



3005 Packard

3005 Packard

Ann Arbor, MI 48104

Inquiry Number: 2791628.3

June 11, 2010



Certified Sanborn® Map Report

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Site Name:
3005 Packard
3005 Packard
Ann Arbor, MI 48104

Client Name:
AKT Environmental Consultants
22725 Orchard Lake Road
Farmington Hills, MI 48336



EDR Inquiry # 2791628.3 Contact: Jessica Cory

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APPENDIX G

PREVIOUS ENVIRONMENTAL REPORTS

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PHASE I HYDROGEOLOGIC STUDY REPORT
BUDDY'S PACKARD SUNOCO
3005 PACKARD ROAD
ANN ARBOR, MICHIGAN

Prepared for:

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- FEBRUARY 8, 1995 -

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PHASE I HYDROGEOLOGIC STUDY REPORT
BUDDY'S PACKARD SUNOCO
ANN ARBOR, MICHIGAN

INTRODUCTION

Purpose

This report has been prepared by Envirologic Technologies, Inc. (Envirologic), on behalf of Pipeline Oil Sales, Inc. (Pipeline), in accordance with the Michigan Leaking Underground Storage Tank Act, Public Act 478 of 1988, as amended (Act 478). This report describes the activities and results of a Phase I Hydrogeologic Study conducted at Buddy's Packard Sunoco, Ann Arbor, Michigan.

Project Description

The Buddy's Packard Sunoco facility is located at 3005 Packard Road, Ann Arbor, Michigan. Specifically, the site is located in the SW 1/4 of the SW 1/4 of Section 2, Township 3 South, Range 6 East on the Ypsilanti West, Michigan United States Geologic Survey (USGS) 7.5 Minute Topographic Quadrangle Map, Pittsfield Township, Washtenaw County, Michigan (refer to Figure 1). The facility is currently a service station/convenience store which retails gasoline.

Project Background

Prior to an Underground Storage Tank (UST) system upgrade (i.e., new tanks, piping and pumps were installed during November and December of 1994), the facility utilized three (3) underground storage tanks (USTs), ranging in capacity from 1,000 to 20,000 gallons (refer to Figure 2). The USTs were utilized for the storage of regular unleaded gasoline, midgrade unleaded gasoline, premium unleaded gasoline and kerosene fuel.

Site Check

On August 31, 1994, Pipeline reported a Suspected Release to the Michigan State Police - Fire Marshall Division. In accordance with the Michigan UST Rules (January, 1991), all UST systems were tested for leaks (tightness test) and on September 15, 1994 a Site Check was performed. The results of the tightness tests indicated that no UST system leaks were present. However, the Site Check, which included completing three hand-augered soil borings (HSB-1, HSB-2 and HSB-3) in the vicinity of the USTs, soil sampling and field screening with an Organic Vapor Analyzer (OVA), indicated petroleum odors (vapors) and staining (refer to Figure 2). Based on the field screening results from the Site Check a Confirmed Release was reported to the Michigan Department of Natural Resources (MDNR) on September 15, 1994. An Initial Abatement Report was submitted to MDNR on September 29, 1994.

Initial Assessment

In accordance with Act 478, an Initial Assessment was completed at this facility on November 3 and 4, 1994. Initial Assessment field activities included the advancement of nine soil borings (SB-1 through SB-9), soil sampling and analysis, installation of one temporary monitoring well (SB-5/Temp-1) and groundwater sampling and analysis.

The laboratory analyses indicated that both soil and groundwater exhibited concentrations of petroleum contaminants above MERA Type B Cleanup Criteria. Field observations also indicated the presence of product that appeared to be associated with the former Kerosene UST system. An Initial Assessment Report was submitted to the MDNR on November 10, 1994. Based on the discovery of free product during the Initial Assessment, and in accordance with Act 478, a Free Product Report was submitted to the MDNR on November 21, 1994.

Environmental Monitoring of UST Removal

On November 16, 17 and 18, 1994, Envirologic performed environmental monitoring and collected excavation soil samples for potential closure during removal of the former kerosene and gasoline UST systems (refer to Figure 3). The UST systems were removed (decommissioned) in response to a total UST systems upgrade for the Buddy's Packard Sunoco facility.

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All three USTs and associated piping were excavated and removed by Keith Fransted Construction, Inc. of Concord, Michigan. Limited soil removal was performed due to the presence of obvious residual soil contamination and because most of the soils were too wet and clay-rich to be recompacted. Six soil samples were collected from each excavation in accordance with the MDNR Guidance Document, *Verification Of Soil Remediation* (MDNR, April 1994, Revision 1). Additionally, a four-inch PVC free product recovery well (RW-1) with a five-foot screen was placed in the Kerosene excavation prior to backfilling with clean fill. Soil samples from the both the kerosene and gasoline UST excavations were submitted to KAR Laboratories, Inc.(KAR), of Kalamazoo, Michigan for analysis (refer to Appendix A for the soil analytical reports). The laboratory analyses indicated that soil contamination above MERA Type B Cleanup Criteria is still present in the vicinity of the former kerosene and gasoline UST excavations (refer to Table 1).

Based on the results of the previous investigations, a Phase I Hydrogeologic Study was undertaken with field activities starting on January 9, 1995.

Table 1
Summary Environmental Monitoring of UST Removal Soil Analytical Results

Sample Location	Sample Depth (feet)	Scan 2 Compounds				MTBE (ug/kg)	Scan 7 Compounds	Total Lead (mg/kg)
		Benzene (ug/kg)	Toluene (ug/kg)	Ethyl Benzene (ug/kg)	Total Xylenes (ug/kg)		Naphthalene (ug/kg)	
Kero East Wall	6.5	25	<10	350	68	<100	660	10
Kero North Wall	5.0	15	11	<10	27	<100	<330	11
Kero West Wall	6.0	190	15	2,400	4,125	<100	710	12
Kero South Wall	6.0	1,600	280	5,900	35,600	<2000 ^c	1,300	9
Kero East Floor	9.0	99	34	350	459	<100	390	8
Kero West Floor	9.0	350	41	2,900	2,236	<100	400	12
South Wall*	8.0	<10	19	<10	75	<100	<330	9
North Wall*	6.0	<10	28	<10	39	160	<330	8
East Wall North*	7.0	420	9,000	1,300	3,190	<100	390	8
East Wall South *	7.0	<10	16	<10	25	<100	<330	11
West Wall North*	7.0	780	200	2,100	7,000	<100	550	8
West Wall South*	7.0	580	<10	2,700	18,600	<500 ^c	430	8
MERA^a Type B	---	24	16,000	1,500	5,600	4,600	5,000	21.0 ^b

- NOTES: 1. Samples collected on November 16 and 18, 1994.
2. < (less than) indicates not detected followed by method detection limit.
3. * = Samples collected from gasoline UST excavation.
4. ^a = MERA Operational Memorandum #8, Revision 3, February 4, 1994.
5. ^b = MERA Operational Memorandum #15, September 30, 1993.
6. ^c = Elevated detection limit caused by sample matrix interference.

PHASE I HYDROGEOLOGIC STUDY PROGRAM

A Phase I Hydrogeologic Study was implemented on January 9, 1995. The Phase I investigation included the advancement of five soil borings, soil sampling, the installation of four groundwater monitoring wells, and groundwater sampling and analysis. The following describes these activities and results in more detail.

Soil Borings and Soil Analysis

Five soil borings (MW-1, MW-2, MW-2D, MW-3 and SB-10) were advanced on-site during the Phase I Investigation, beginning on January 9, 1995 (refer to Figure 4). All soil borings were advanced using a hollow-stem auger (HSA) drilling rig. All drilling was performed by West Michigan Drilling, a Division of Envirologic Technologies, Inc. of Kalamazoo, Michigan.

Soil samples were collected at approximately five foot vertical intervals utilizing a 24-inch-long standard split-barrel sampler, in accordance with the standard penetration test ASTM D-1586. All soil samples were classified (described) by a geologist, field screened for total volatile organic compounds (VOCs) using an OVA in the field at the time of collection (refer to Appendix B for the soil boring logs).

Soil cuttings were containerized in MDOT approved 55-gallon steel drums and the borings were either converted into groundwater monitoring wells, or abandoned with a bentonite slurry grout.

All drilling equipment coming into contact with the soil was steam cleaned prior to arrival on-site and between each boring location. The split-barrel sampler was cleaned/decontaminated with a phosphate free detergent and rinsed with fresh and deionized water between each sample.

One soil sample from each soil boring was selected for laboratory analysis. The soil samples were submitted to KAR for analysis of MDNR Scan 2 compounds (benzene, toluene, ethyl benzene and total xylenes(BTEX)), MDNR Scan 7 compounds (polynuclear aromatic hydrocarbons (PNAs)), methyl tert-butyl ether (MTBE), and total lead.

The soil samples were placed in the proper sample containers provided by KAR, stored in a cooler with cold packs and delivered to the lab within the specified holding time for the parameters listed above. All shipping and handling of the soil samples were conducted utilizing Envirologic's standard Chain-of-Custody protocol.

Monitoring Well Installation

Four of the five HSA soil borings were completed as groundwater monitoring wells (MW-1, MW-2, MW-2D and MW-3). The monitoring wells were constructed with five foot long, two-inch inside diameter (I.D.), PVC well screens with 0.01-inch (#10 slot) openings. Three monitoring wells were set to intersect the water table at a total depth of approximately 15 feet (MW-1, MW-2 and MW-3). One monitoring well (MW-2D) was set deeper into the aquifer at a total depth of 30 feet. Two-inch I.D. PVC riser pipe was placed above the top of the screen to approximately 0.5 foot below ground level (bgl).

The HSA borings were completed by placing a coarse silica sand filter pack (Global #5 sand) around the well screens to approximately two feet above the top of the screen as the HSAs were pulled from the borehole. The remaining annular space was sealed with a bentonite grout to approximately one foot bgl. All monitoring wells were completed with a steel casing protector at the ground surface to protect the integrity of the well (refer to Appendix B for the well logs).

Elevation and Location Survey

An elevation and location survey of the newly installed groundwater monitoring wells was performed on January 12, 1995. Top of casing (TOC) and ground surface elevations were surveyed with an automatic level to the nearest 0.01 foot utilizing an on-site arbitrary benchmark of 100.00 feet. Horizontal map locations were measured with a fiberglass tape.

Groundwater Sampling and Analysis

All groundwater monitoring wells were developed at least 72 hours prior to sampling using a centrifugal pump or bailing, with surging methods. Development was considered complete when the purge water was relatively sediment free.

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All monitoring wells were sampled on January 17, 1995. The method of sampling consisted of removing approximately three times the volume of standing water within each well with a stainless-steel bailer prior to obtaining a groundwater sample. Water samples were decanted from the bailer to appropriate sample containers provided by KAR. The groundwater samples were submitted for analysis of BTEX, PNAs, MTBE and dissolved lead. Samples for dissolved lead analyses were filtered by KAR.

All development and purge water was containerized in MDOT approved 55-gallon steel drums and temporarily stored on-site pending analysis and disposal.

PHASE I HYDROGEOLOGIC STUDY RESULTS

Regional Geology

According to the Hydrogeologic Atlas of Michigan (WMU, 1981) the regional glacial geology near Ann Arbor is dominated by deltaic sediments and moraines deposited during the last glacial period. Beach ridges and lake-bed plains are also present in the Ann Arbor area. The thickness of the glacial deposits in the area ranges from 200 to 400 feet.

Beneath the glacial deposits is bedrock, consisting of the Early Mississippian/Late Devonian age Antrim Shale (WMU, 1981). This bedrock unit is approximately 100-150 feet thick.

Site Geology

The logs from soil borings advanced during the Initial Assessment and the Phase I Hydrogeologic Study were used to determine the surficial geology of the site. The geology consists of four distinct units. The first unit encountered is a fill unit. The fill consists of one to three feet of brown sand and gravel with some silt and clay.

Underlying the fill unit is a gray clay unit. The clay unit has fractures, is seven to nine feet thick, is plastic and contains trace amounts of sand and gravel. Underlying the clay unit is a unit of interbedded clay and fine sand. The sand zones within this unit are saturated. The lateral continuity of the sand zones is not well known. This unit is five to seven feet thick. Underlying the interbedded clay and sand unit is a gravel unit. The

gravel unit contains some medium to coarse sand, trace amounts of silt and is saturated. This gravel unit extends from the base of the interbedded clay and sand unit to at least the depth of the borings. Refer to Figures 5 and 6 for two geologic cross sections of the site.

Site Hydrogeologic Conditions

Site hydrogeologic conditions have been determined through the installation and sampling of on-site monitoring wells. Monitoring wells MW-1, MW-2 and MW-3 are screened across the saturated sand zones within the interbedded clay and sand unit.

Based upon the current data, the saturated sand zones appear to be connected.

Monitoring well MW-2D is screened within the lower gravel unit.

Data collected from monitoring wells MW-1, MW-2, MW-2D and MW-3 indicate a thin, semi-confined aquifer within the interbedded clay and sand unit and a confined aquifer within the gravel layer. Preliminary data suggest that these two aquifers are not hydraulically connected at this location, as indicated by the extreme difference in piezometric heads observed between nested monitoring wells MW-2 and MW-2D; the 9.7 feet of piezometric head difference (January 17, 1995) over the 15 feet that separate the two well screens yields a downward vertical gradient of approximately 0.65 feet/foot (refer to Table 2). Because the actual hydraulic connection or migration rate between the two aquifers depends on the thickness, continuity and vertical permeability of the clay

Table 2
Groundwater and Monitoring Well Elevation Data

Well I.D.	Ground Elevation (feet)	TOC Elevation (feet)	January 17, 1995		February 6, 1995	
			Water Depth (feet)	Water Elevation (feet)	Water Depth (feet)	Water Elevation (feet)
MW-1	100.61	100.00	6.82	93.18	6.65	93.35
MW-2	101.55	100.66	6.78	93.88	6.41	94.25
MW-2D	101.61	100.81	16.63	84.18	16.49	84.32
MW-3	103.02	102.46	8.37	94.09	7.77	94.69

NOTES:

1. All elevations are relative to an on-site arbitrary benchmark of 100.00 feet,
2. TOC = Top-of-Casing.

aquitard separating the two aquifers and because this information is not currently available, the potential connection between the aquifers cannot be determined at this time.

Depths to groundwater from below each well's TOC were measured on January 17 and February 6, 1995 (refer to Table 2). The predominant groundwater flow direction in the semi-confined aquifer is north-northeast (refer to Figure 7). Groundwater flow in the lower confined aquifer could not be determined because only one monitoring well is screened in the gravel unit.

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The approximate horizontal piezometric gradient in the semi-confined aquifer is 0.008 feet/foot (January 17, 1995). The horizontal piezometric gradient was calculated by dividing the difference in the piezometric head between monitoring wells MW-1 and MW-2 by the horizontal distance separating monitoring wells MW-1 and MW-2.

The presence of groundwater contamination south (upgradient) of the former UST excavations, as presented below, suggests that, (1) additional piezometric and hydrogeologic data (monitoring wells) are needed to verify the north-northeast groundwater flow direction and/or (2) the potential for an upgradient source(s) of contamination should be investigated.

Distribution of Contaminants

Soil

The results of the soil analyses from the Initial Assessment (soil borings SB-1 through SB-9) and Phase I Hydrogeologic Study (soil borings MW-1, MW-3 and SB-10) indicate that selected BTEX contaminants are present above MERA Type B Cleanup Criteria in the vicinity of the former kerosene and gasoline UST excavations. PNAs (naphthalene) and MTBE were also detected, however, their concentrations are below MERA Type B Cleanup Criteria. Total lead was detected at all soil boring locations below MERA Default Type A Cleanup Criteria (MDNR, September 30, 1993). Table 3 presents a summary of the soil analytical results received from the Initial Assessment and Phase I Hydrogeologic Study (refer to Appendix A for the soil analytical reports).

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The horizontal extent of soil contamination has been defined north and northeast of the former gasoline UST excavation and in the vicinity of soil boring SB-3 (refer to Figure 8). The horizontal extent of soil contamination has not been defined in all other areas surrounding the former kerosene and gasoline UST excavations. Soil contamination appears to extend off-site southwest of the former kerosene and gasoline UST excavations (refer to Figure 8). The vertical extent of soil contamination has not been delineated but is believed to extend to the saturated sand in some areas as indicated by the groundwater results presented below.

Table 3
Summary of Initial Assessment and Phase I Soil Analytical Results

Sample Location	Depth of Sample (feet)	Scan 2 Compounds				MTBE (ug/kg)	Scan 7 Compounds	Total Lead (mg/kg)
		Benzene (ug/kg)	Toluene (ug/kg)	Ethyl Benzene (ug/kg)	Total Xylenes (ug/kg)		Naphthalene (ug/kg)	
SB-1*	4 - 6	<10	<10	<10	<30	<100	<330	6.4
SB-2*	4 - 6	<10	<10	<10	<30	<100	<330	6.3
SB-3*	4 - 6	<10	<10	<10	<30	<100	<330	9.2
SB-3*	10 - 12	<10	<10	<10	<30	<100	<330	5.1
SB-4*	4 - 6	25	620	700	2,900	<100	390	12.1
SB-4*	9 - 11	<10	<10	<10	<30	<100	<330	3.5
SB-5*	4 - 6	<10	<10	<10	<30	<100	<330	4.5
SB-5*	9 - 11	340	<10	<10	<30	<100	<330	5.3
SB-8*	4 - 6	<10	<10	<10	<30	<100	<330	5.5
SB-9*	4 - 6	<10	<10	<10	<30	<100	<330	5.7
MW-1	4 - 6	<10	<10	<10	<10	<100	<330	8
SB-10	4 - 6	160	45	210	231	<100	560	8
MW-3	4 - 6	430	110	1100	6100	180	900	12
MERA^a Type B	---	24	16,000	1,500	5,600	4,600	5,000	21.0 ^b

NOTES: 1. * = samples collected on November 4, 1994 during Initial Assessment activities.
2. < (less than) indicates not detected followed by method detection limit.
3. ^a = MERA Operational Memorandum #8, Revision 3, February 4, 1994.
4. ^b = MERA Operational Memorandum #15, September 30, 1993.

Groundwater

The groundwater analytical results from the Phase I Hydrogeologic Study indicate that selected BTEX compounds and MTBE are present above MERA Type B Cleanup Criteria in upgradient monitoring wells MW-2 and MW-3, which are screened in the semi-confined aquifer (refer to Table 4). The groundwater analytical results for PNAs and dissolved lead in the semi-confined aquifer indicate non-detect concentrations (below MERA Type A Cleanup Criteria) for all three wells (MW-1, MW-2 and MW-3). However, the water analytical results collected from temporary monitoring well SB-5/Temp-1 during the Initial Assessment yielded 15 ug/l naphthalene and 5.8 ug/l acenaphthylene.

The horizontal extent of BTEX and MTBE contamination in the semi-confined aquifer has been defined northwest of the former gasoline UST excavation, near monitoring well MW-1 (refer to Figure 9). The horizontal extent of groundwater contamination in the semi-confined aquifer has not been defined in all other areas surrounding the former kerosene and gasoline UST excavations. Groundwater contamination appears to extend upgradient (south-southwest) of the former kerosene and gasoline UST excavations (refer to Figure 9), suggesting a possible off-site source of the contaminants. It's also possible that the interbedded clay and saturated fine sand unit is not continuous between monitoring well locations MW-1, MW-2 and MW-3 and that the static piezometric data presented above may be erroneous. Additional piezometric and hydrogeologic data

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(monitoring wells) are needed to verify the continuity of the unit and the north-northeast groundwater flow direction. Possible upgradient sources of contamination should also be investigated.

The vertical extent of groundwater contamination in the semi-confined aquifer has not been defined, but is likely to be limited to the saturated sand that is interbedded with clay.

No BTEX compounds, MTBE, PNAs or dissolved lead were detected in groundwater monitoring well MW-2D, which is screened in the lower confined aquifer (refer to Table 4 and Figure 9). Please refer to Appendix C for the groundwater analytical reports.

Table 4							
Summary of Phase I Groundwater Analytical Results							
Sample Location	Scan 2 Compounds				MTBE (ug/l)	Scan 7 Compounds (ug/l)	Dissolved Lead (mg/l)
	Benzene (ug/l)	Ethyl Bezene (ug/l)	Toluene (ug/l)	Total Xylenes (ug/l)			
MW-1	<1	<1	<1	<1	<50	<5	<0.003
MW-2	440	<1	<1	<1	2800	<5	<0.003
MW-2D	<1	<1	<1	<1	<50	<5	<0.003
MW-3	3.1	<1	5.9	4.7	21,000	<5	<0.003
MERA^a Type B	1.2	680	790	280	230	---	0.004^b

NOTES: 1. Samples collected on January 17, 1995.
2. < (less than) indicate not detected followed by method detection limit.
3. ^a = MERA Operational Memorandum #8, Revision 3, February 4, 1994.
4. ^b = MERA Operational Memorandum #15, September 30, 1993.

SUMMARY AND CONCLUSIONS

A Phase I Hydrogeologic Study was implemented on January 9, 1995. The Phase I investigation included the advancement of five soil borings (MW-1, MW-2, MW-2D, MW-3 and SB-10), soil sampling, the installation of four groundwater monitoring wells, and groundwater sampling and analysis. The following describes these activities and results in more detail.

One soil sample from each soil boring was selected for laboratory analysis. The soil samples were submitted to KAR for analysis of BTEX, PNAs, MTBE, and total lead.

Four of the five HSA soil borings were completed as groundwater monitoring wells.

Three monitoring wells were set to intersect the water table at a total depth of approximately 15 feet (MW-1, MW-2 and MW-3). One monitoring well (MW-2D) was set deeper into the aquifer at a total depth of 30 feet.

The monitoring wells were sampled on January 17, 1995. The groundwater samples were submitted for analysis of BTEX, PNAs, MTBE and dissolved lead.

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The logs from soil borings advanced during the Initial Assessment and the Phase I Hydrogeologic Study were used to determine the surficial geology of the site. The geology consists of four distinct units, an upper fill unit, a fractured gray clay unit, an interbedded clay and fine sand unit and a lower gravel unit.

Site hydrogeologic conditions were determined through the installation and sampling of monitoring wells MW-1, MW-2 and MW-3, screened in the interbedded clay and sand unit, and monitoring well MW-2D, screened within the lower gravel unit. These wells identified a semi-confined aquifer within the interbedded clay and sand unit and a confined aquifer within the gravel layer. Preliminary piezometric head data suggest that these two aquifers are not hydraulically connected, however, the actual hydraulic connection or migration rate between the two aquifers needs to be determined based upon the thickness, continuity and vertical permeability of the clay aquitard separating the two aquifers.

The predominant groundwater flow direction and gradient in the semi-confined aquifer is north-northeast and 0.008 feet/foot, respectively. Groundwater flow in the lower confined aquifer could not be determined because only one monitoring well is screened in the gravel unit.

The results of the soil analyses from the Initial Assessment (soil borings SB-1 through SB-9) and Phase I Hydrogeologic Study (soil borings MW-1, MW-3 and SB-10) indicate that selected BTEX contaminants are present above MERA Type B Cleanup Criteria in

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the vicinity of the former kerosene and gasoline UST excavations. PNAs and MTBE were also detected, however, their concentrations are below MERA Type B Cleanup Criteria. Total lead was detected at all soil boring locations below MERA Default Type A Cleanup Criteria (MDNR, September 30, 1993). Refer to Table 3 and Figure 8 for summaries of the soil analytical results from the Initial Assessment and Phase I Hydrogeologic Study.

The horizontal extent of soil contamination has been defined north and northeast of the former gasoline UST excavation and in the vicinity of soil boring SB-3. The horizontal extent of soil contamination has not been defined in all other areas surrounding the former kerosene and gasoline UST excavations. Soil contamination appears to extend off-site southwest of the former kerosene and gasoline UST excavations (refer to Figure 8). The vertical extent of soil contamination has not been delineated, but is believed to extend to the saturated sand in some areas as indicated by the groundwater results presented below.

The groundwater analytical results from the Phase I Hydrogeologic Study indicate that selected BTEX compounds and MTBE are present above MERA Type B Cleanup Criteria in upgradient monitoring wells MW-2 and MW-3, which are screened in the semi-confined aquifer. The groundwater analytical results for PNAs and dissolved lead in the semi-confined aquifer indicate non-detect concentrations (below MERA Type A Cleanup Criteria) for all three wells (MW-1, MW-2 and MW-3). Refer to Table 4 and

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Figure 9 for summaries of the groundwater soil analytical results from Phase I Hydrogeologic Study.

The horizontal extent of BTEX and MTBE contamination in the semi-confined aquifer has been defined northwest of the former gasoline UST excavation, near monitoring well MW-1. The horizontal extent of groundwater contamination in the semi-confined aquifer has not been defined in all other areas surrounding the former kerosene and gasoline UST excavations. Groundwater contamination appears to extend upgradient (southwest) of the former kerosene and gasoline UST excavations. The vertical extent of groundwater contamination in the semi-confined aquifer has not been defined, but is likely to be limited to the saturated sand that is interbedded with clay.

No BTEX compounds, MTBE, PNAs or dissolved lead were detected in groundwater monitoring well MW-2D, which is screened in the lower confined.

As suggested above, the presence of groundwater contamination south (upgradient) of the former UST excavations indicates that; (1) additional piezometric data (monitoring wells) are needed to verify the north-northeast groundwater flow direction and/or (2) the potential for an upgradient source of contamination should be investigated.

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USEPA, "RCRA Ground-Water Monitoring Technical Enforcement Guidance Document",
Office of Waste Programs Enforcement, Office of Solid Waste and Emergency
Response, Washington, D.C., OSWER-9950.1, 317 p., 1986

General

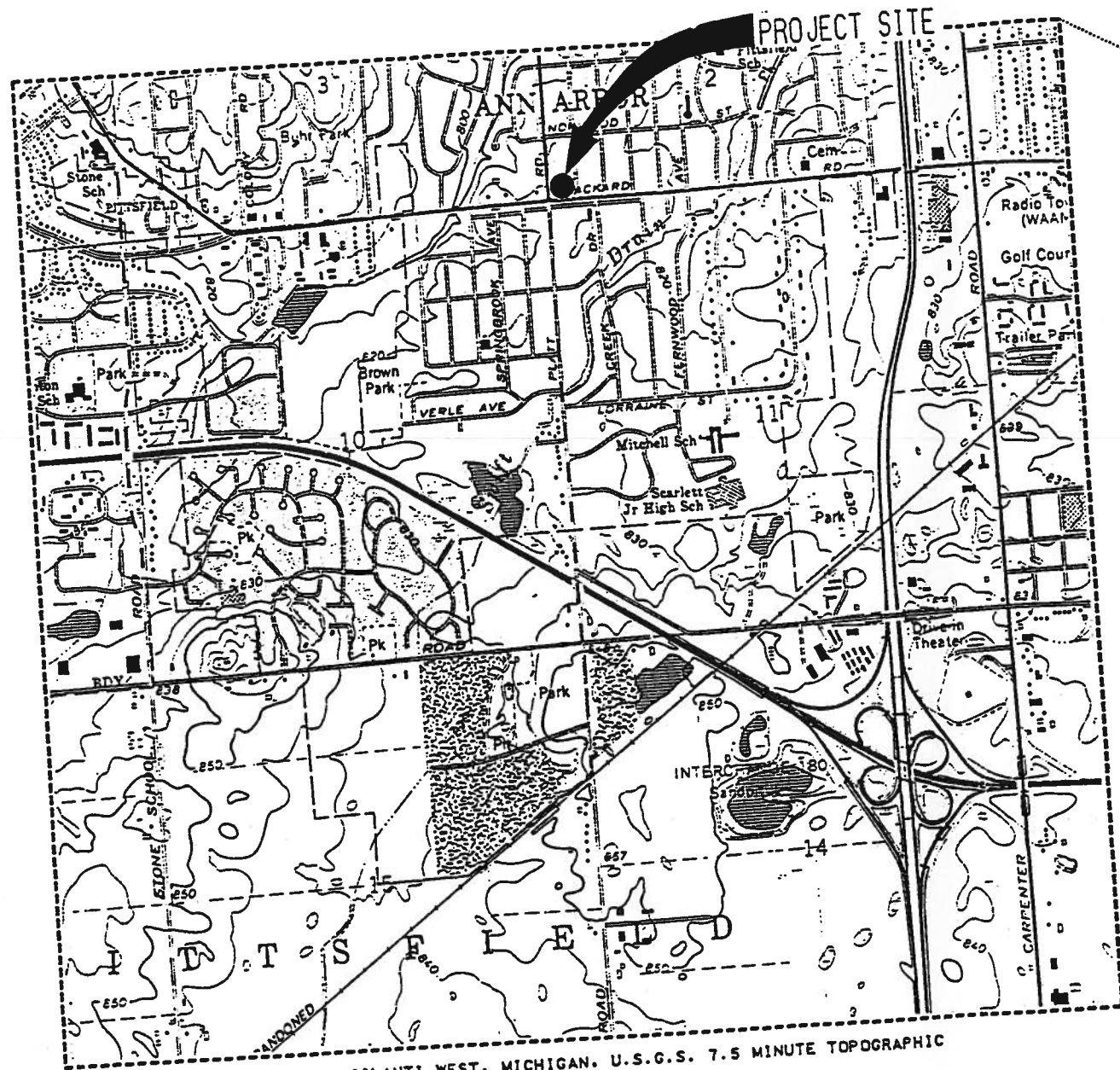
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topographic quadrangle, 1967, Photo revised, 1983

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Geology, College of Arts and Sciences, 1981



SOURCE: YPSILANTI WEST, MICHIGAN, U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP



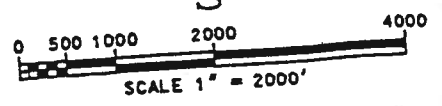
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

T.3 S., R. 6 E.
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

BUDDY'S PACKARD SUNOCO

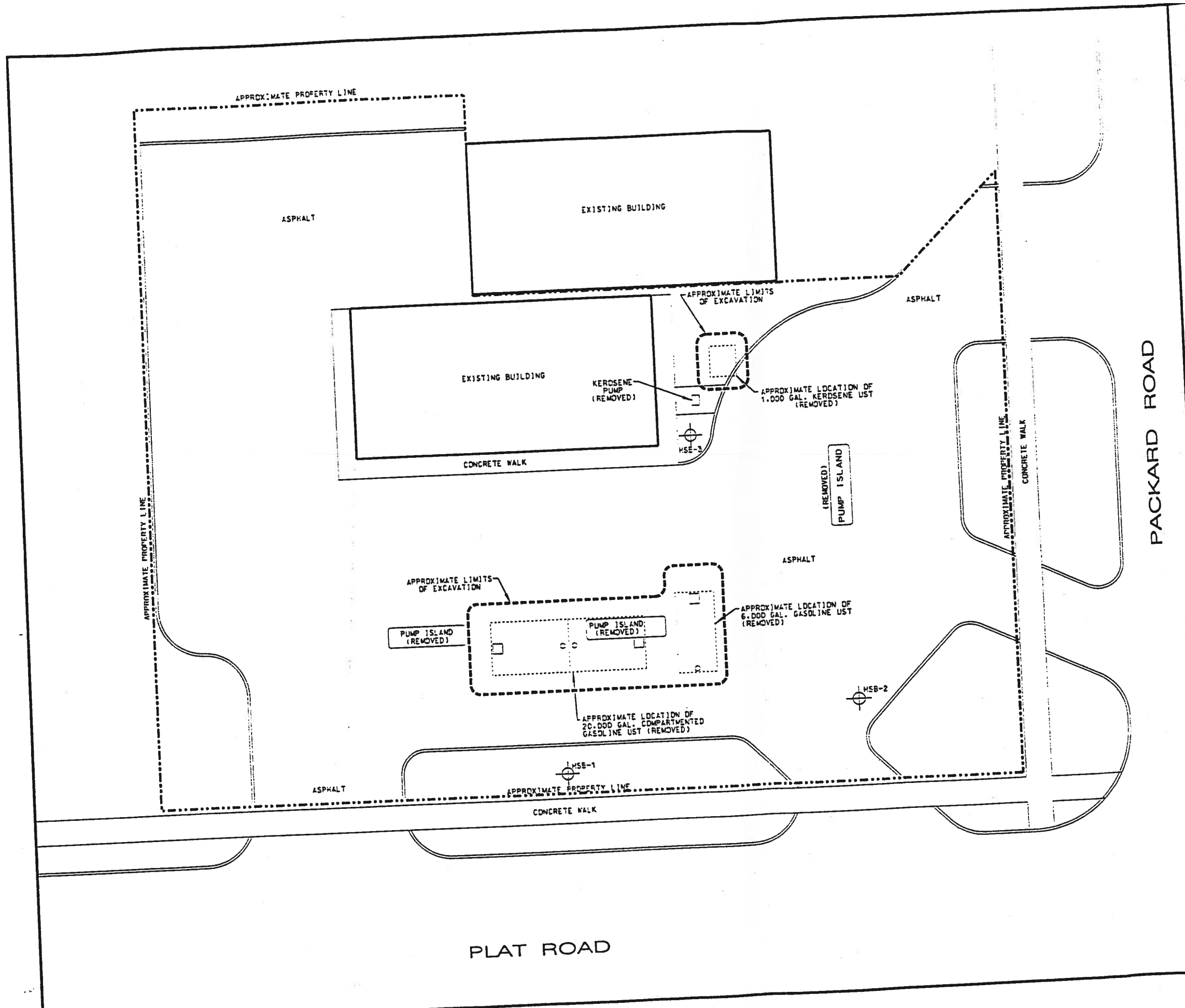
3005 PACKARD
ANN ARBOR, MICHIGAN 48104

LOCATION MAP

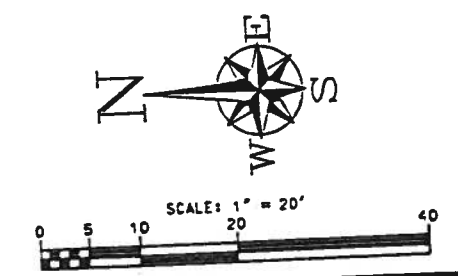


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PROJECT NO.
940150
FIGURE NO.
1



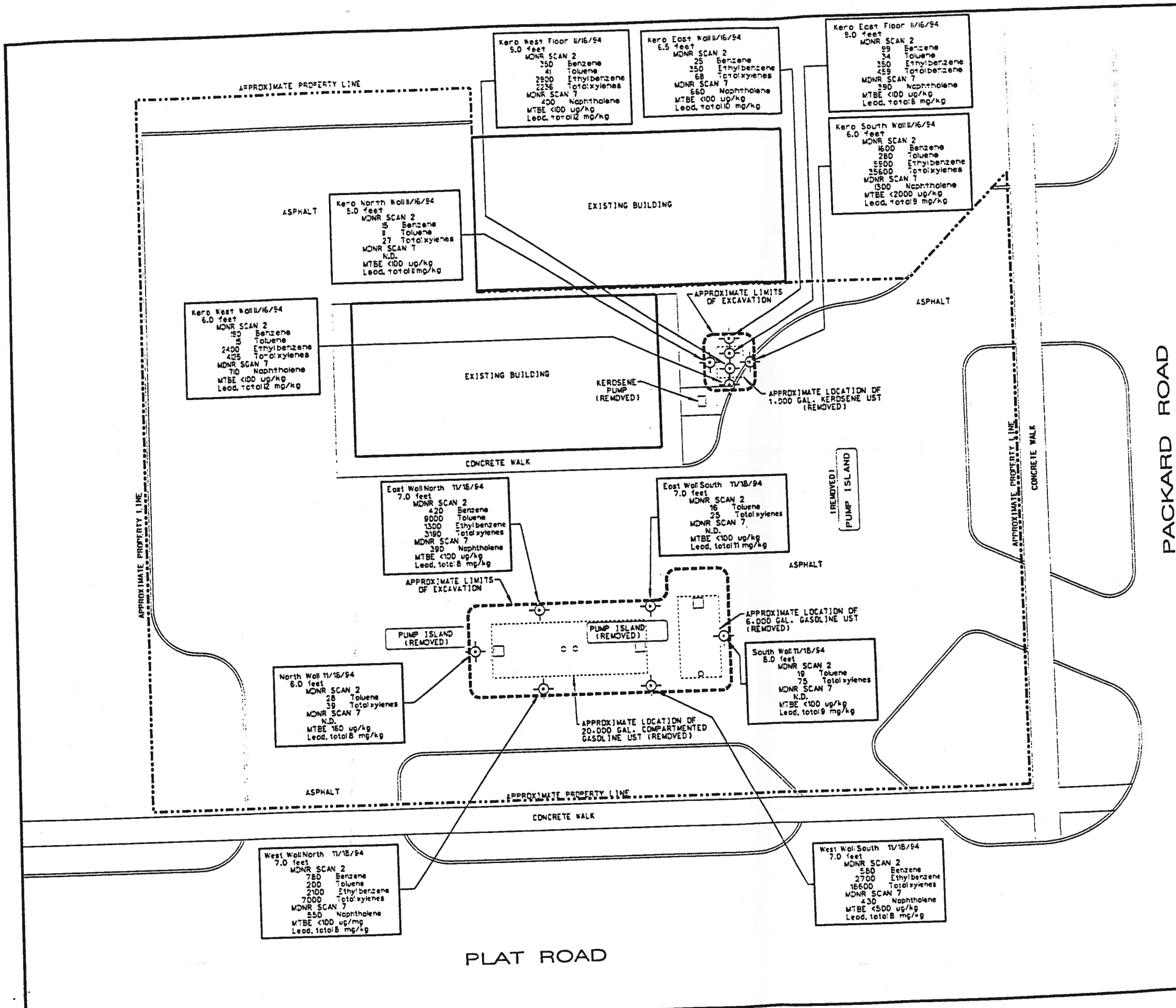
LEGEND
 SITE CHECK SOIL BORING LOCATION

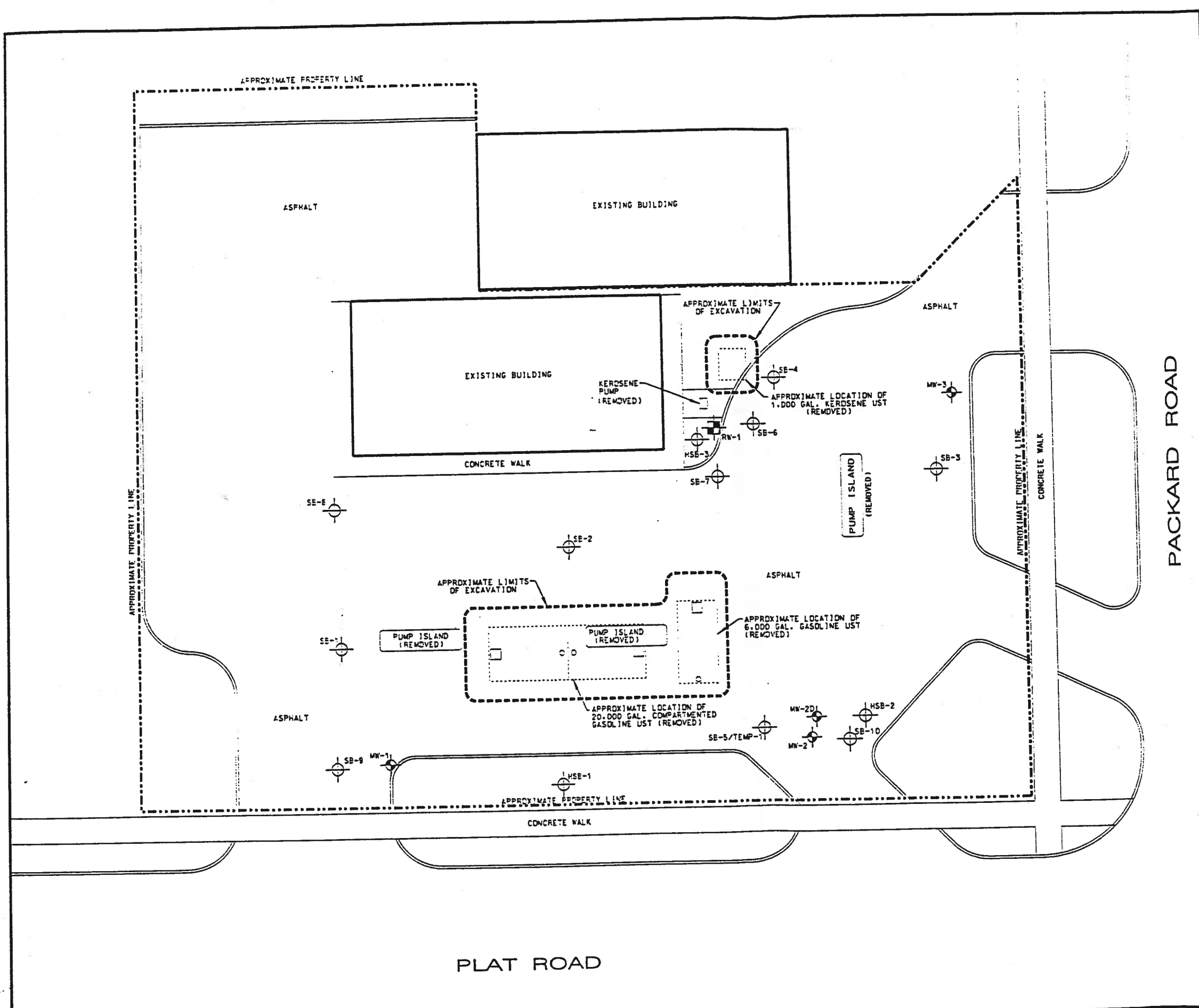


BUDDY'S PACKARD SUNOCO
 3005 PACKARD
 ANN ARBOR, MICHIGAN 48104

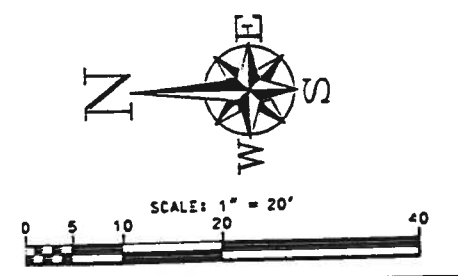
SITE PLAN

 ENVIROLOGIC TECHNOLOGIES, INC. 2960 INTERSTATE PARKWAY KALAMAZOO, MICHIGAN 49001 PH: (616) 342-1100 FAX: (616) 342-4945	PROJECT NO: 940150
	FIGURE NO: 2





- ### LEGEND
- SOIL BORING LOCATION
 - FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/16/94)
 - MONITORING WELL LOCATION



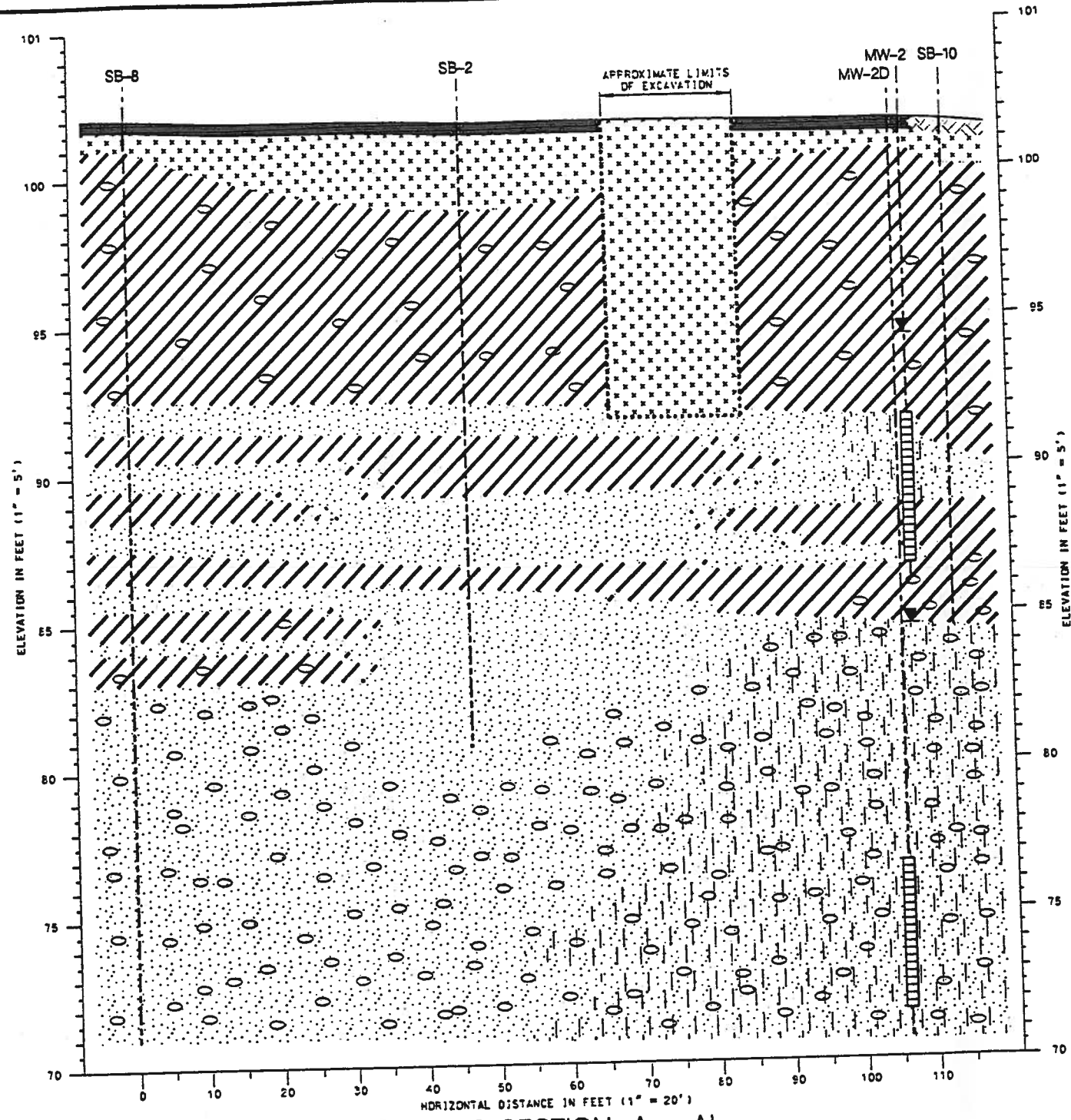
BUDDY'S PACKARD SUNOCO
 3005 PACKARD
 ANN ARBOR, MICHIGAN 48104

**SOIL BORING AND
 MONITORING WELL
 LOCATION MAP**

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PROJECT NO:
S40150

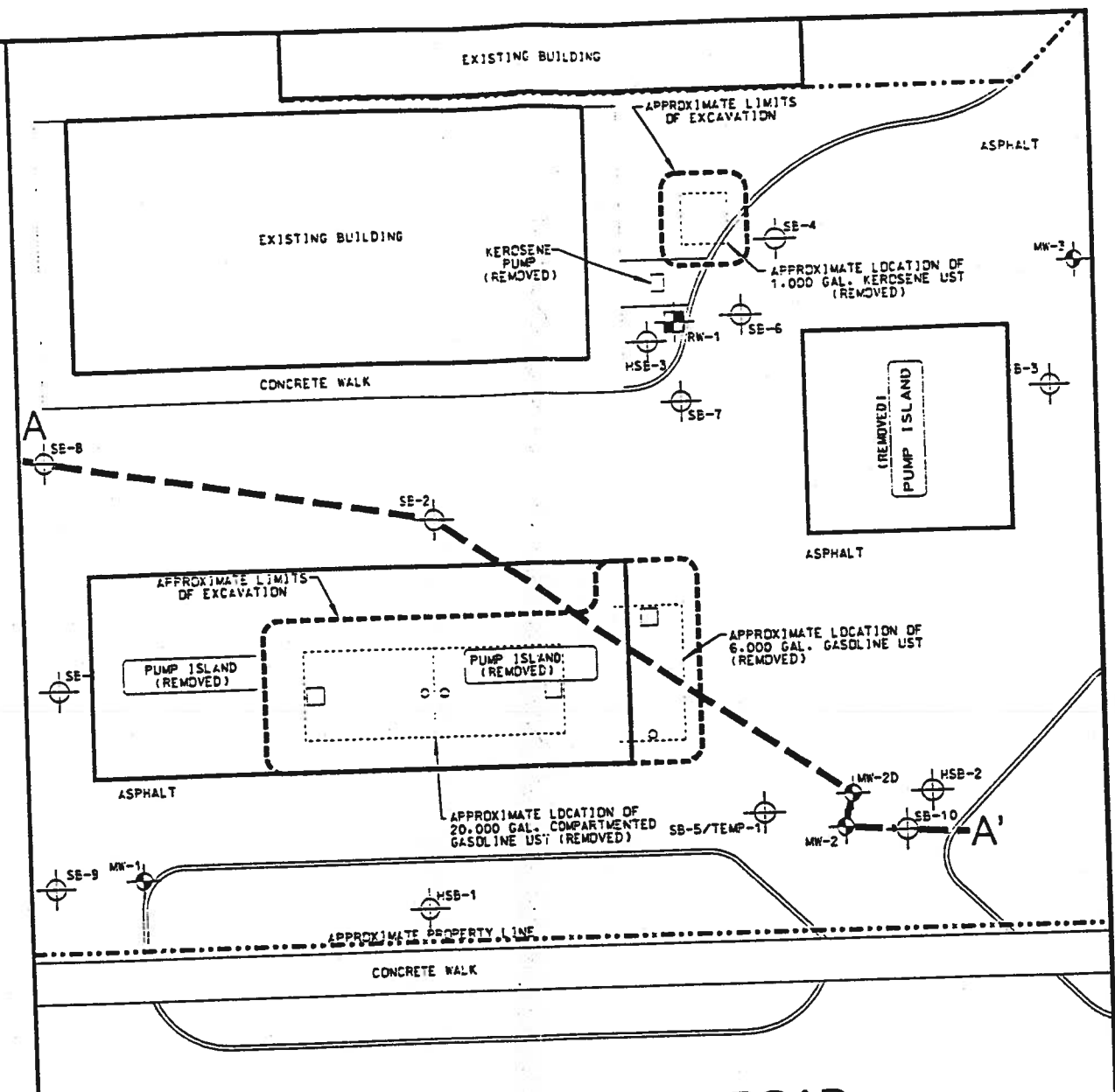
FIGURE NO:
4



CROSS-SECTION A - A'

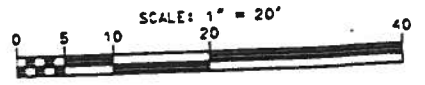
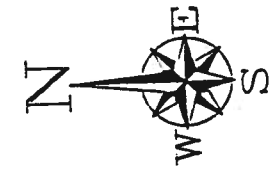
LEGEND

- | | | | | |
|---------|------------|------|-------------------|--|
| ASPHALT | MISC. FILL | SILT | GRAVEL | STATIC WATER LEVEL
JANUARY 17, 1995 |
| TOPSOIL | SAND | CLAY | SCREENED INTERVAL | |



LEGEND

- SOIL BORING LOCATION
- FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)
- MONITORING WELL LOCATION
- CROSS-SECTION A - A'

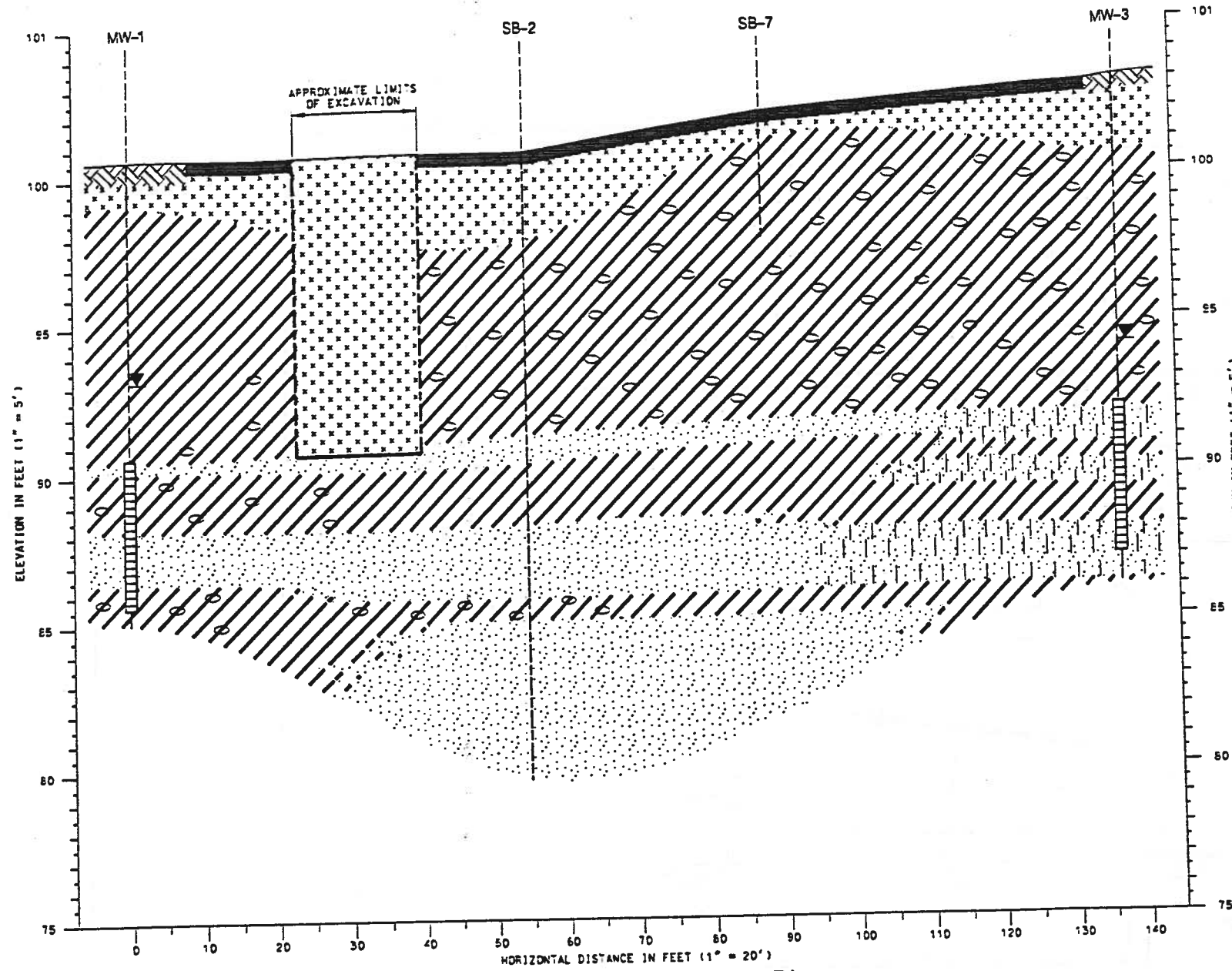


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**GEOLOGIC CROSS-SECTION
 A - A'**

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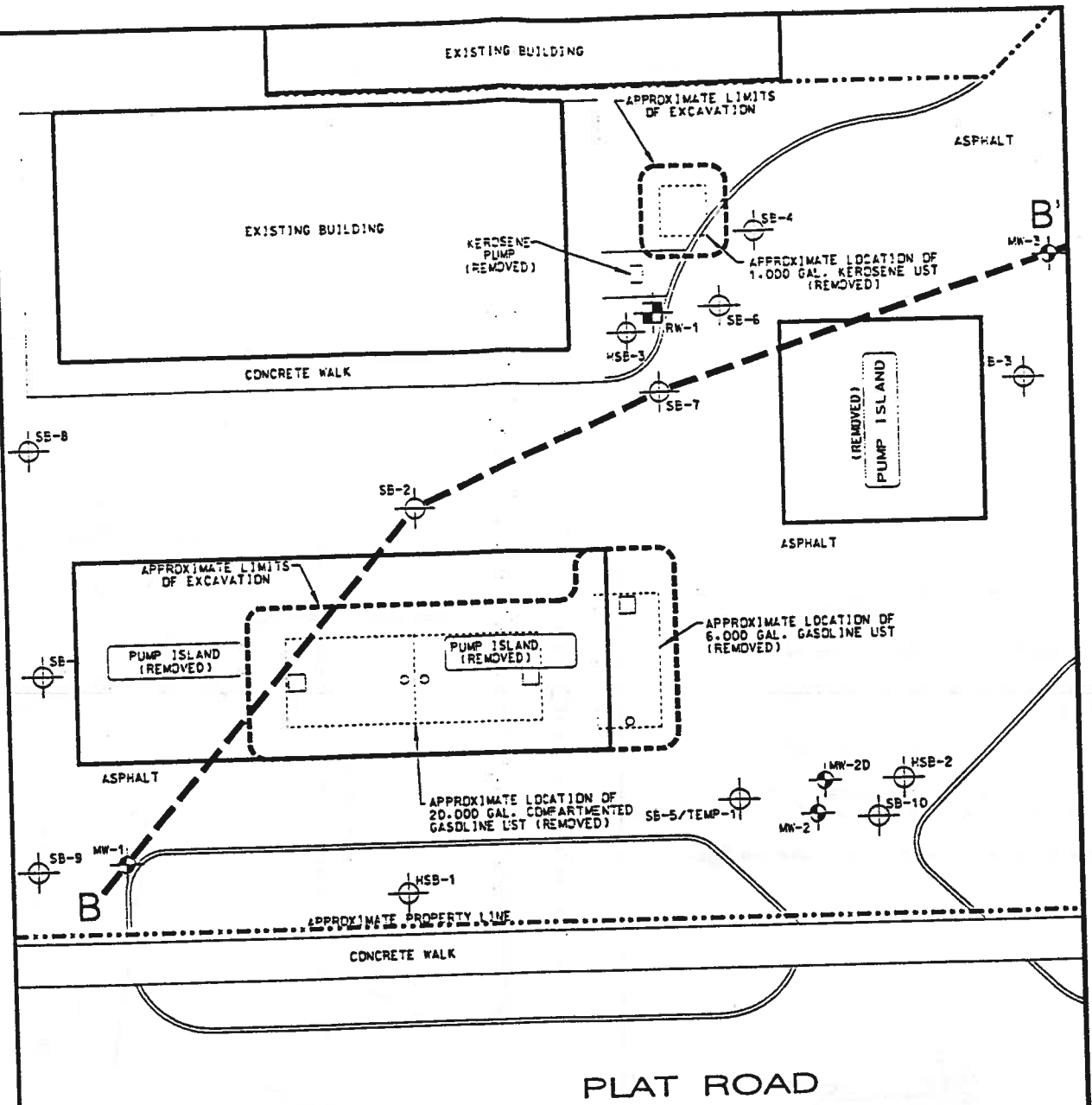
PROJECT NO: 940150
 FIGURE NO: 5



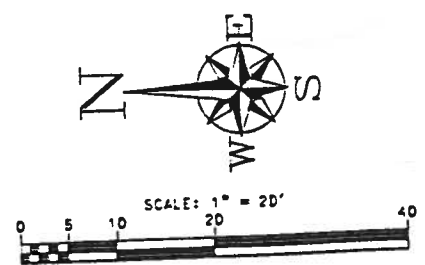
CROSS-SECTION B - B'

LEGEND

- | | | | | |
|---------|------------|------|-------------------|--|
| ASPHALT | MISC. FILL | SILT | GRAVEL | STATIC WATER LEVEL
JANUARY 17, 1995 |
| TOPSOIL | SAND | CLAY | SCREENED INTERVAL | |



- SOIL BORING LOCATION
- FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)
- MONITORING WELL LOCATION
- CROSS-SECTION B - B'

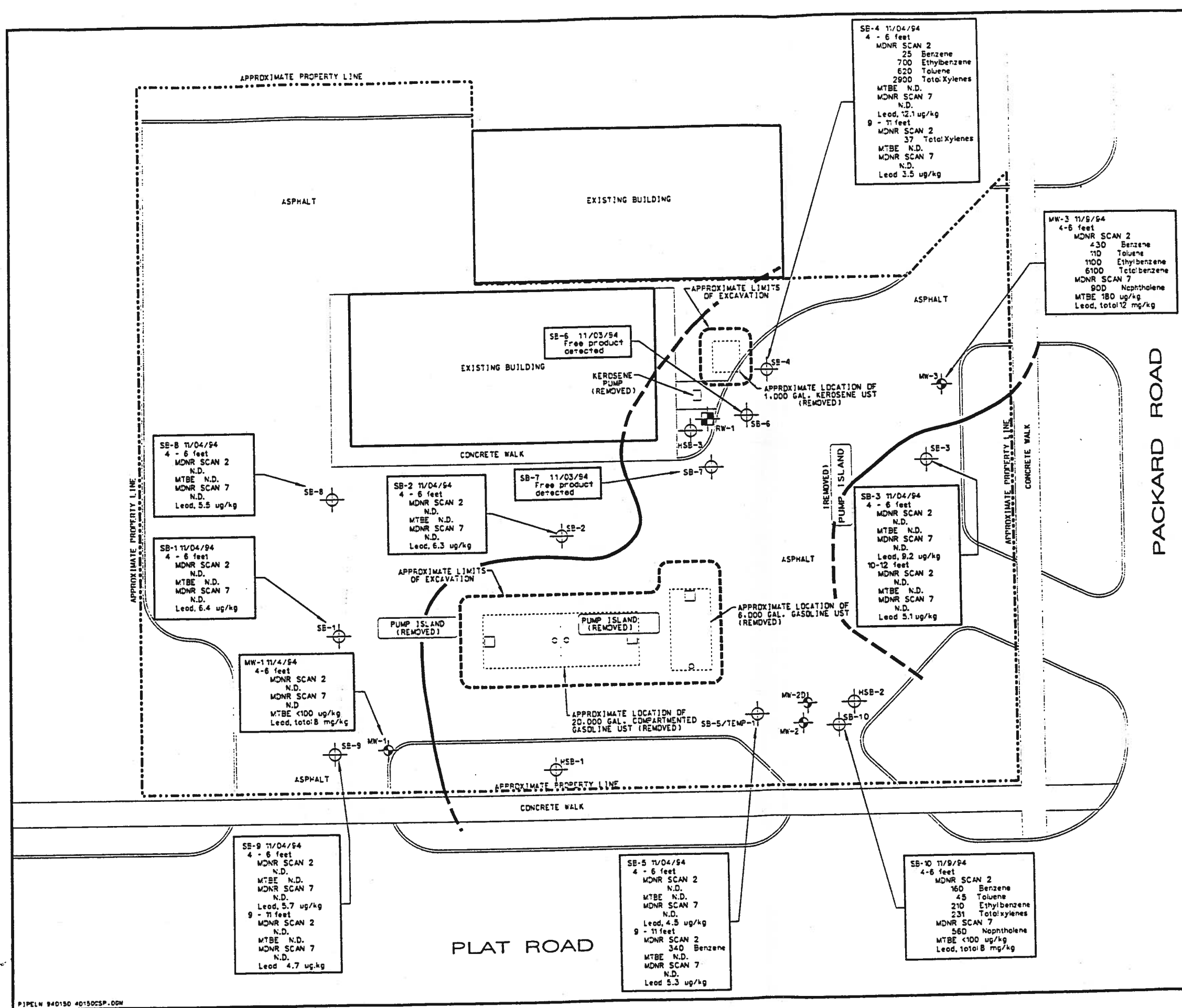


BUDDY'S PACKARD SUNOCO
 3005 PACKARD
 ANN ARBOR, MICHIGAN 48104

**GEOLOGIC CROSS-SECTION
 B - B'**

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PROJECT NO: 940150
 FIGURE NO: 6



SE-4 11/04/94
4 - 6 feet
MDNR SCAN 2
25 Benzene
700 Ethylbenzene
620 Toluene
2900 Total Xylenes
MTBE N.D.
MDNR SCAN 7
N.D.
Lead, 12.1 ug/kg
9 - 11 feet
MDNR SCAN 2
37 Total Xylenes
MTBE N.D.
MDNR SCAN 7
N.D.
Lead 3.5 ug/kg

MW-3 11/5/94
4-6 feet
MDNR SCAN 2
430 Benzene
110 Toluene
1100 Ethylbenzene
6100 Total benzene
MDNR SCAN 7
900 Naphthalene
MTBE 180 ug/kg
Lead, total 12 mg/kg

SE-6 11/03/94
Free product detected

SE-8 11/04/94
4 - 6 feet
MDNR SCAN 2
N.D.
MTBE N.D.
MDNR SCAN 7
N.D.
Lead, 5.5 ug/kg

SB-11 11/04/94
4 - 6 feet
MDNR SCAN 2
N.D.
MTBE N.D.
MDNR SCAN 7
N.D.
Lead, 6.4 ug/kg

SB-2 11/04/94
4 - 6 feet
MDNR SCAN 2
N.D.
MTBE N.D.
MDNR SCAN 7
N.D.
Lead, 6.3 ug/kg

SB-7 11/03/94
Free product detected

SB-3 11/04/94
4 - 6 feet
MDNR SCAN 2
N.D.
MTBE N.D.
MDNR SCAN 7
N.D.
Lead, 9.2 ug/kg
10-12 feet
MDNR SCAN 2
N.D.
MTBE N.D.
MDNR SCAN 7
N.D.
Lead 5.1 ug/kg

MW-1 11/4/94
4-6 feet
MDNR SCAN 2
N.D.
MDNR SCAN 7
N.D.
MTBE <100 ug/kg
Lead, total 8 mg/kg

APPROXIMATE LOCATION OF 20,000 GAL. COMPARTMENTED GASOLINE UST (REMOVED)

MW-2 1
MW-20 1

SE-9 11/04/94
4 - 6 feet
MDNR SCAN 2
N.D.
MTBE N.D.
MDNR SCAN 7
N.D.
Lead, 5.7 ug/kg
9 - 11 feet
MDNR SCAN 2
N.D.
MTBE N.D.
MDNR SCAN 7
N.D.
Lead 4.7 ug/kg

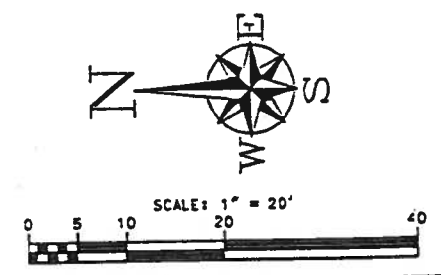
SE-5 11/04/94
4 - 6 feet
MDNR SCAN 2
N.D.
MTBE N.D.
MDNR SCAN 7
N.D.
Lead, 4.5 ug/kg
9 - 11 feet
MDNR SCAN 2
340 Benzene
MTBE N.D.
MDNR SCAN 7
N.D.
Lead 5.3 ug/kg

SB-10 11/9/94
4-6 feet
MDNR SCAN 2
160 Benzene
45 Toluene
210 Ethylbenzene
231 Total xylenes
MDNR SCAN 7
560 Naphthalene
MTBE <100 ug/kg
Lead, total 8 mg/kg

LEGEND

- SOIL BORING LOCATION
- EXISTING FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)
- MONITORING WELL LOCATION
- APPROXIMATE EXTENT OF SOIL CONTAMINATION (DASHED WHERE INFERRED)

NOTE: SOIL RESULTS REPORTED AS ug/kg
N.D. = NOT DETECTED

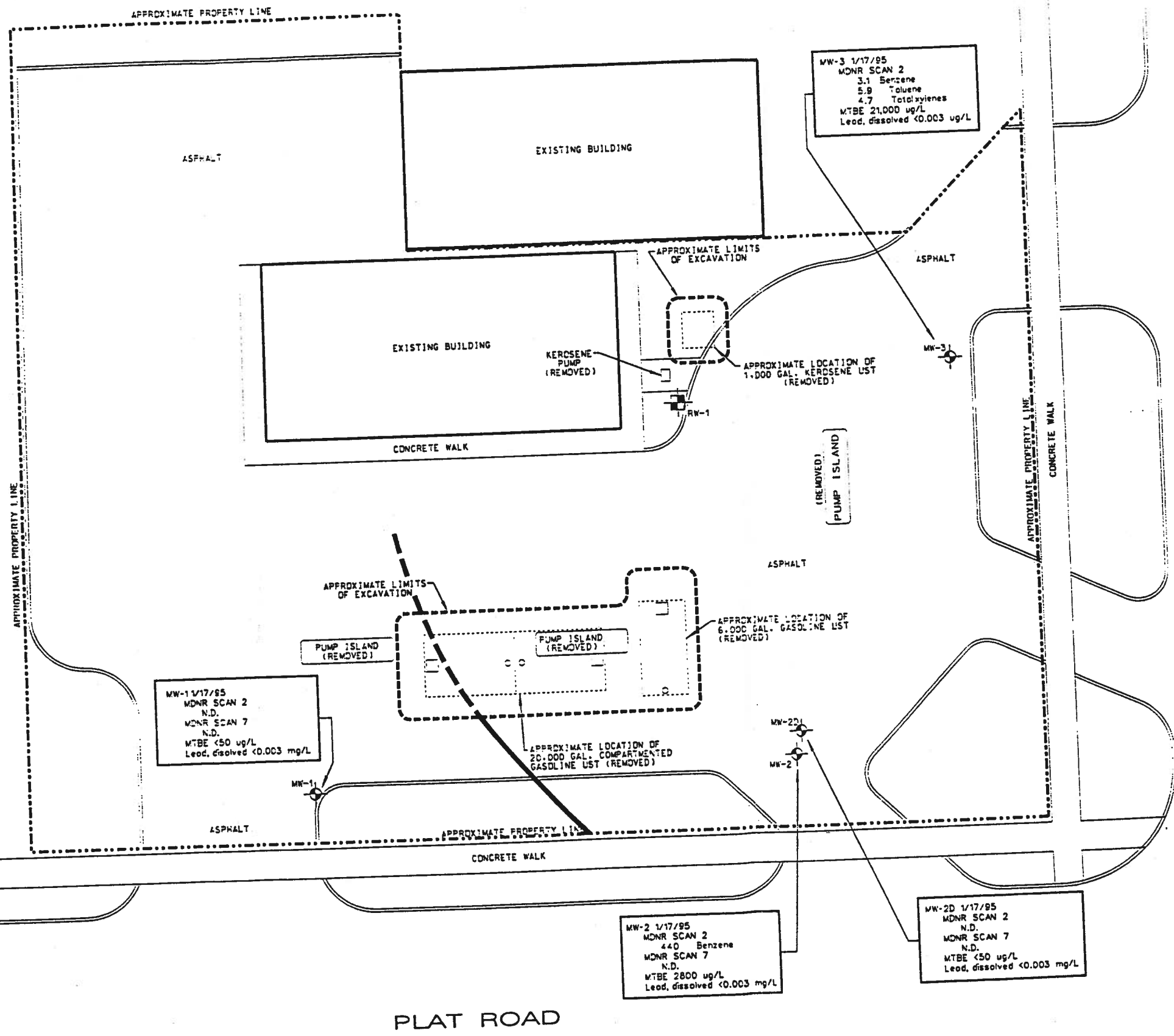


BUDDY'S PACKARD SUNOCO
3005 PACKARD
ANN ARBOR, MICHIGAN 48104

DISTRIBUTION OF SOIL CONTAMINATION

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PH: (616) 342-1100 FAX: (616) 342-4945

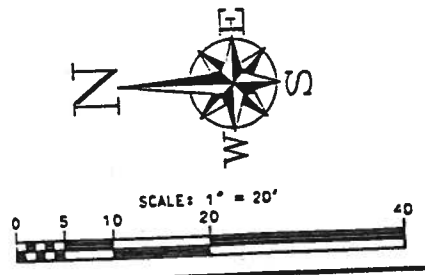
PROJECT NO:
540150
FIGURE NO:
8



LEGEND

- MONITORING WELL LOCATION
- EXISTING FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)
- APPROXIMATE EXTENT OF GROUNDWATER CONTAMINATION. DASHED WHERE INFERRED.

NOTE: ALL RESULTS REPORTED AS ug/L UNLESS OTHERWISE STATED
N.D. = NOT DETECTED



BUDDY'S PACKARD SUNOCO
3005 PACKARD
ANN ARBOR, MICHIGAN 48104

**DISTRIBUTION OF
GROUNDWATER
CONTAMINATION**

**ENVIROLOGIC
TECHNOLOGIES, INC.**
2960 INTERSTATE PARKWAY
KALAMAZOO, MICHIGAN 49001
PH: (616) 342-1100 FAX: (616) 342-4945

PROJECT NO:
940150
FIGURE NO:
9

LOG OF MW-1

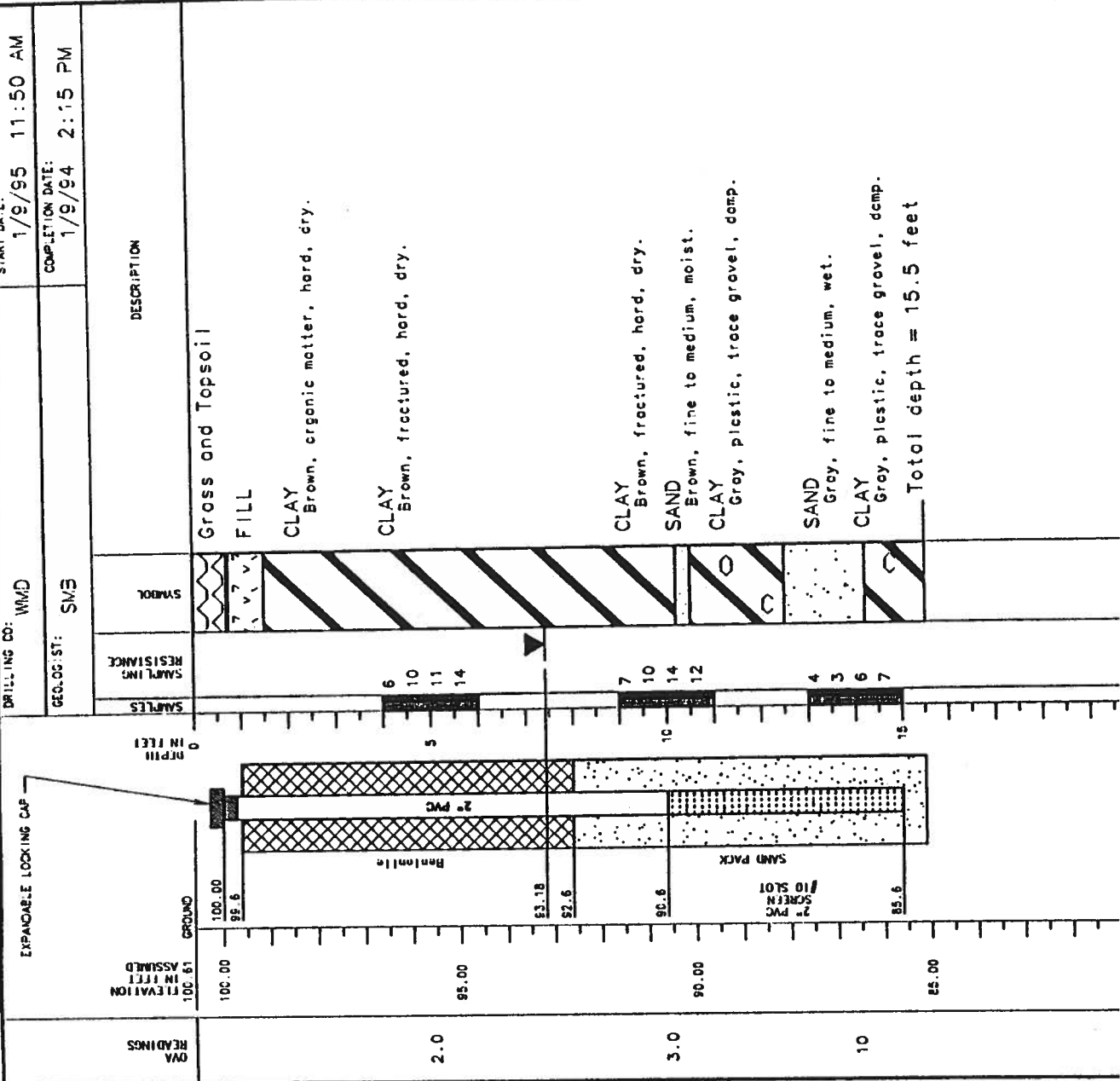
CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD
START DATE: 1/9/95 11:50 AM

GEOLOGIST: SM3
COMPLETION DATE: 1/9/94 2:15 PM

ENVIROLOGIC TECHNOLOGIES, INC.
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KALAMAZOO, MI 49001
(616) 342-1100



Total depth = 15.5 feet

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 KALAMAZOO, MI 49001
 (616) 342-1100

LOG OF MW-2

SHEET 1 of 1

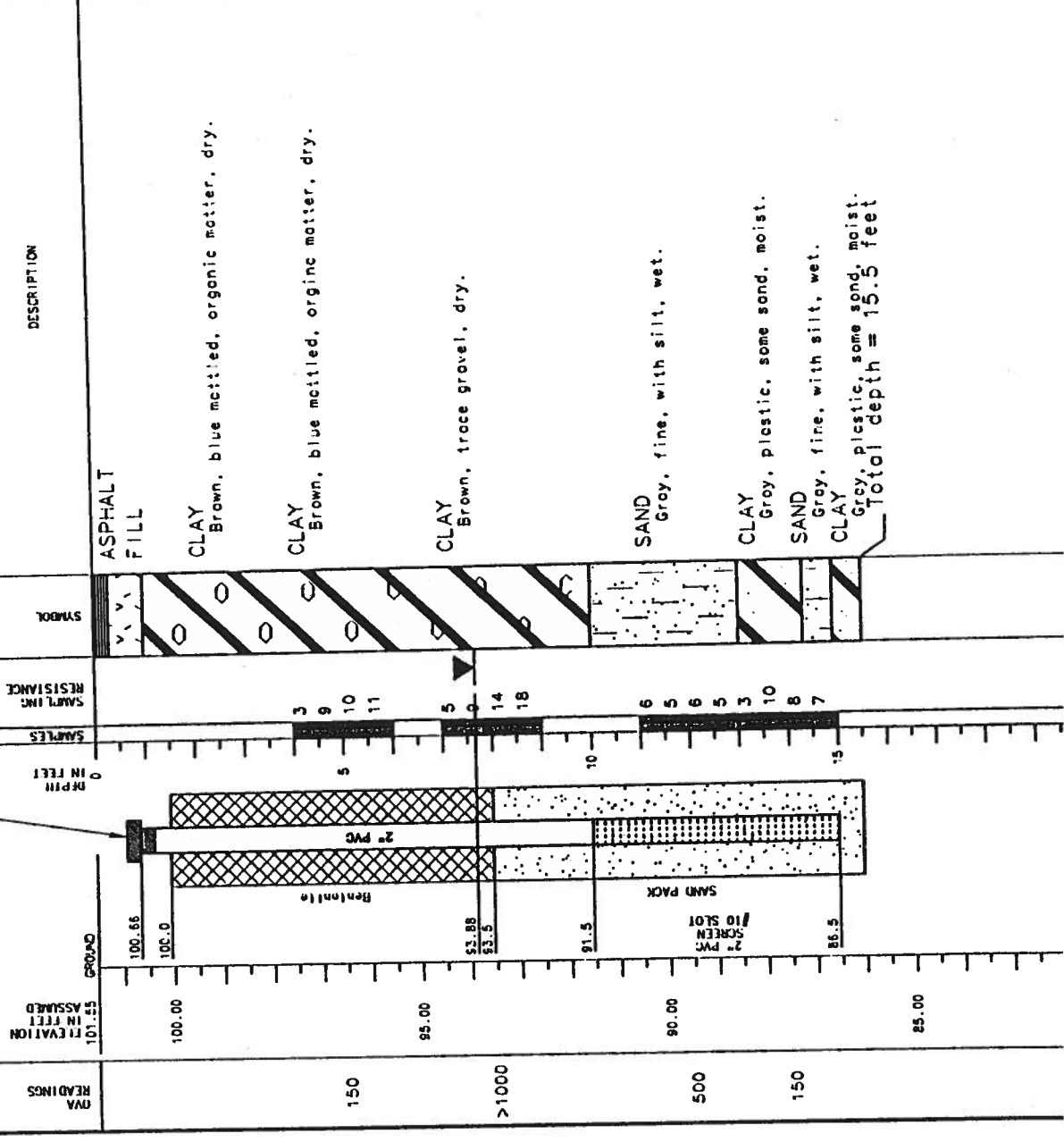
CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD
 START DATE: 1/9/95 2:25 PM

GEOLOGIST: SMB
 COMPLETION DATE: 1/9/95 5:30 PM

EXPANDABLE LOCKING CAP



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 (616) 342-1100

LOG OF MW-2D

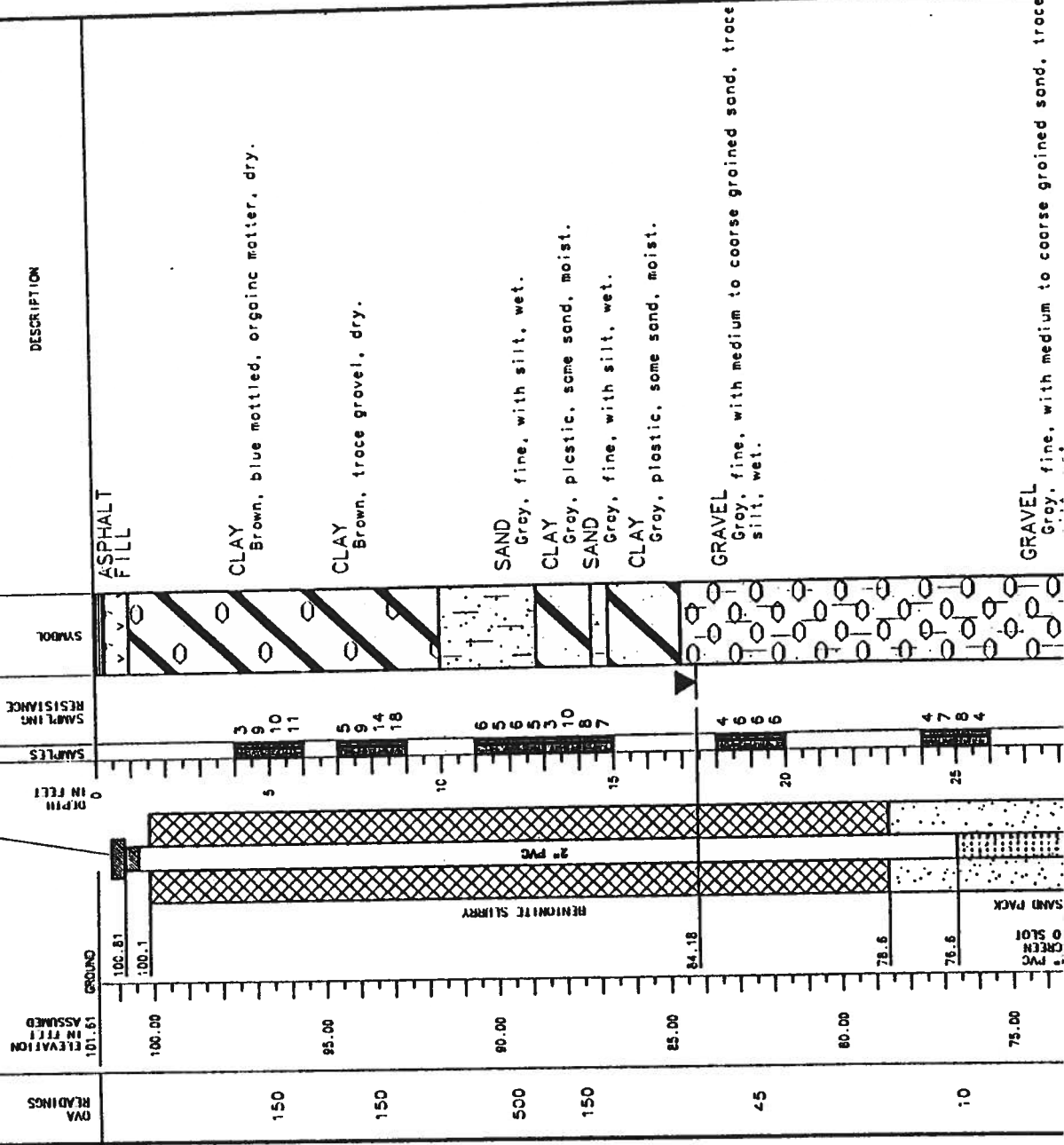
SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

START DATE: 1/10/95 11:00 AM
 COMPLETION DATE: 1/10/95 2:15 PM

DRILLING CO: WMD
 GEOLOGIST: SWB



DEPTH (FT)	DEPTH (FT)	SYMBOL	DESCRIPTION
101.81	0	EXPANDABLE LOCKING CAP	EXPANDABLE LOCKING CAP
100.81	5	ASPHALT FILL	ASPHALT FILL
100.1	10	CLAY	Brown, blue mottled, organic matter, dry.
95.00	15	CLAY	Brown, trace gravel, dry.
90.00	20	SAND	Gray, fine, with silt, wet.
85.00	25	CLAY	Gray, plastic, some sand, moist.
84.18		SAND	Gray, fine, with silt, wet.
80.00		CLAY	Gray, plastic, some sand, moist.
78.6		GRAVEL	Gray, fine, with medium to coarse grained sand, trace silt, wet.
76.6		GRAVEL	Gray, fine, with medium to coarse grained sand, trace silt, wet.
75.00		GRAVEL	Gray, fine, with medium to coarse grained sand, trace silt, wet.

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LOG OF MW-3

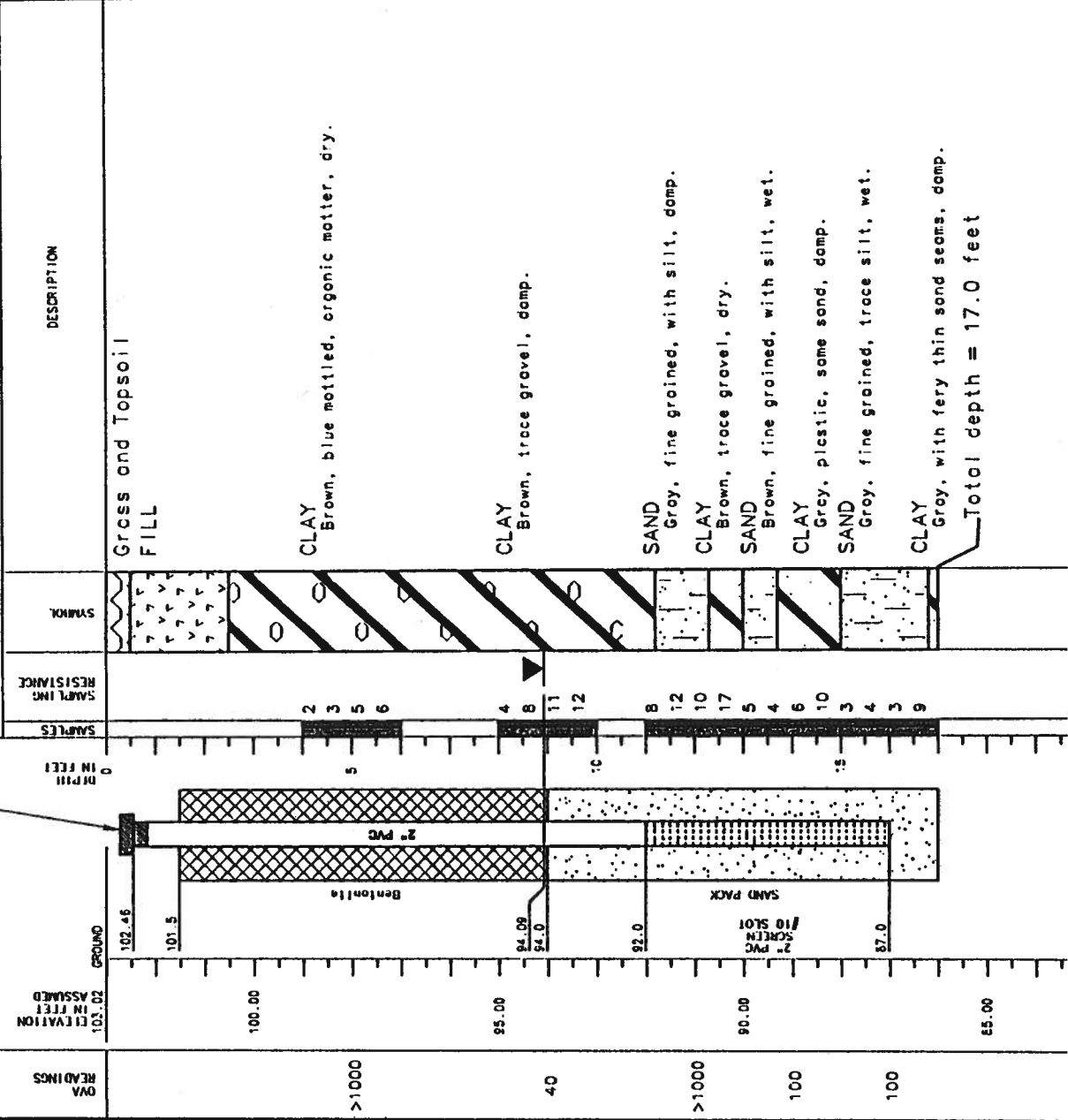
SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD
 START DATE: 1/9/95 8:50 AM

GEOLOGIST: SWB
 COMPLETION DATE: 1/9/95 10:45 AM



ENVIROLOGIC TECHNOLOGIES, INC.
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 KALAMAZOO, MI 49001
 (616) 342-1100

LOG OF RW-1

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: Keith Fransted Constr. START DATE: 11/18/94

GEOLOGIST: DHN COMPLETION DATE: 11/18/94

EXPANDABLE LOCKING CAP

OVA READINGS

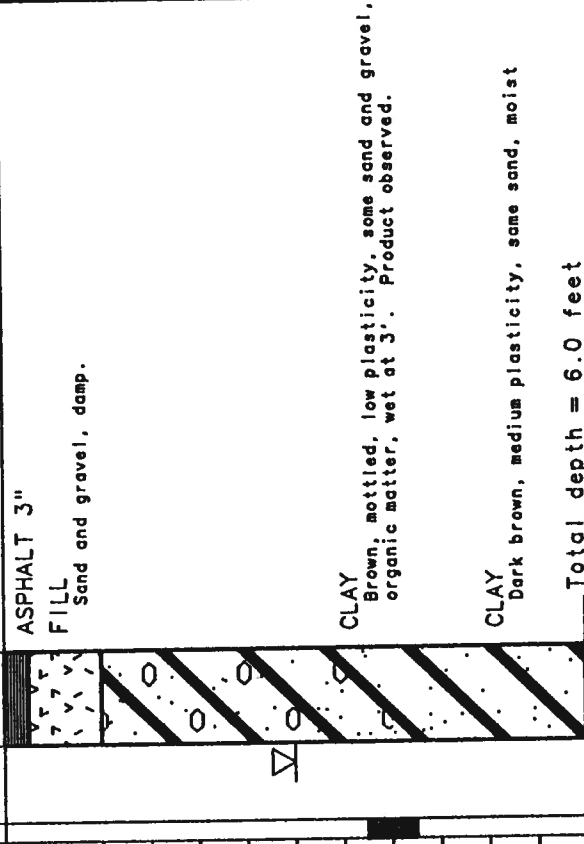
SAMPLES

SAMPLING RESISTANCE

SYMBOL

DESCRIPTION

DEPTH IN FEET



NOTE:
 Recovery well RW-1 was installed by placing the casing in an open excavation. Soil was then backfilled around the casing.

LOG OF HSB-1

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 KALAMAZOO, MI 49001
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CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: ETI - HANDAUGER

START DATE: 9/15/94 11:15 AM

COMPLETION DATE: 9/15/94 11:35 AM

GEOLOGIST: JRP

ELEVATIONS:

SURFACE:

STATIC WATER LEVEL:

TOP OF CASING:

OVA READINGS

DEPTH IN FEET

SAMPLES

SAMPLING RESISTANCE

SYMBOL

DESCRIPTION

>1000

0

5

10

GRASS AND TOPSOIL

CLAY

Brown to green, hard, damp.

CLAY

Brown to green, hard, dry.

Total depth = 5.25 feet

BACKFILL





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KALAMAZOO, MI 49001
(616) 342-1100

LOG OF HSB-2

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO

LOCATION: ANN ARBOR, MICHIGAN

ELEVATIONS:

SURFACE: TOP OF CASING:

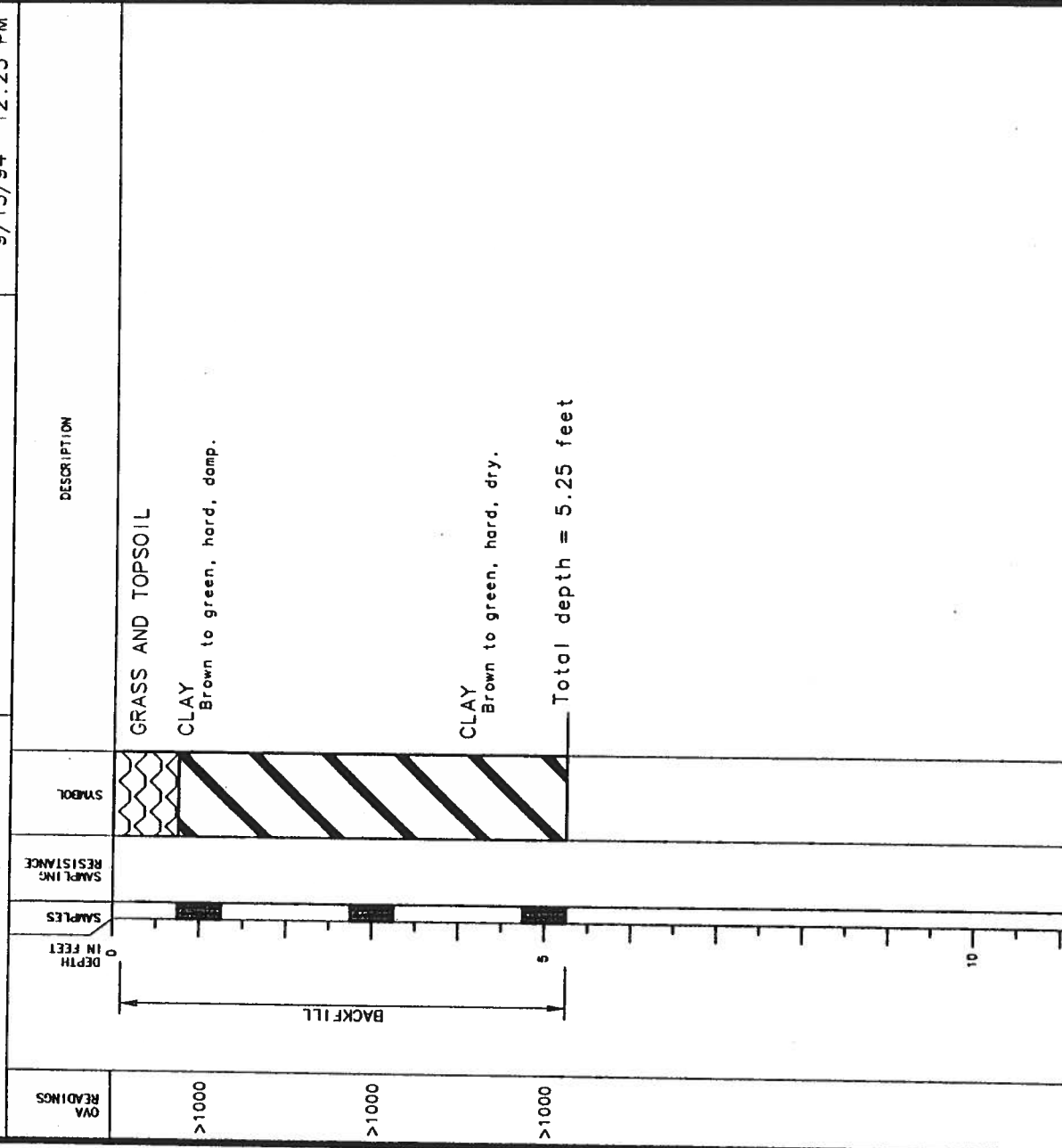
STATIC WATER LEVEL:

DRILLING CO: ETI - HANDAUGER

GEOLOGIST: JRP

START DATE: 9/15/94 12:00 PM

COMPLETION DATE: 9/15/94 12:25 PM



LOG OF HSB-3

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: ETI - HANDAUGER

GEOLOGIST: JRP

START DATE: 9/15/94

12:25 PM

COMPLETION DATE: 9/15/94

12:45 PM

ENVIROLOGIC TECHNOLOGIES, INC.
 2960 INTERSTATE PARKWAY
 KALAMAZOO, MI 49001
 (616) 342-1100

ELEVATIONS:

SURFACE:

STATIC WATER LEVEL:

TOP OF CASING:

QVA READINGS

DEPTH IN FEET

SAMPLES

SAMPLING RESISTANCE

SYMBOL

DESCRIPTION

<1000

>1000

FILL
 Block, sand, trace gravel, damp.

Water in the hole at 2 feet.

CLAY
 Block to green, plastic, damp.
 Total depth = 3.5 feet





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 (816) 342-1100

LOG OF SB-1

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PARCKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD START DATE: 11-3-94 9:40AM

GEOLOGIST: SMB COMPLETION DATE: 11-3-94 10:40AM

ELEVATIONS:

SURFACE:

STATIC WATER LEVEL:

TOP OF CASING:

DEPTH IN FEET	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
0				4" ASPHALT FILL Sand and gravel, dry.
4				CLAY Bluish green, roots and stems, damp.
5				CLAY Mottled brown and gray, trace gravel, hard, dry.
6				CLAY Gray, soft, trace sand and silt, slightly plastic, moist.
7				CLAY Mottled brown and gray, trace gravel, hard, dry, occasional sand layers, very moist.
8				SAND Gray, some clay, very moist.
9				CLAY Gray, plastic, soft, moist.
10				SAND Gray, fine grained, with silt, trace clay, wet.
11				CLAY Gray, plastic, soft, moist.
12				SAND Gray, fine, with silt, trace clay, wet.
13				CLAY Gray, plastic, moist.
14				SAND Gray, medium grained, some gravel, poorly sorted, wet.
15				
16				
17				
18				
19				
20				

BENTONITE SLURRY

Total depth = 20.0 feet



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LOG OF SB-2

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PARCKARD SUNOCO 940150
LOCATION: ANN ARBOR, MICHIGAN

ELEVATIONS:

SURFACE:

TOP OF CASING:

DRILLING CO: WMD

START DATE: 11-3-94 10:50AM

STATIC WATER LEVEL:

GEOLOGIST: SMB

COMPLETION DATE: 11-3-94 11:50AM

DEPTH IN FEET	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION
0				
0-4			3" ASPHALT FILL	3" ASPHALT FILL
4-5				Sand and gravel, dry.
5-11				Brown clay, some sand and gravel, dry.
11-14				Mottled brown and gray, fractured, trace gravel, damp.
14-17				Brown, hard, dry.
17-20				Greenish gray, medium and fine grained, moderately sorted, wet.
20-23				Gray, soft, plastic, damp.
23-25				Gray, fine grained, well sorted, wet.
25-28				Gray, plastic, trace gravel, damp.
28-31				Gray, fine and medium grained, well sorted, wet.
31-34				Gray, coarse grained, moderately sorted, wet.

BENTONITE SLURRY

2

20

40

40



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LOG OF SB-3

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PARCKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

START DATE: 11/3/94 1:00 PM

COMPLETION DATE: 11/3/94 2:20 PM

DRILLING CO: WMD

GEOLOGIST: SMB

ELEVATIONS:

SURFACE:

STATIC WATER LEVEL:

TOP OF CASING:

OVA READINGS

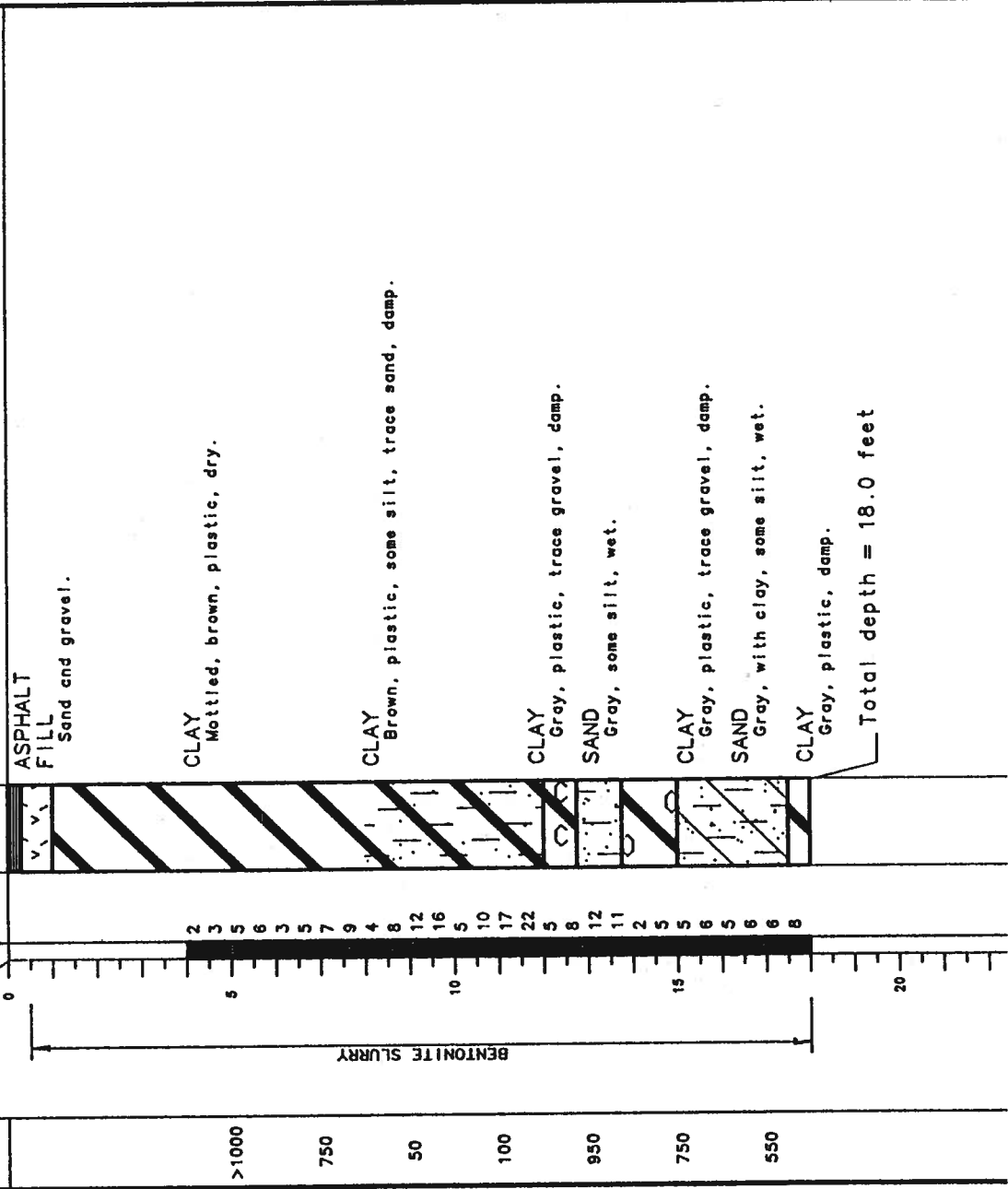
DEPTH IN FEET

SAMPLES

SAMPLING RESISTANCE

SYMBOL

DESCRIPTION



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LOG OF SB-4

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PARCKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD
 START DATE: 11-3-94 3:05PM

GEOLOGIST: SMB
 COMPLETION DATE: 11-3-94 4:00PM

ELEVATIONS:

SURFACE:

STATIC WATER LEVEL:

TOP OF CASING:

OVA READINGS

DEPTH IN FEET

SAMPLES

SAMPLING RESISTANCE

SYMBOL

DESCRIPTION

3" ASPHALT FILL
 Sand and gravel, dry.

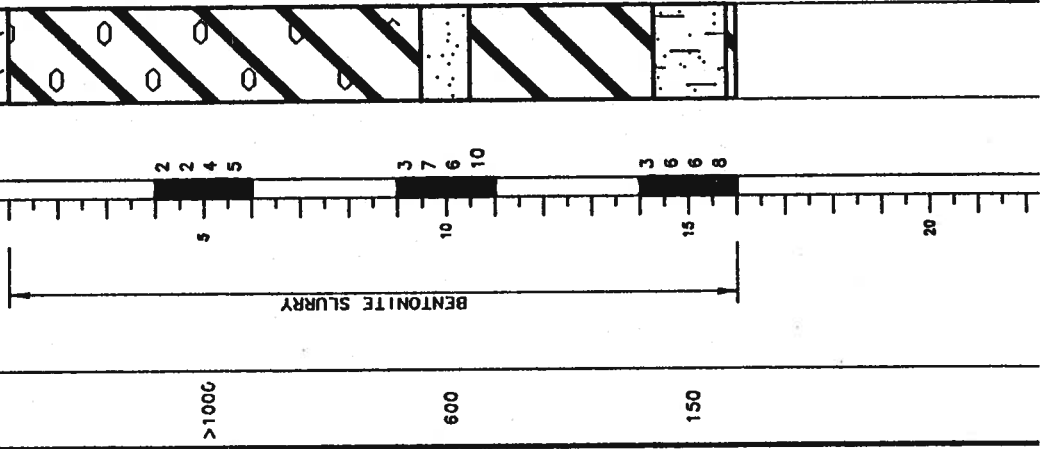
CLAY
 Mottled, brown and bluish gray, trace gravel, damp.

SAND
 Brown, medium grained, some coarse grained, wet.

CLAY
 Gray, plastic, hard, damp.

SAND
 Gray, fine grained, some silt, well sorted, wet.

CLAY
 Gray, plastic, hard, damp.



LOG OF SB-5/TEMP-1

CLIENT: PIPELINE - BUDDY'S PARCKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

START DATE: 11-3-94 4:10PM

COMPLETION DATE: 11-3-94 5:25PM

DRILLING CO: WMD

GEOLOGIST: SMB

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ELEVATIONS:

SURFACE: TOP OF CASING:

STATIC WATER LEVEL:

OVA READINGS	DEPTH IN FEET	SAMPLES	SAMPLING RESISTANCE	SYMBOL	DESCRIPTION	
	0					
5	5	5		4" ASPHALT FILL	Sand and gravel, dry.	
	8	8			FILL	Green and brown clay, fractured, plastic, trace silt, damp.
	11	11			CLAY	Brown, bluish gray fractures, trace gravel, hard, dry.
	14	14				
>1000	10	6, 9			CLAY	Gray, plastic, trace silt, dry. Sand seams, fine grained, well sorted, some silt, dry.
>1000	12	12			CLAY	Gray, plastic, trace silt, dry.
>1000	15	5, 9, 13			SAND	Gray, fine grained, with silt, wet.
	15				GRAVEL	Gray, fine, wet.
	15				CLAY	Gray, plastic, damp.
	15					Total depth = 16.0 Feet

NOTE: Temporary monitoring well TEMP-1 was removed after a groundwater sample was obtained for analysis.



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LOG OF SB-6

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PARCKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD START DATE: 11/3/94 2:45 PM

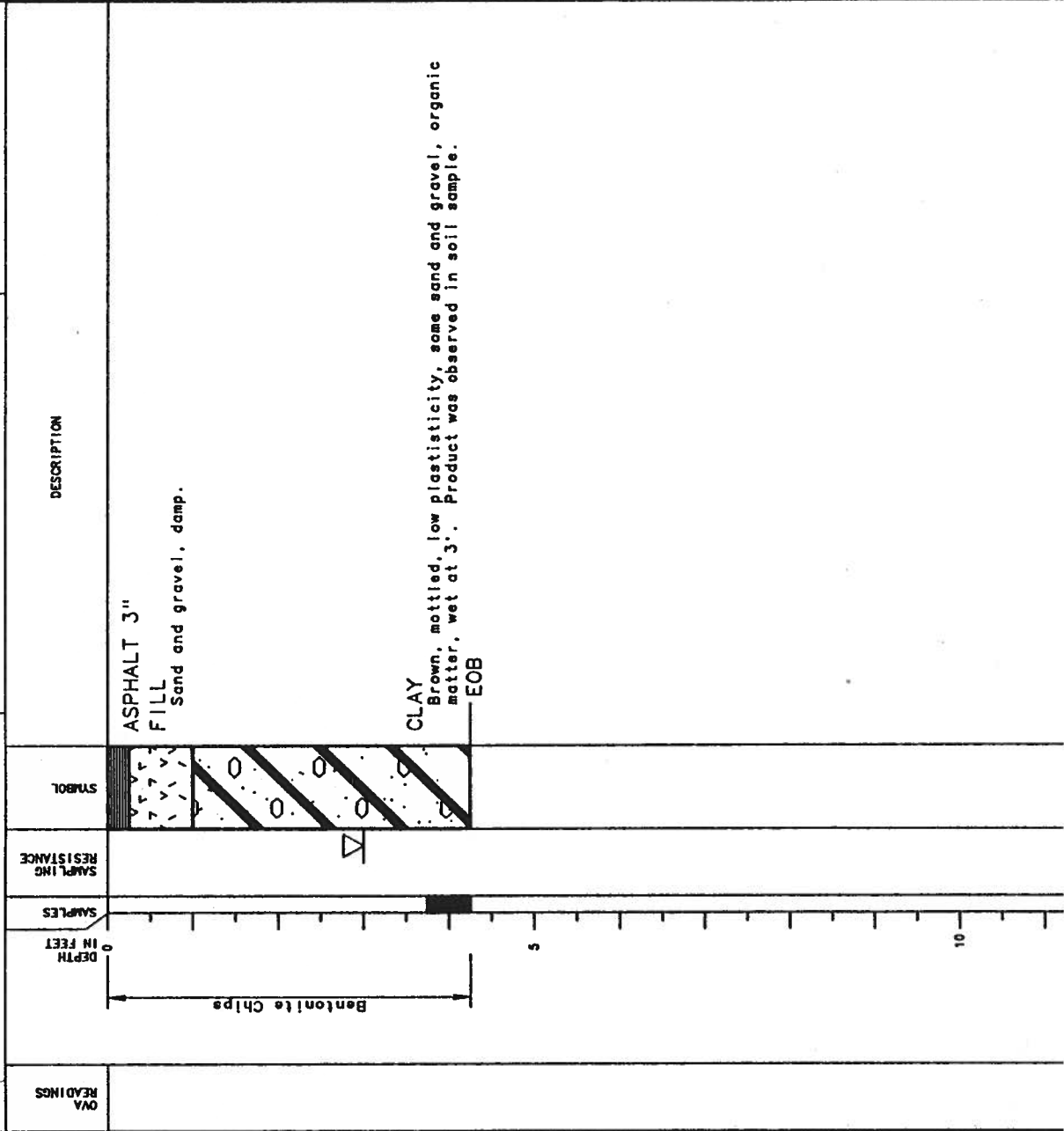
GEOLOGIST: SMB COMPLETION DATE: 11/3/94 3:00 PM

ELEVATIONS:

SURFACE:

STATIC WATER LEVEL:

TOP OF CASING:



OVA READINGS

SAMPLES

SAMPLING RESISTANCE

SYMBOL

DESCRIPTION

LOG OF SB-7

CLIENT: PIPELINE - BUDDY'S PARCKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD
 START DATE: 11/3/94 2:45 PM

GEOLOGIST: SMB
 COMPLETION DATE: 11/3/94 3:00 PM

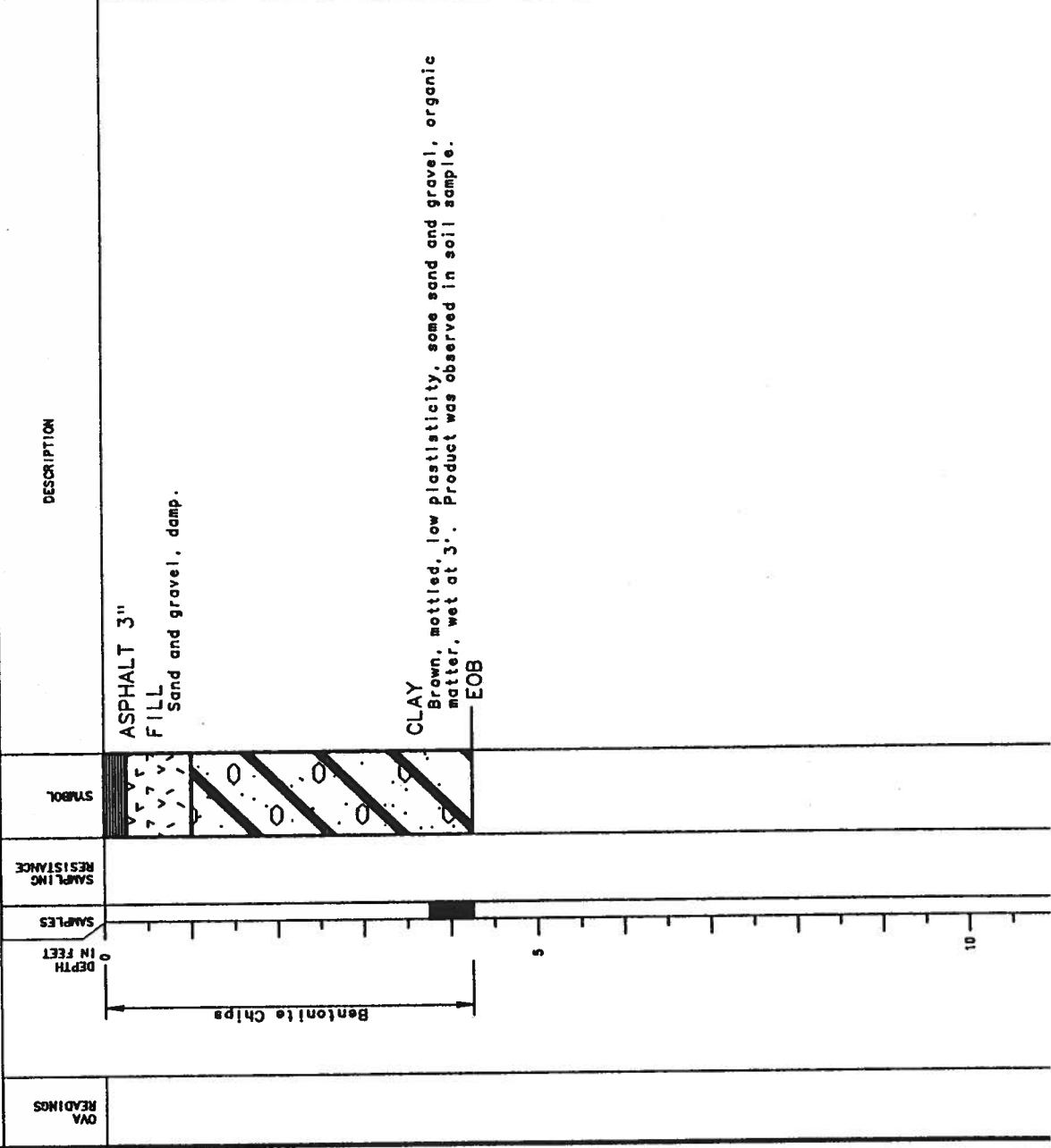
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ELEVATIONS:

TOP OF CASING:

SURFACE:

STATIC WATER LEVEL:



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LOG OF SB-8

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PARCKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD
 START DATE: 11-4-94 9:20AM

GEOLOGIST: SMB
 COMPLETION DATE: 11-4-94 11:15AM

ELEVATIONS:

SURFACE:

STATIC WATER LEVEL:

TOP OF CASING:

GVA READINGS

DEPTH IN FEET

SAMPLES

SAMPLING RESISTANCE

SYMBOL

DESCRIPTION

3" ASPHALT

FILL
 Sand and gravel, damp.

CLAY

Dark green and brown, trace silt and gravel, plastic, damp.

CLAY

Brown, bluish gray fractures, trace silt and gravel, dry.

CLAY

Brown, plastic, trace gravel, hard, damp.

SAND

Brown, fine and medium grained, well sorted, wet.

Clay and sand in alternating layers (seams).

CLAY

Gray, trace gravel, damp.

SAND

Gray, medium and fine grained, well sorted, wet.

GRAVEL

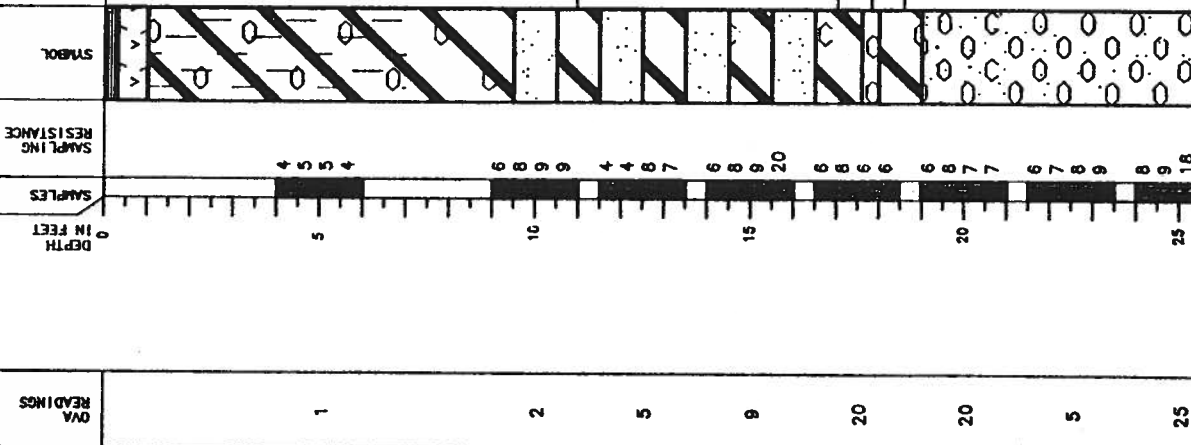
Gray, trace clay, wet.

CLAY

Gray, trace gravel, damp.

GRAVEL

Gray, fine and medium, some coarse grained sand, wet.



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 (616) 342-1100

LOG OF SB-9

SHEET 1 of 1

CLIENT: BUDDY'S PARCKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

ELEVATIONS:

TOP OF CASING:

SURFACE:

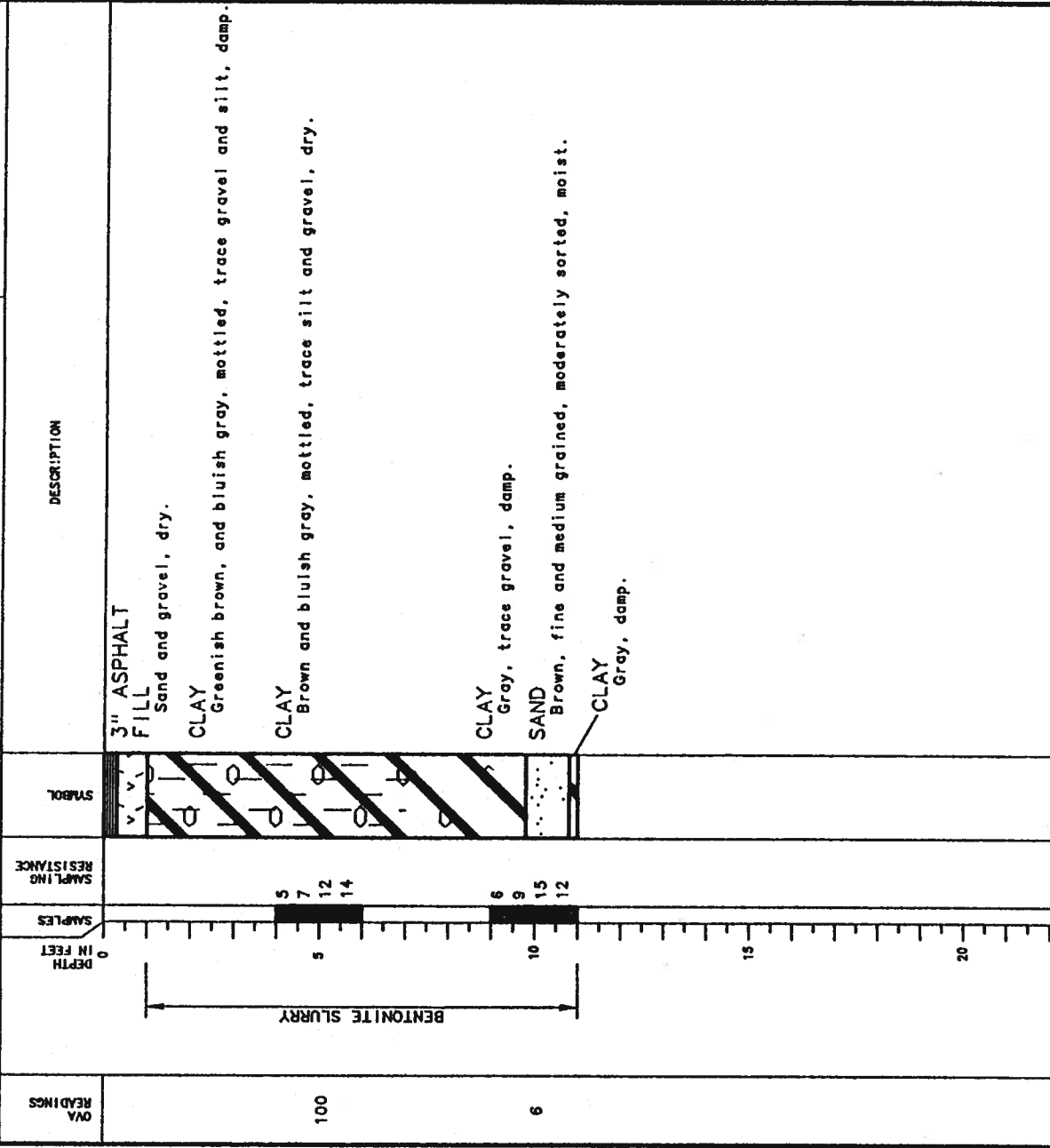
STATIC WATER LEVEL:

DRILLING CO: WMD

START DATE: 11-4-94 11:25AM

GEOLOGIST: SWB

COMPLETION DATE: 11-4-94 12:15PM



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LOG OF SB-10

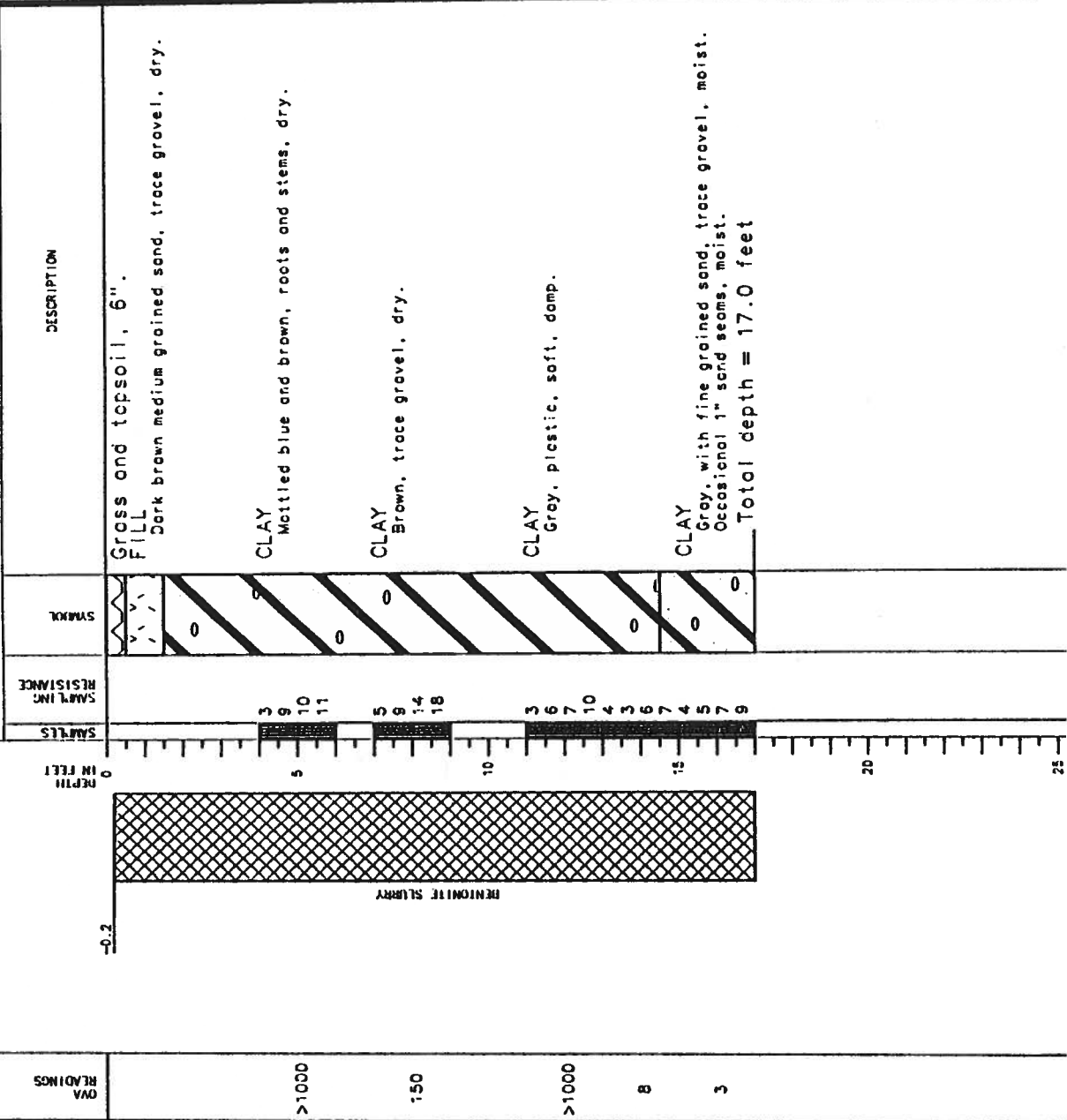
SHEET 1 of 1

CLIENT: PIPELN - Buddy's Pockard Sunoco - 940150

LOCATION: 3005 Pockard, Ann Arbor, MI

DRILLING CO: WWD
 START DATE: 1-9-95 2:25PM

GEOLOGIST: SM/B
 COMPLETION DATE: 1-9-95 3:50PM



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**PHASE II HYDROGEOLOGICAL STUDY
WORK PLAN
BUDDY'S PACKARD SUNOCO
3005 PACKARD ROAD
ANN ARBOR, MICHIGAN**

Prepared for:

**PIPELINE OIL SALES
744 EAST SOUTH STREET
JACKSON, MICHIGAN 49203**

- APRIL 6, 1995 -

Prepared by:

**ENVIROLOGIC TECHNOLOGIES, INC.
2960 Interstate Parkway
Kalamazoo, Michigan 49001
(616) 342-1100**



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**PHASE II HYDROGEOLOGICAL STUDY WORK PLAN
FOR
BUDDY'S PACKARD SUNOCO
JACKSON, MICHIGAN**

Ann Arbor

INTRODUCTION

Purpose

This Phase II Hydrogeological Study Work Plan, for an additional investigation, is being prepared in accordance with the Michigan Leaking Underground Storage Tank Act, Part 213 of the Natural Resources and Environmental Protection Act (N.R.E.P.A.). The purpose of the Phase II Hydrogeological Study is to determine the vertical and horizontal extent of soil and groundwater contamination. This work plan is being submitted by Envirologic Technologies, Inc., (Envirologic) on behalf of Pipeline Oil Sales.

Background Information

The Buddy's Packard Sunoco facility is located at 3005 Packard Road, Ann Arbor, Michigan (Figure 1). This site utilized three (3) underground storage tank systems (USTs) (Figure 2). The USTs were utilized for the storage of regular unleaded gasoline, midgrade unleaded gasoline, premium unleaded gasoline, and kerosene fuel.

The Michigan State Fire Marshal's Office was notified of a confirmed release within the 24-hour deadline on September 15, 1994, due to field observations and field screening results using an Organic Vapor Analyzer (OVA) during a Site Check. As required by Part 213 of the N.R.E.P.A., an Initial Abatement Report (September 29, 1994), Initial

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Assessment Report (November 10, 1994), and Phase I Hydrogeologic Study Status Report (February 8, 1995), were submitted to Michigan Department of Natural Resources.

The Phase I Site Investigation included the advancement of five soil borings and the installation of four monitoring wells. The Phase I Hydrogeologic Study Report, submitted on February 8, 1995, indicated that further investigation was needed to define the vertical and horizontal extent of soil and groundwater contamination. Details of the proposed Phase II Hydrogeologic Study are described below.

PHASE II WORK PLAN

Soil Boring Completion

Eleven soil borings (eight of which will be converted to monitoring wells) will be advanced on-site and on properties adjacent to the Buddy's Packard Sunoco site to investigate the horizontal and vertical extent of soil contamination. The proposed locations are illustrated on Figure 3. The borings will be installed using the hollow stem auger drilling method. Split-barrel samples will be obtained at a minimum of five foot intervals during the installation of the soil borings. Samples will be screened for VOCs with an OVA and field classified by an Envirologic geologist. Soil samples will be submitted to a laboratory for analysis of MDNR Scan 2 compounds, MDNR Scan 7 compounds, methyl tert-butyl ether (MTBE), and total lead.

All downhole drilling equipment will be steam-cleaned between borings. Split-barrel samplers will be decontaminated/cleaned in a Liquinox solution, rinsed with fresh water and finally rinsed with deionized water.

Monitoring Well Installation

Eight of the eleven soil borings will be converted to monitoring wells during this phase of investigation (refer to Figure 3). Five of the proposed monitoring wells will be installed in the semi-confined aquifer within the interbedded clay and sand unit to investigate the horizontal of extent of groundwater contamination. Three of the proposed monitoring

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wells will be installed in the gravel aquifer (lower aquifer) located beneath the semi-confined aquifer. Monitoring wells installed in the lower aquifer will be nested with three of the semi-confined aquifer monitoring wells to investigate the possible vertical migration of groundwater contamination. All monitoring wells will be installed through the hollow stem augers.

The semi-confined aquifer monitoring wells will be set with 60 percent of the screens below saturation and 40 percent above. The gravel aquifer monitoring wells will be set with the screens at the top of the gravel unit (just below the interbedded clay and sand unit). Semi-confined aquifer monitoring wells will be constructed with a ten-foot long (to investigate the possible presence of free product) and lower aquifer monitoring wells will be constructed with a five-foot long #10 slot, schedule 40 PVC screens. All monitoring wells will be completed, below grade, with two inch diameter, schedule 40 PVC riser. A sand pack will then be placed around the well screens from total depth to a depth of two feet above the top of the screen. The remaining annular space will be grouted with a bentonite slurry to prevent vertical migration along the borehole.

The wells will be equipped with locking expandable plugs to prevent tampering or accidental filling. Flush mount protective covers will then be cemented in place around the wells to protect them from vehicle traffic.

Monitoring Well Development and Survey

The newly installed monitoring wells will be developed by pumping and surging with either a centrifugal pump, QED pneumatic development pump, or a bailer. The wells will be developed until relatively sediment free. Purge water discharged from the wells will be temporarily contained in 55-gallon steel drums until disposal.

Top-of-casing and ground elevations for each well will be surveyed relative to existing wells and the on-site reference datum. The monitoring wells and/or soil borings will be horizontally located with respect to on site and off-site features.

Static Water Level Measurements

Static water level measurements will be obtained prior to groundwater sampling. The measurements will be taken after the well caps are removed and the water levels have had sufficient time to equilibrate. Static levels will then be measured from the top-of-casing to the nearest 0.01 foot. An electronic water level indicator will be used to take the measurements. The results will be recorded on a Static Water Level Data Sheet. During the static water level measurements the wells will be checked for signs of lighter than water immiscible phases.

The water level instrument will be decontaminated/cleaned prior to each use utilizing a Liquinox detergent wash, a fresh water rinse, followed by a deionized water rinse.

Monitoring Well Sampling

All monitoring wells on-site will be sampled. The wells will be purged of at least three well casing volumes prior to sampling. Samples will be collected using a stainless steel bailer. The groundwater samples will be collected in the proper containers for the analysis being performed. Disposable rope will be used when sampling the monitoring wells to prevent cross contamination. The bailer will be disassembled and decontaminated/cleaned with Liquinox solution, rinsed with fresh water, and finally rinsed with deionized water.

The groundwater samples will be submitted to a laboratory for analysis of MDNR Scan 2 compounds, MDNR Scan 7 compounds, MTBE, and dissolved lead. Chain-of-Custody procedures will be maintained throughout the sampling event.

Data Analysis and Report Preparation

The results of the Phase II Hydrogeological Study will be summarized and presented in a report.

The accumulated data will be analyzed to determine if the extent of contamination has been fully determined. If the extent of contamination has not been determined, the report may recommend additional work.

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Project Schedule

The Extended Phase II Hydrogeologic Study Work Plan will be implemented within 30 days of submittal to the MDNR. Potential changes in the schedule due to weather conditions, the bidding process, subcontractor and equipment availability, completion of laboratory analyses, and unforeseen developments, are not included.

If the extent of groundwater contamination is successfully defined during the proposed Extended Phase II Hydrogeologic Study, a Remediation Feasibility Study and Corrective Action Plan will be prepared in accordance with Part 213 of the N.R.E.P.A. Remediation Feasibility Study and Corrective Action Plan activities may include, but may not be limited to, a pilot study aquifer test characterize the aquifer and/or vadose zone.

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REFERENCES

Soil Boring and Monitoring Well Installation

Michigan Department of Public Health, "Michigan Water Well Grouting Manual - A Guide For The Contractor," Groundwater Quality Control Section, Division of Water Supply, Bureau of Environmental and Occupational Health, Lansing, Michigan, GW-3-302, 83 p., 1988

United States Environmental Protection Agency (USEPA), "Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells," Environmental Monitoring Systems Laboratory, Las Vegas, Nevada, EPA 600/4-89/034, National Water Well Association, Dublin, Ohio, 398 p., 1989

USEPA, "A Compendium of Superfund Field Operations Methods," Office of Emergency and Remedial Response, Washington, D.C., EPA/540/P-87/001, OSWER 9355.0-14, 1987

USEPA, "RCRA Ground-Water Monitoring Technical Enforcement Guidance Document," Office of Waste Programs Enforcement, Office of Solid Waste and Emergency Response, Washington, D.C., OSWER-9950.1, 317 p., 1986

Soil and Groundwater Sampling

Illinois State Water Survey, "Practical Guide For Groundwater Sampling," Champaign, Illinois, ISWS Contract Report 374, 1985

USEPA, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA - Interim Final," Office of Emergency and Remedial Response, Washington, D.C., EPA/540/G-89/004, OSWER 9355.3-01, 1988

USEPA, "A Compendium of Superfund Field Operations Methods," Office of Emergency and Remedial Response, Washington, D.C., EPA/540/P-87/001, OSWER 9355.0-14, 1987-A

USEPA, "Ground-Water Monitoring Seminar Series - Technical Papers," Office of Research and Development, CERL-87-7, 1987-B

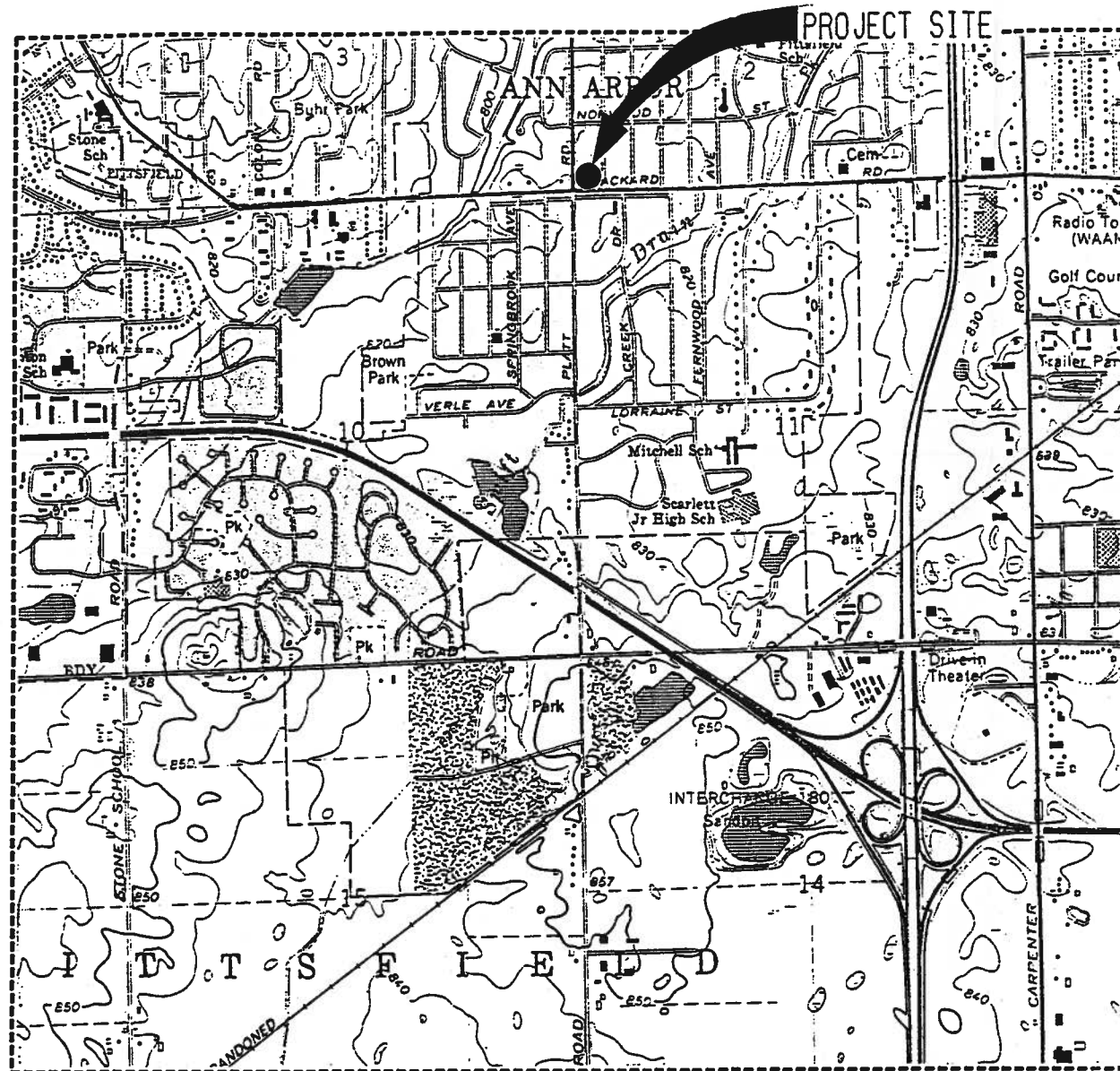
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REFERENCES - CONTINUED

USEPA, "Handbook of Ground Water," Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma, EPA/625/6- 87/016, 212 p., 1987-C

USEPA, "Manual of Groundwater Quality Sampling Procedures," Robert S. Kerr Environmental Research Laboratory, Office of Research and Development, Ada, Oklahoma, 92 p., 1981

USEPA, "RCRA Ground-Water Monitoring Technical Enforcement Guidance Document," Office of Waste Programs Enforcement, Office of Solid Waste and Emergency Response, Washington, D.C., OSWER-9950.1, 317 p., 1986

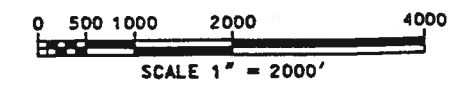
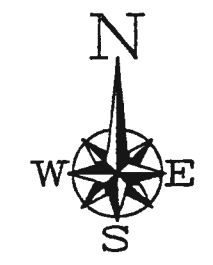


SOURCE: YPSILANTI WEST, MICHIGAN, U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP



6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

T.3 S., R. 6 E.
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

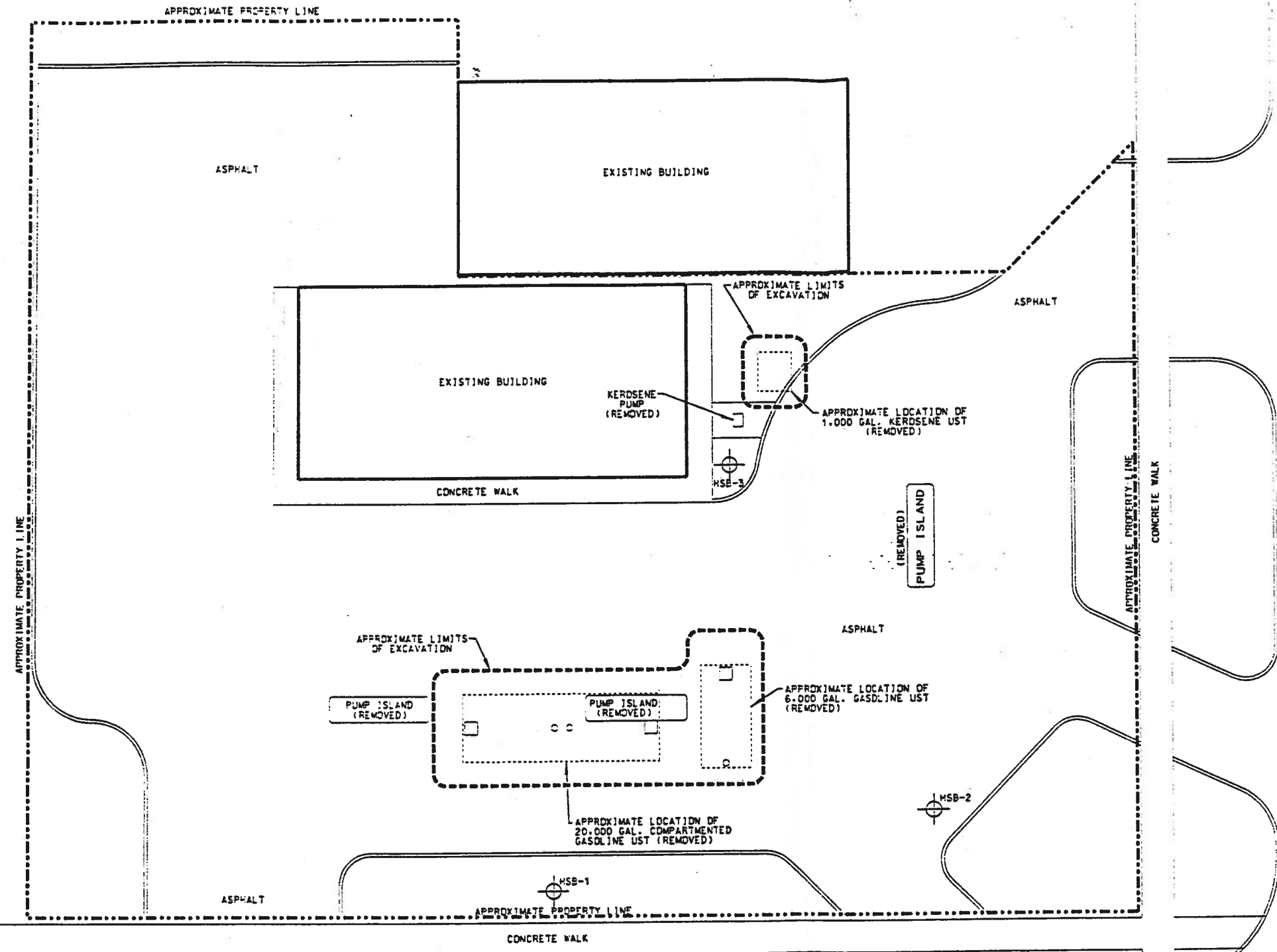


BUDDY'S PACKARD SUNOCO
3005 PACKARD
ANN ARBOR, MICHIGAN 48104

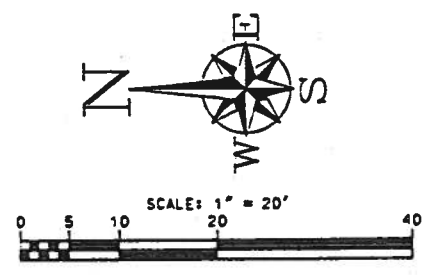
LOCATION MAP

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KALAMAZOO, MICHIGAN 49001
PH: 16161342-1100 FAX: 16161342-4945

PROJECT NO.
940150
FIGURE NO.
1



LEGEND
 SITE CHECK SOIL BORING LOCATION

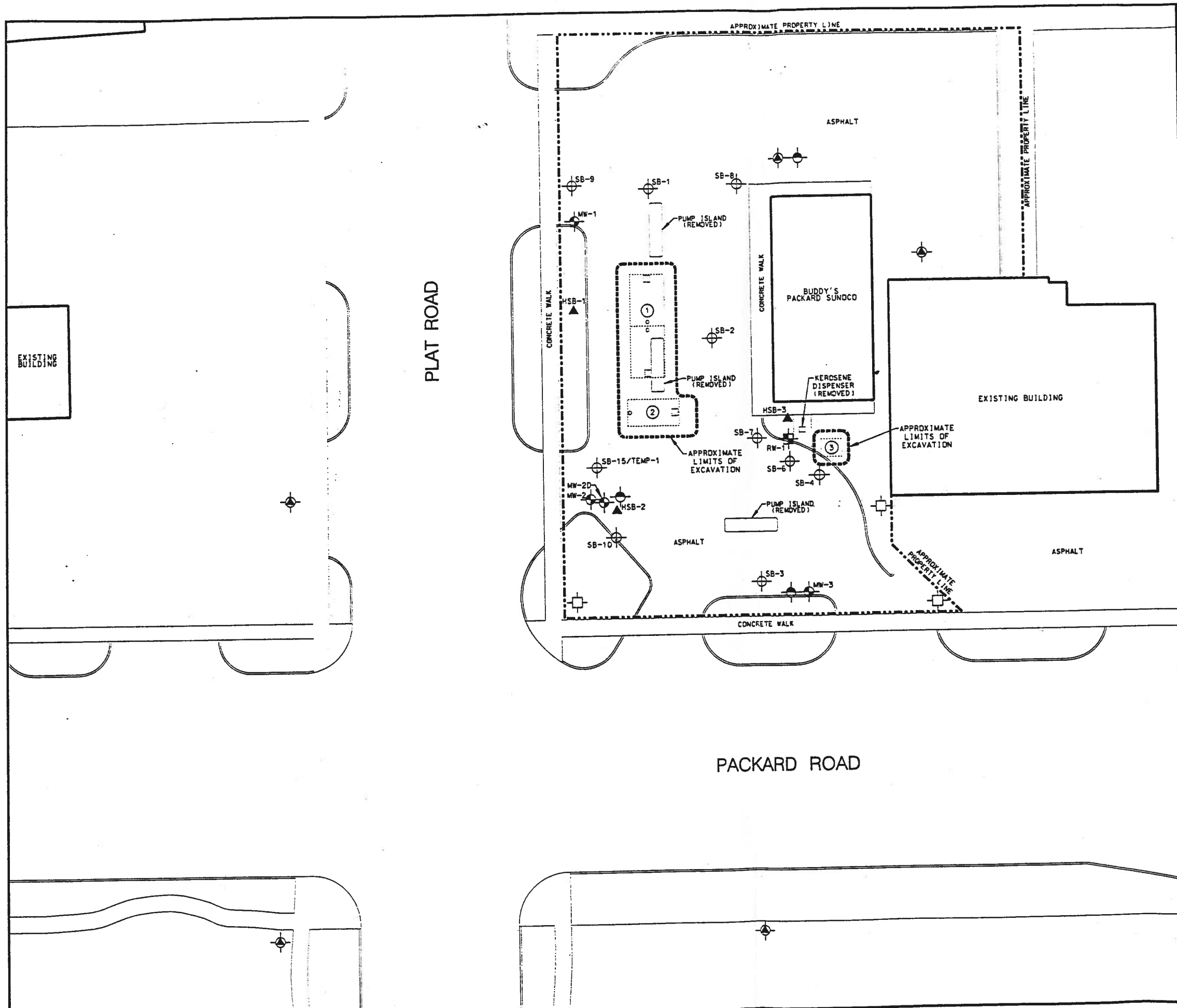


BUDDY'S PACKARD SUNOCO
 3005 PACKARD
 ANN ARBOR, MICHIGAN 48104

SITE PLAN

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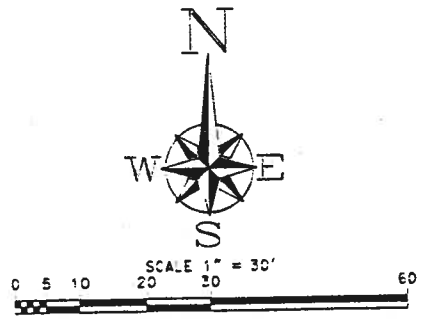
PROJECT NO: 940150
 FIGURE NO: 2



TANK TABLE			
TANK NO.	CAPACITY	CONTENTS	STATUS
1	20,000 GAL.*	GASOLINE	REMOVED
2	6,000 GAL.	GASOLINE	REMOVED
3	1,000 GAL.	KEROSENE	REMOVED

*TANK NO. 1 IS A COMPARTMENTED TANK
NOTE: ALL TANK LOCATIONS ARE APPROXIMATE

- LEGEND**
- ▲ EXISTING HAND AUGER BORING LOCATION
 - ⊕ EXISTING SOIL BORING LOCATION
 - ⊙ EXISTING MONITORING WELL LOCATION
 - ⊞ EXISTING RECOVERY WELL LOCATION
 - ⊙ (with dot) PROPOSED SHALLOW MONITORING WELL LOCATION
 - ⊙ (with cross) PROPOSED INTERMEDIATE MONITORING WELL LOCATION
 - ⊞ (with cross) PROPOSED SOIL BORING LOCATION



BUDDY'S PACKARD SUNOCO
 3005 PACKARD
 ANN ARBOR, MICHIGAN 48104

**PROPOSED
 SOIL BORING AND
 MONITORING WELL
 LOCATIONS**

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 KALAMAZOO, MICHIGAN 49001
 PH: (616) 342-1100 FAX: (616) 342-4945

PROJECT NO: 940150
 FIGURE NO: 3

10/147 9



LEAKING UNDERGROUND STORAGE TANK FINAL ASSESSMENT REPORT

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY. The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit a report within the stated time period may result in Administrative Penalties as provided for in Part 213, Section 21321 of Act 451, P. A. 1994 as amended.

FACILITY NAME: Buddy's Packard Sunoco #28
FACILITY ID NUMBER: 0-002107
ADDRESS: 3005 Packard & Plat, Ann Arbor, MI
COUNTY: Washtenaw
MERA SITE ID NUMBER: Unknown
DATE(S) RELEASE DISCOVERED: 8/31/94 - Suspected
9/29/94 - Confirmed
CONFIRMED RELEASE NUMBER(s): Unknown
O/O NAME: Pipeline Oil Sales, Inc.
MUSTFA CLAIM NUMBER: Not Applicable
O/O ADDRESS: 744 E. South Street, Jackson, MI
CONTACT PERSON: Jeffery Hanson
PHONE NUMBER: (517) 782-0467

ANSWER ALL QUESTIONS (DO NOT LEAVE BLANKS):

- 1. Has the UST been emptied? X Yes No (If no, explain why):
2. Free product present: a. Currently? YES X NO If YES, total gallons recovered since last report: NA
b. Previously? X YES NO If YES, total gallons recovered to date: 0.125 gallons
3. Have vapors been identified in any confined spaces (basement, sewers)? YES X NO
4. State the number of homes where drinking water is or was affected as a result of a release from this facility: None
5. Estimated distance and direction from point of release to nearest:
a. Private well: 1 Mile to NE b. Municipal well: > 1 Mile c. Surface water/wetland: Swift Drain located 1100 feet to the southeast
6. Since last report: a. cubic yards of soil remediated: 870 b. gallons of groundwater remediated: 0
7. Totals to date: a. cubic yards of soil remediated: 870 b. gallons of groundwater remediated: 0
8. Michigan RBCA Site Classification (1-4): 4

CERTIFICATION OF REPORT COMPLETION

I, the undersigned CP, hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate and complete. I certify that it was submitted to the USTD on August 28, 1997

(date submitted-REQUIRED)

CP Original Signature - Required L. N. Sastry
Date 8/28/97

James Alfonsi
PRINT QC Project Manager's Name

L. N. Sastry, CPG
PRINT CP's Name

Fluor Daniel GTL Inc.
Consultant

23937 Research Drive, Farmington Hills, Michigan 48335
Address

810-473-0720
Phone Number

810-473-0892
Fax Number

* I am relying, in part, upon information provided by Envirollogic Technologies, Inc., the accuracy of which I cannot independently verify.



LIST OF ATTACHMENTS

(Include as Required and Check Box if Attached)

Attachments 1, 2, 6-12, 16-18, and 22-28 are to be submitted if applicable.

Attachments 3-5, 13-15, and 19-21 are found in the back of this document and should be completed and submitted when necessary.

ATTACHMENT NUMBER	DESCRIPTION
------------------------------	--------------------

4	Laboratory Results Table for Soils
5	Tier I RBSL / Tier II or Tier III SSTL Comparison Table for Soils
6	Site Map Showing Soil Sampling Locations, Maximum Contaminant Concentrations, and Sampling Depths
8	Cross Sections Showing the Vertical and Horizontal Distribution of Soil Contaminants
9	Soil Boring Logs
11	Groundwater Gradient Map
14	Laboratory Results Table for Groundwater
15	Tier I RBSL / Tier II or Tier III SSTL Comparison Table for Groundwater
16	Site Map Showing Groundwater Sampling Locations, Maximum Contaminant Concentrations, and Location of Contaminant Plume

1.0 REPORTING AND RESPONSE TO RELEASES INVOLVING FREE PRODUCT

- A. Has free product been encountered subsequent to submission of the Initial Assessment Report?
 Yes No

If "No", skip to Section 2.0. If "Yes", continue with question "B" below.

2.0 DELINEATION OF THE EXTENT OF CONTAMINATION

- A. Were additional site assessment activities conducted subsequent to the submission of the Initial Assessment Report? Yes No

- B. If "Yes", what environmental media were further investigated?
(Check all that apply):

Soil Groundwater Air Surface Water

Sediments Biota Other (Specify):

- C. Was the Work Plan implemented as outlined in the Initial Assessment Report? Yes No

- D. If "No", describe the changes made to the sampling and analysis plan in detail and provide justification for why they were made (attach additional sheets, as needed):

NOTE: A Work Plan was not included in the February 8, 1995 Phase I Hydrogeologic Study Report prepared by Envirolgic Technologies. However, Fluor Daniel GTI reviewed the Phase I Hydrogeologic Report to determine a plan to provide adequate delineation at the site.

2.1 SITE AND AREA MAPS

Area and site map(s), drawn to scale, may be used to effectively present a variety of information required to be included in this Final Assessment Report. It may not be possible to include all required information on one map. Multiple maps may be attached, with each highlighting a different type of information. However, use of multiple maps should be minimized. Placement of information on the site map(s) should be done in a clear and legible manner. The area map should show the location of the site boundaries in relation to the nearest major roads.

The base site map on which to display information required for the Final Assessment Report should include the following, as appropriate:

- Location of each underground storage tank and associated piping in the leaking underground storage tank system (prior to excavation if tanks have been removed)
- Location of the release and the component of the underground storage tank system from which the release occurred
- Location of any other existing and former underground storage tanks at the site
- Approximate location of fill ports, dispensers, and other pertinent system components
- Location of nearby buildings, roadways, paved areas, or other structures
- Location of nearby surface waters or wetlands
- Location and depth of nearby underground sewers and utility lines
- Location of all wells within 100 feet of the property boundary

Please refer to Attachment #6 & #16.

2.2 SOIL CONDITIONS AND CHARACTERISTICS

A. Is soil contamination present? **Yes** No

NOTE: If "Yes", complete questions "B" through "H". If "No", skip to Section 2.3.

B. Total volume of soil remediated or disposed to date: **870 cubic yards**

C. Describe any soil remediation or disposal activities performed to date:

Approximately 870 cubic yards of contaminated soil were excavated and disposed during UST replacement activities performed in November 1994.

D. Attach Field Screening Results (Attachment No. 3) and Laboratory Results (Attachment No. 4) tables showing the results of all soil sampling performed to date for the listed parameters. (NOTE: The USTD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)

A tabular summary of the soil sample laboratory analytical results is presented in Attachment #4. PID field screening results are depicted in Attachment #9 - Boring Logs.

- J. Attach copies of boring logs (Attachment No. 9) and well construction diagrams (Attachment No. 10) for all monitoring wells.

Please refer to Attachment #9 for boring logs and well completion data.

Groundwater Flow Rate and Direction:

- K. Predominant soil type in water-bearing stratum (e.g., sand, silt):

The shallow water bearing unit is comprised of interbedded clay and sand lenses. The sand lenses may not be continuous between existing monitoring wells.

- L. Effective porosity of water-bearing stratum: **Estimated at 35%.**

- M. Hydraulic conductivity: **Estimated 10^{-5} cm/sec**

- N. Lateral hydraulic flow gradient (attach a site map with groundwater flow direction and elevation data as Attachment No. 11 - USGS datum preferred):

Flow direction appears to vary across the site. Mounding was observed in the southwest corner of the site, likely due to surface water recharge.

- O. Effective groundwater flow rate: **Not Determined**

- P. Identify hydrogeologic conditions that could influence flow direction (describe here or in Attachment No. 12):

The shallow water bearing unit is comprised of interbedded clay and sand lenses. The sand lenses may not be continuous between existing monitoring wells.

- Q. Is there any indication of a vertical flow gradient? Yes No

- R. If "Yes", describe: **NA**

- S. Has the groundwater been affected by the release? Yes No

- T. Has there been more than one groundwater unit contaminated by the release? Yes No

- U. If "Yes", attach additional sheets answering questions "G" through "R" for each groundwater unit.
NA

- V. Describe any groundwater remediation activities performed: **None to date**

- W. Total volume of groundwater remediated to date: **None**

- X. Does the known plume currently extend off-site? Yes No Unknown

Y. Attach Field Screening Results (Attachment No. 13) and Laboratory Results (Attachment No. 14) tables showing the results of all groundwater sampling performed to date for the listed parameters. (NOTE: The USTD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.) **Please refer to Attachment #9- Soil Boring Logs.**

Z. Provide in the Comparison Table for Groundwater (Attachment No. 15) the maximum contaminant concentrations detected to date in the on-site or off-site groundwater for each listed parameter. (NOTE: Enter "ND" with the appropriate method detection limit when the parameter was not detected, and enter "NA" when the chemical was not analyzed. In areas where remediation has occurred, do not include sample results for areas where the groundwater has been subsequently altered due to remediation.) **Please refer to Attachment #15.**

AA. Show the maximum concentrations and the estimated aerial horizontal extent of the contaminated plume in relation to the groundwater sampling locations on the site map and include as Attachment No. 16. **Please refer to Attachment #16 - Dissolved BTEX Map.**

BB. Describe the vertical extent and distribution of the groundwater contaminants using depth-coded cross sections (Attachment No. 17) that show screened intervals of the monitoring wells. Cross sections locations should be included on the site:
Please refer to Attachment #8 - Cross Sections.

CC. Were multiple groundwater sampling events conducted at the site? Yes No

DD. If "Yes", include a chronological summary of the results for each sampling location using the data tables provided in Attachment No. 14 and include as Attachment No. 18.

Please refer to Attachment #14 - Dissolved BTEX Analytical Data.

2.4 **CONDITIONS AND CHARACTERISTICS IN OTHER ENVIRONMENTAL MEDIA**

A. Is contamination present in any environmental media other than soil or groundwater?
 Yes No

NOTE: If "Yes", answer questions "B" through "I". If "No", skip to Section 3.0.

3.0 **SITE CLASSIFICATION**

A. Indicate the current Site Classification Level (See Attachment No. 10 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks"):

Class 1: Immediate threat to human health, safety, or sensitive environmental receptors

Class 2: Short-term threat to human health, safety, or sensitive environmental receptors

Class 3: Long-term threat to human health, safety, or sensitive environmental receptors

Class 4: No demonstrable long-term threat to human health, safety, or sensitive environmental receptors

NOTE: Regardless of the classification level, all reports must be submitted within the legislative time frame unless an alternate schedule is approved in writing by the USTD.

- B. Date of most recent classification or reclassification: ***September 1, 1997***
- C. Is this classification a reclassification performed subsequent to the submission of the Initial Assessment Report? X Yes X No
Classification performed for the first time
- D. If "Yes", describe the conditions that have changed significantly since the prior classification to justify the reclassification:

4.0 RESULTS OF THE TIER II OR TIER III EVALUATION

4.1 CONFIRMATION OF EXPOSURE PATHWAYS AND SCENARIOS

- A. Have any of the following site characteristics or conditions, transport mechanisms, exposure routes, or potential receptors at the site or the surrounding area been newly identified to be present or changed significantly in character since the submission of the Initial Assessment Report?

Because the Phase I Hydrogeologic Report was submitted in February 1995, the following exposure evaluation is the initial RBCA classification.

- B. If "Yes", check all that are newly identified or significantly changed since the submission of the Initial Assessment Report:

THIS IS THE INITIAL RBCA CLASSIFICATION. THESE ARE NOT CHANGES TO A PREVIOUS CLASSIFICATION.

Site Characteristics or Conditions

- Neighboring Land Use or Local Zoning Changes
- New or Discontinued Uses of Groundwater At or Near the Site
- Changes in On-Site Facility Operations
- Construction of New Structures or Utilities At or Near the Site

Potential Sources

- Impacted Soils
- Dissolved Groundwater Plume
- Free Phase Liquid Plume
- Impacted Sediments or Surface Water

Potential Transport Mechanism(s)

- Wind Erosion and Atmospheric Dispersion
- Volatilization and Atmospheric Dispersion
- Volatilization and Enclosed-Space Accumulation
- Leaching and Groundwater Transport
- Mobile Free-Liquid Migration
- Stormwater/Surface Water Transport
- Utility Corridors
- Other (*Specify*):

Potential Exposure Route(s)

- Soil Ingestion
- Direct Contact of Soil with Skin
- Inhalation of Airborne Particulates
- Inhalation of Volatiles
- Potable Water Use
- Use of Non-Potable Water
- Other (*Specify*):

Potential Receptor(s)

- Resident
- Commercial Worker III*
- Commercial Worker IV*
- Industrial Worker
- Construction Worker
- Sensitive Habitat
- Structures
- Utilities
- Surface Waters
- Water Supply Wells
- Other (*Specify*):

* As defined in Attachment No. 11 to the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks"

C. For each item checked above, briefly describe the change and its potential impact on the selection of exposure route(s) and potential receptors for the Tier II or Tier III evaluation relative to the Tier I or Tier II evaluation included in the Initial Assessment Report (*use additional attached sheets, if necessary*):

Not Applicable.

D. List the most plausible potential residential exposure pathway(s) for the site:

Ingestion of impacted groundwater from downgradient receptors. However, no drinking water well exists within one mile from the site.

4.3 IDENTIFICATION OF TIER I RISK-BASED SCREENING LEVELS OR TIER II / TIER III SITE-SPECIFIC TARGET LEVELS AND COMPARISON TO SITE DATA

- A. For each contaminated medium, complete a Tier I RBSL / Tier II or Tier III SSTL Comparison Table (Attachment No. 5 for soil, Attachment No. 15 for groundwater and Attachment No. 21 for other media, as appropriate) by:
1. Checking the box associated with the applicable land use scenario;
 2. Checking the boxes associated with the contaminants currently present at the site;
 3. Entering the current maximum detected on-site or off-site concentration for each selected contaminant, along with the corresponding sample identification number and date of sampling;
 4. Entering the lowest applicable RBSL value from the Tier I Look-Up Tables (*refer to Attachment No. 11 of the "Guidance Document For Risk-Based Corrective Action At Leaking Underground Storage Tanks"*) for the specific exposure routes present and environmental medium being considered or a corresponding optional Tier II SSTL. *[NOTE: Include the exposure route code that identifies the basis for each applicable criterion noted. For example, 12 ug/kg (A) for a cleanup goal based on the direct contact with soil exposure route, and 12 ug/kg (B) for a cleanup goal based on the soil leaching to groundwater exposure route];*
 5. Comparing the contaminant-specific maximum concentration to the corresponding RBSL or SSTL criterion; and
 6. Identifying and recording whether or not there is an exceedence of the RBSL or the SSTL.

Please refer to Attachment #5 & #15.

- B. Tier I RBSL / Tier II or Tier III SSTL Comparison Tables are attached for the following (*Check all that apply*):

LAND USE	ENVIRONMENTAL MEDIUM		
	SOIL	GROUNDWATER	OTHER (Specify)
Residential	X	X	
Commercial III			
Commercial IV			
Industrial			

4.4 PROPOSED FOLLOW-UP ACTIVITIES

A. Based on the results of the Tier II or III evaluation, indicate the follow-up activities proposed for the site:

<input type="checkbox"/> Site conditions do not exceed the relevant Tier I RBSLs or the calculated Tier II/ Tier III SSTLs do not rely on institutional controls	Proceed with site closure. No further sections of Final Assessment Report need to be completed.
<input checked="" type="checkbox"/> Site conditions exceed some or all of the relevant Tier I RBSLs or Tier II/Tier III SSTLs	Propose final corrective action to achieve Tier I RBSLs or Tier II/Tier III SSTLs. Continue with Section 5.0.

5.0 FEASIBILITY ANALYSIS

A. As appropriate, given the site conditions, complete the following comparison table of the potentially applicable corrective actions that were considered for the facility to reduce the volume, toxicity and/or mobility of the released regulated substances (*both on-site and off-site, as applicable*), noting the principal advantages and disadvantages of each listed alternative. (*Indicate explicitly, where appropriate, the relative estimated net present value cost of each alternative corrective action, its indicated effectiveness and feasibility, and the time needed to implement and complete the alternative. Attach additional sheets, if necessary.*)

CORRECTIVE ACTION ALTERNATIVES	PRINCIPAL ADVANTAGES	PRINCIPAL DISADVANTAGES
1) Restrictive Covenant	- No further site work required.	- Restricts future property development.
2) Biodegradation & Resampling	- Minimal disturbance to site.	- Relies on natural processes.

B. Identify and briefly describe the preferred alternative. (*Attach additional sheets, if needed. Document the rationale for selecting this option by discussing how the selected remedial action will:*

- *Be protective of human health and the environment*
- *Comply with applicable or relevant and appropriate requirements*
- *Meet the requirements of the Risk-Based Corrective Action process*
- *Be a permanent solution (to the maximum extent possible)*
- *Be cost-effective)*

The hydrocarbon source has been eliminated by removing the underground storage tanks from the site, therefore no future releases are anticipated. The current concentrations are below the chosen criteria.

Fluor Daniel GTI recommends that a restrictive covenant be pursued for the site. The covenant would restrict future development at the site and would prohibit the construction of enclosed buildings directly above areas of the site which currently exceed volatilization to indoor air criteria.

However, resampling activities may be conducted in future. If resampling activities indicate that natural biodegradation has reduced contaminant levels below the applicable criteria (or if the applicable MDEQ criteria becomes available), then a request may be made to revoke the restrictive covenant.

- C. Has a pilot study been conducted to demonstrate the performance of any component or subsystem associated with the corrective action? Yes No
- D. If "Yes", describe the pilot study or testing that was conducted and present the results (*attach additional sheets, if necessary*): **Not Applicable**
- E. If a pilot study or testing was not conducted, explain why they were not needed:

A pilot test is not required to initiate institutional controls.

6.0 **CORRECTIVE ACTION PLAN**

6.1 **DESCRIPTION OF THE CORRECTIVE ACTION**

- A. Describe the overall program and the primary components of the selected corrective action to be implemented at the facility (*attach additional sheets, if necessary*):

Fluor Daniel GTI recommends that a restrictive covenant be pursued for the site. The covenant would restrict future development at the site and would prohibit the construction of enclosed buildings directly above areas of the site which currently exceed volatilization to indoor air criteria.

However, resampling activities may be conducted in future. If resampling activities indicate that natural biodegradation has reduced the contaminant levels below the applicable criteria (or if the applicable MDEQ criteria becomes available), then a request may be made to revoke the restrictive covenant.

- B. Include a schematic drawing of the remedial system to be employed (Attachment No. 24).

No mechanical drawings are required for the preferred alternative.

- C. Include maps depicting capture zones/zones of influence, system layout, and anticipated system rates (Attachment No. 25).

Not Applicable.

D. From Attachment No. 12 to the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks" (entitled "Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases"), specify and justify the indicator parameters to be used (if applicable) to evaluate the implementation of the Corrective Action Plan. (For each indicator parameter, identify the corresponding cleanup goal and the basis of the cleanup goal.)

NOTE - The proposed restrictive covenant will eliminate the exposure pathways. However, the following cleanup goals are provided for reference:

INDICATOR PARAMETER / Rationale for Selection	IDENTIFIED CLEANUP GOAL	UNITS (ug/kg or ug/l)	BASIS OF THE CLEANUP GOAL
<u>Benzene</u>	<u>54</u>	<u>ug/kg</u>	<u>Hydrocarbon volatilization to indoor air is the most conservative possible pathway for adsorbed concentrations to affect human health. These ASTM criteria may be modified as MDEQ volatilization criteria become available.</u>
<u>Toluene</u>	<u>20,500</u>	<u>ug/kg</u>	<u>Same as above.</u>
<u>Ethylbenzene</u>	<u>427,000</u>	<u>ug/kg</u>	<u>Same as above.</u>
<u>Xylenes</u>	<u>280</u>	<u>ug/kg</u>	<u>Same as above.</u>

6.2 AMBIENT AIR QUALITY MONITORING ACTIVITIES

A. Will ambient air quality be monitored during the implementation of the corrective action?
 __Yes X No

B. If "No", explain why air monitoring is not needed:

The restrictive covenant will eliminate the potential exposure receptors.

C. If "Yes", describe the air quality monitoring to be conducted during the corrective action:

PARAMETERS TO BE MONITORED	ACTION LEVEL (Basis for Action Level)	MONITORING DEVICE TO BE USED	MONITORING FREQUENCY	PROCEDURE TO BE FOLLOWED IF ACTION LEVEL EXCEEDED
NA				

6.3 PLANS FOR OPERATION AND MAINTENANCE

A. Does any equipment or system associated with the corrective action need to be operated or maintained in order for the RBSLs or SSTLs to be met? ___ Yes X No

(NOTE: The USTD may request that operation and maintenance information and procedures for this equipment or systems be developed as identified in Section 21309(2)(b).)

6.4 PLANS FOR PERFORMANCE MONITORING

A. Does meeting the cleanup goals depend on the performance of a treatment system or a system for controlling the further release or migration of contaminants? No

If "No", skip to Section 6.5.

6.5 SCHEDULE FOR IMPLEMENTATION OF THE CORRECTIVE ACTION

A. Attach the schedule for implementing the corrective action (*Include as Attachment No. 27. Reflect sufficient detail, a breakdown of the overall program into subcomponents, and the identification of key interim milestones (e.g., proposed submittal dates for Public Notice, Notice of Corrective Action, etc.) to demonstrate that the corrective action is implementable and has been adequately planned.*)

B. Date Confirmed Release Report Submitted: September 15, 1994

C. Date Initial Assessment Report Submitted: November 10, 1994

D. Date of Subsequent or Other Releases (*if appropriate*): NA

E. Proposed Corrective Action Start Date: September 1997

F. Dates of Key Interim Milestones (*Specify*): NA

G. Proposed Remedial Activity Completion Date: Not Determined

H. Expected Performance Monitoring Completion Date: Not Required

6.6 NOTICES AND RESTRICTIONS

A. Will the corrective action plan require the use of institutional controls to restrict land use or resources? Yes

If "No", skip to Section 6.7; otherwise, answer questions "B" through "F" below.

6.7 FINANCIAL ASSURANCE MECHANISM

A. Has a financial assurance agreement, as provided for in R29.2161 to R29.2169 of the Michigan Administrative Code, been included for approval by the USTED to assure the effectiveness and integrity of the corrective action? Yes - Pipeline Oil Sales, Inc. is a self insured company. Further information regarding Pipeline's financial assurance mechanism may be obtained by contacting Pipeline directly.

B. If "No", provide an explanation: NA

If "Yes", provide the following:

C. Date the financial assurance mechanism was submitted to USTED: / /

D. Amount of the financial assurance mechanism: \$ _____

E. Coverage of the financial assurance mechanism
(check all that apply):

Monitoring
Oversight

Operation and Maintenance
Other (Specify):

Pipeline Oil Sales, Inc. is a self insured company. Further information regarding Pipeline's financial assurance mechanism may be obtained by contacting Pipeline directly.

6.8 PERMITTING AND APPROVAL REQUIREMENTS

A. Will the corrective action result in any discharge during its implementation?
 Yes X No

If "No", no more information is necessary; if "Yes", continue with questions "B" and "C".

ATTACHMENT - 4

FINAL ASSESSMENT REPORT - ATTACHMENT #4

BUDDY'S PACKARD SUNOCO #28
 3005 PACKARD & PLAT
 ANN ARBOR, MICHIGAN

HISTORICAL BTEX/MTBE CONCENTRATIONS IN SOIL (ug/l)

Sample Location	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Lead	Total PNAs	Comments
SB-1	4-6'	11/04/94	<10	<10	<10	<30	<100	6400	<330	
SB-2	4-6'	11/04/94	<10	<10	<10	<30	<100	6300	<330	
SB-3	4-6'	11/04/94	<10	<10	<10	<30	<100	9200	<330	
SB-3	10-12'	11/04/94	<10	<10	<10	<30	<100	5100	<330	
SB-4	4-6'	11/04/94	25	620	700	2900	<100	12100	390	Naphthalene - 390
SB-4	9-11'	11/04/94	<10	<10	<10	<30	<100	3500	<330	
SB-5	4-6'	11/04/94	<10	<10	<10	<30	<100	4500	<330	
SB-5	9-11'	11/04/94	340	<10	<10	<30	<100	5300	<330	
SB-8	4-6'	11/04/94	<10	<10	<10	<30	<100	5500	<330	
SB-9	4-6'	11/04/94	<10	<10	<10	<30	<100	5700	<330	
MW-1	4-6'	01/09/95	<10	<10	<10	<30	<100	8000	<330	
SB-10	4-6'	01/09/95	160	45	210	231	<100	8000	560	Naphthalene - 560
MW-3	4-6'	01/09/95	430	110	1100	6100	180	12000	900	Naphthalene - 900
Kerosene East Wall	6.5'	11/16/94	25	<10	350	68	<100	10000	660	Naphthalene - 660
Kerosene North Wall	5'	11/16/94	15	11	<10	27	<100	11000	<330	
Kerosene West Wall	6'	11/16/94	190	15	2400	4125	<100	12000	710	Naphthalene - 710
Kerosene South Wall	6'	11/16/94	1600	280	5900	35600	<2000	9000	1300	Naphthalene - 1300
Kerosene East Floor	9'	11/16/94	99	34	350	459	<100	8000	390	Naphthalene - 390
Kerosene West Floor	9'	11/16/94	350	41	2900	2236	<100	12000	400	Naphthalene - 400
Gasoline South Wall	8'	11/18/94	<10	19	<10	75	<100	9000	<330	
Gasoline North Wall	6'	11/18/94	<10	28	<10	39	160	8000	<330	
Gasoline East Wall (North)	7'	11/18/94	420	9000	1300	3190	<100	8000	390	Naphthalene - 390
Gasoline East Wall (South)	7'	11/18/94	<10	16	<10	25	<100	11000	<330	
Gasoline West Wall (North)	7'	11/18/94	780	200	2100	7000	<100	8000	550	Naphthalene - 550
Gasoline West Wall (South)	7'	11/18/94	580	<10	2700	18600	<500	8000	430	Naphthalene - 430
MW-4	10' - 12'	05/07/97	NA	NA	NA	NA	NA	NA	<330	
MW-8	7' - 9'	05/07/97	200	42	66	150	210	NA	<330	

ATTACHMENT - 5

FINAL ASSESSMENT REPORT-ATTACHMENT NO. 5
TIER I RBSL/TIER II OR TIER III SSTL COMPARISON TABLE FOR SOILS
FACILITY NAME : Buddy's Packard Sunoco, 3005 Packard, Ann Arbor, MI
FACILITY ID NO. : 0-002107

X Residential
Exposure Codes

Commercial

Commercial IV

Industrial

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/kg)	Applicable Criterion with Exposure Codes (ug/kg)		Criterion Exceeded? (Yes or No)	
				Tier I RBSL	Tier II/III SSTL	Tier I RBSL	Tier II/III SSTL
VOLATILES							
Benzene	Kerosene South Wall	11/16/94	1,600	54 (C)		YES	
Toluene	Gasoline East Wall (North)	06/13/95	9,000	20,500 (C)		NO	
Ethylbenzene	Kerosene South Wall	11/16/94	5,900	380,000 (A)		NO	
Total Xylenes	Kerosene South Wall	11/16/94	35,600	400,000 (A)		NO	
MTBE	MW-8 7 -9'	05/07/97	210	3,600,000 (A)		NO	
POLYNUCLEAR AROMATICS (PNAs)							
Acenaphthene	Kerosene South Wall	11/16/94	<330				
Acenaphthylene	Kerosene South Wall	11/16/94	<330				
Anthracene	Kerosene South Wall	11/16/94	<330				
Benzo(a)anthracene	Kerosene South Wall	11/16/94	<330				
Benzo(a)pyrene	Kerosene South Wall	11/16/94	<330				
Benzo(b)fluoranthene	Kerosene South Wall	11/16/94	<330				
Benzo(g,h,i)perylene	Kerosene South Wall	11/16/94	<330				
Benzo(k)fluoranthene	Kerosene South Wall	11/16/94	<330				
Chrysene	Kerosene South Wall	11/16/94	<330				
Dibenzo(a,h)anthracene	Kerosene South Wall	11/16/94	<330				
Fluoranthene	Kerosene South Wall	11/16/94	<330				
Fluorene	Kerosene South Wall	11/16/94	<330				
Indeno(1,2,3-cd)pyrene	Kerosene South Wall	11/16/94	<330				
Naphthalene	Kerosene South Wall	11/16/94	1300	40,700 (C)		NO	
Phenanthrene	Kerosene South Wall	11/16/94	<330				
Pyrene	Kerosene South Wall	11/16/94	<330				

ATTACHMENT - 6

LEGEND

- ⊙ MONITORING WELL
- ⊙ SOIL BORING
- ★ FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)

SB-1	
11-04-94	
4-8	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

All Concentrations in ug/L (ppb)



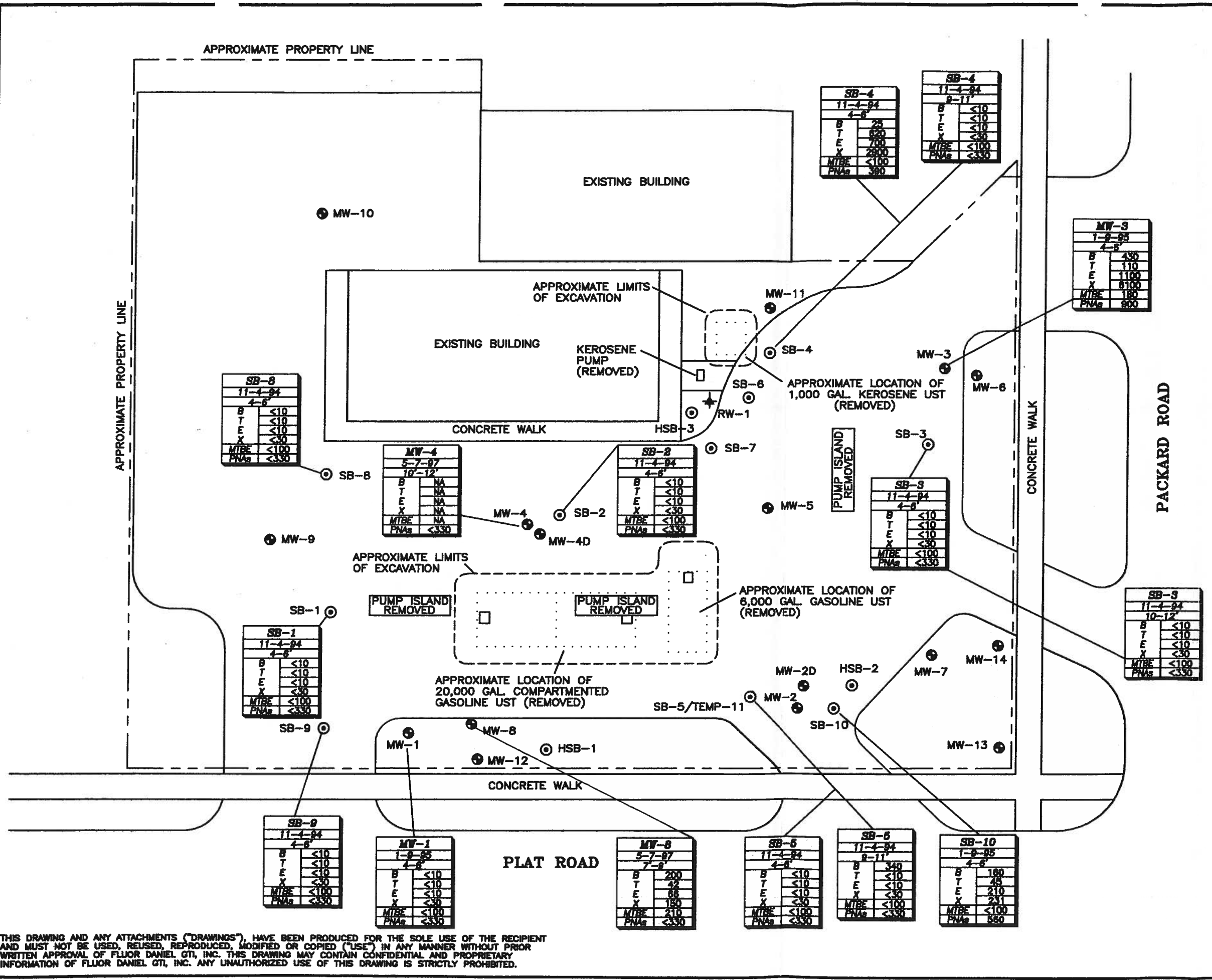
SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

FLUOR DANIEL GTI
 23937 RESEARCH DRIVE
 FARMINGTON HILLS, MI 48335
 (810) 473-0720

REV. NO.:	DRAWING DATE:	ACAD FILE:
	5/18/97	BUD-ABMP

ABSORBED BTEX/MTBE/PNA'S MAP

CLIENT:	BUDDY'S PACKARD SUNOCO	PM:	JMA
LOCATION:	3005 PACKARD ANN ARBOR, MICHIGAN	PE:	
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	JKK/TK	01001-1247	



SB-8	
11-4-94	
4-8	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

MW-4	
5-7-97	
10-12'	
B	NA
T	NA
E	NA
X	NA
MTBE	NA
PNA's	<330

SB-2	
11-4-94	
4-8	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

SB-4	
11-4-94	
4-8	
B	25
T	620
E	700
X	2800
MTBE	<100
PNA's	380

SB-4	
11-4-94	
8-11'	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

MW-3	
1-9-95	
4-8	
B	430
T	110
E	1100
X	6100
MTBE	180
PNA's	800

SB-1	
11-4-94	
4-8	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

SB-3	
11-4-94	
4-8	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

SB-3	
11-4-94	
10-12'	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

SB-9	
11-4-94	
4-8	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

MW-1	
1-9-95	
4-8	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

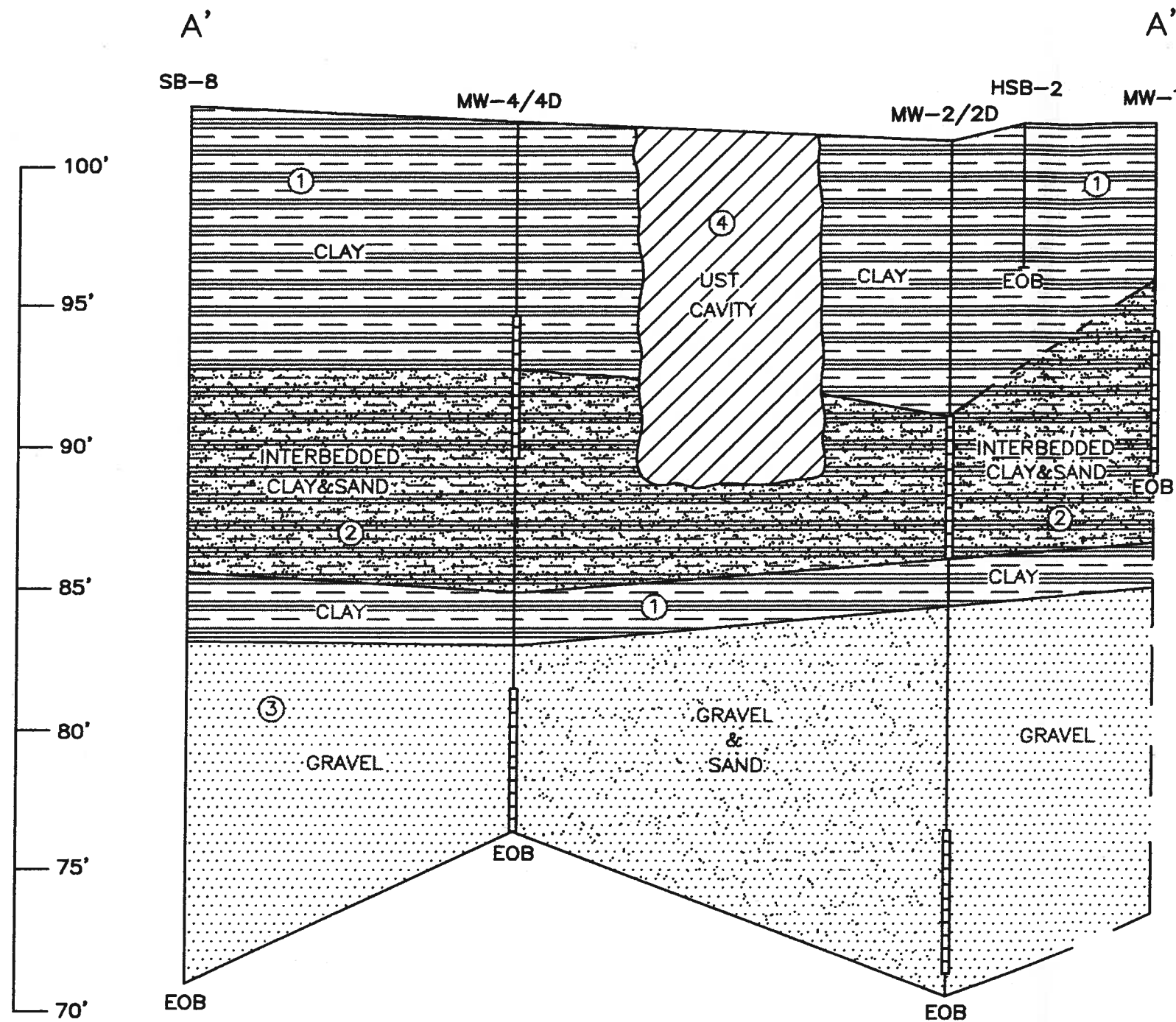
MW-8	
5-7-97	
7-9'	
B	200
T	42
E	68
X	150
MTBE	210
PNA's	<330

SB-5	
11-4-94	
4-8	
B	<10
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330






SB-6	
11-4-94	
8-11'	
B	340
T	<10
E	<10
X	<30
MTBE	<100
PNA's	<330

SB-10	
1-9-95	
4-8	
B	180
T	45
E	210
X	231
MTBE	<100
PNA's	580

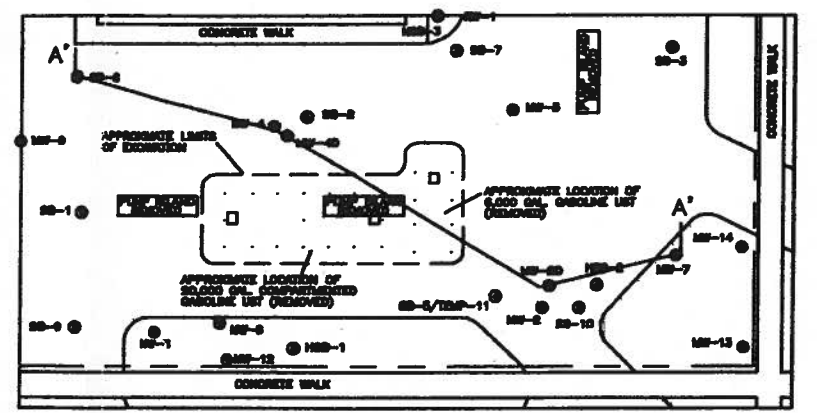
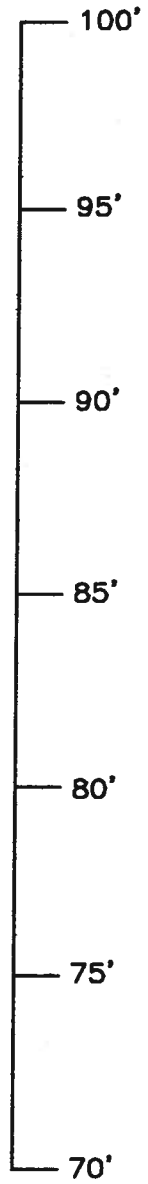
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LEGEND

 - WELL SCREEN
 ① - CLAY
 ② - INTERBEDDED CLAY & SAND
 ③ - GRAVEL & SAND
 ④ - UST CAVITY, BACKFILL

NOTE: HORIZONTAL SCALE 1" = 20'
 VERTICAL SCALE 1" = 5'



 FLUOR DANIEL GTI		23937 RESEARCH DRIVE FARMINGTON HILLS, MI 48335 (248) 473-0720	
		REV. NO.:	DRAWING DATE: 8/12/97
CROSS SECTION A-A'			
CLIENT: BUDDY'S PACKARD SUNOCO			PM: JMA
LOCATION: 3005 Packard Ann Arbor, Michigan			PE:
DESIGNED:	DETAILED: TK	PROJECT NO.: 01001-1247	FIGURE:

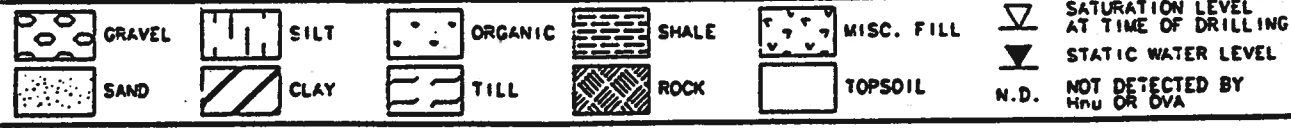
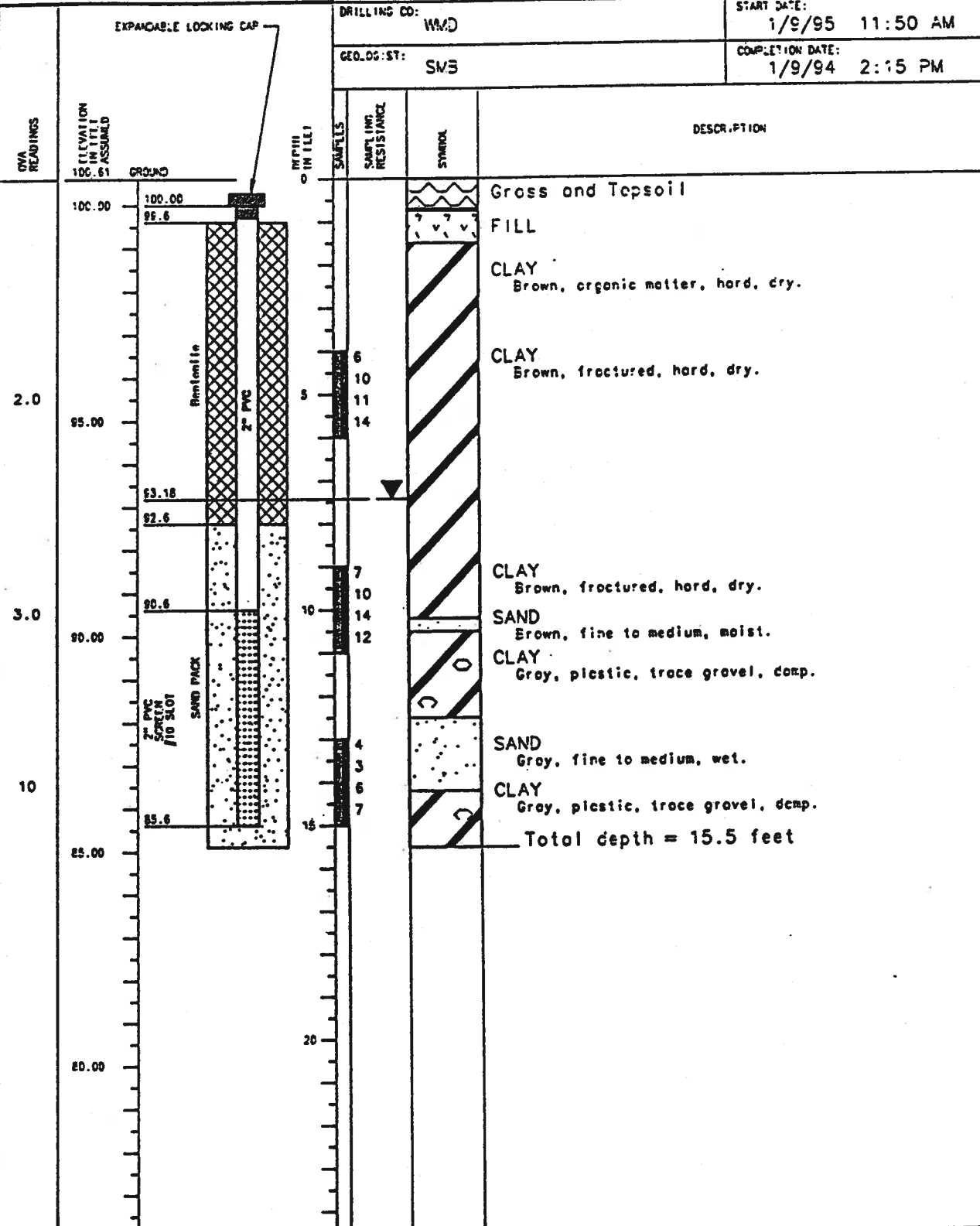
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CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD START DATE: 1/9/95 11:50 AM

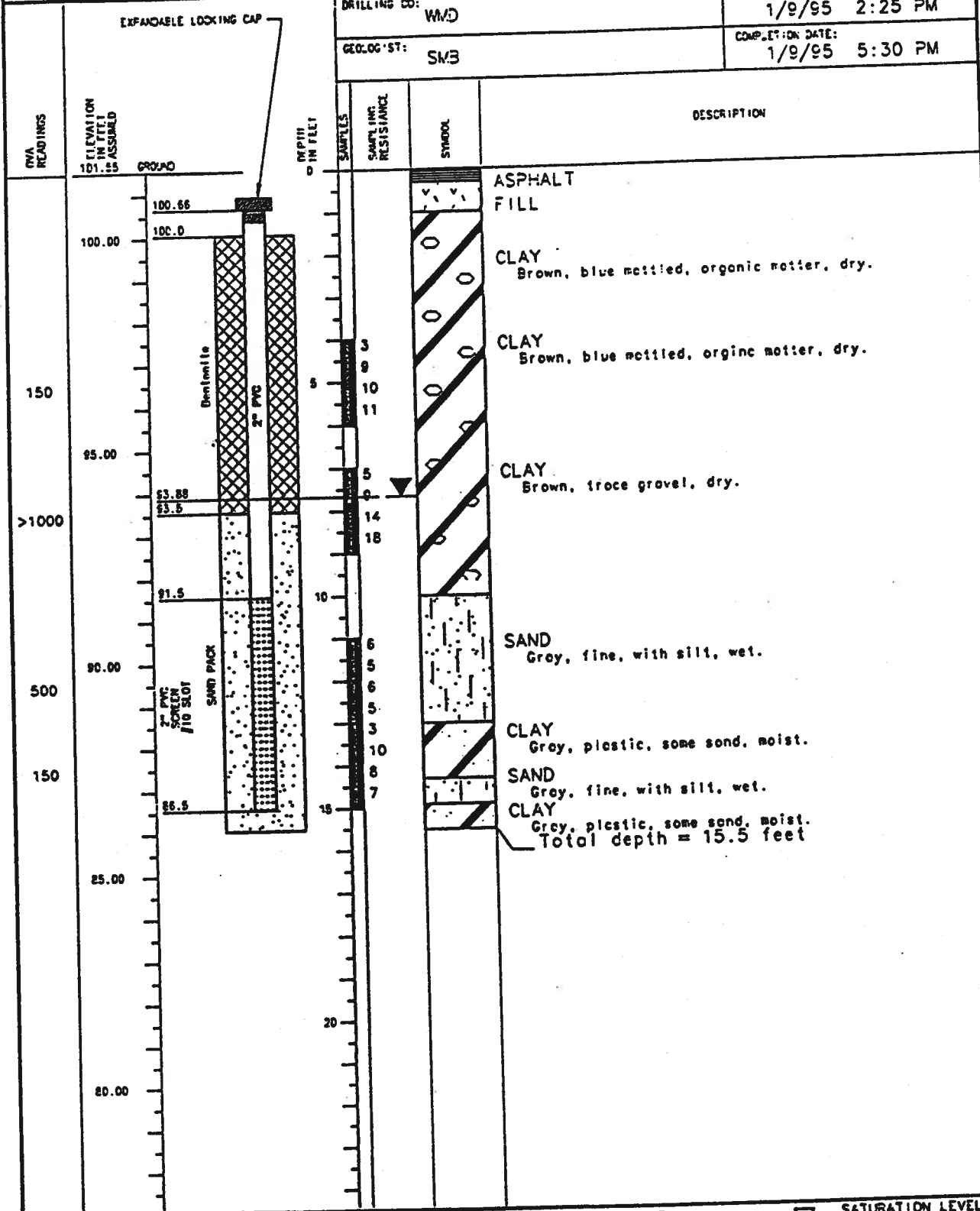
GEOLOGIST: SMS COMPLETION DATE: 1/9/94 2:15 PM



LOG OF MW-2

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150
 LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD
 START DATE: 1/9/95 2:25 PM
 GEOLOGIST: SM3
 COMPLETION DATE: 1/9/95 5:30 PM



GRAVEL	SILT	ORGANIC	SHALE	MISC. FILL	SATURATION LEVEL AT TIME OF DRILLING
SAND	CLAY	TILL	ROCK	TOPSOIL	STATIC WATER LEVEL
					N.D. NOT DETECTED BY Hnu OR DVA

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

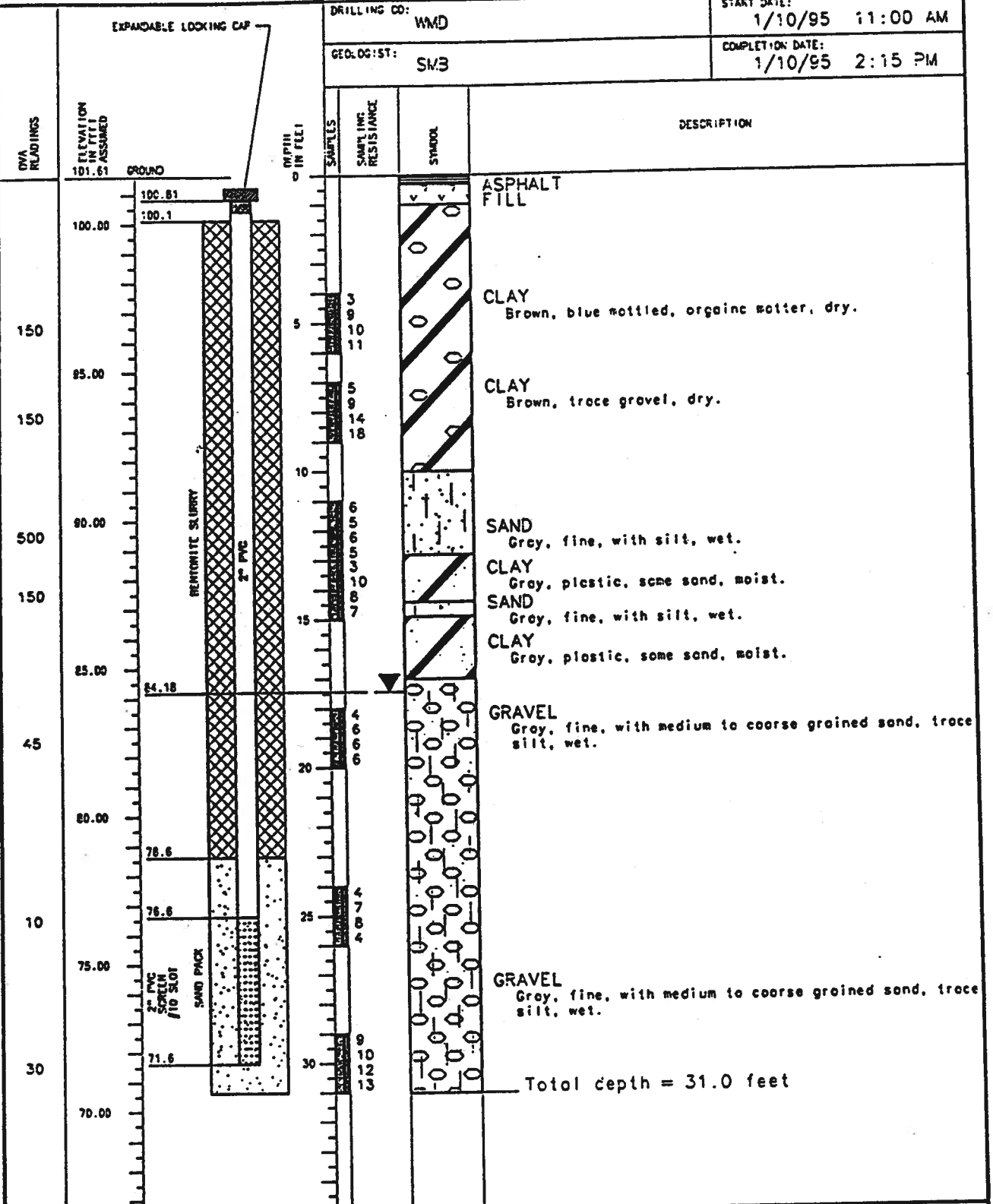
LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD

START DATE: 1/10/95 11:00 AM

GEOLOGIST: SM3

COMPLETION DATE: 1/10/95 2:15 PM



GRAVEL	SILT	ORGANIC	SHALE	MISC. FILL	SATURATION LEVEL AT TIME OF DRILLING
SAND	CLAY	TILL	ROCK	TOPSOIL	STATIC WATER LEVEL
					N.D. NOT DETECTED BY Hru OR DVA



**ENVIROLOGIC
TECHNOLOGIES, INC.**
2960 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF MW-3

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

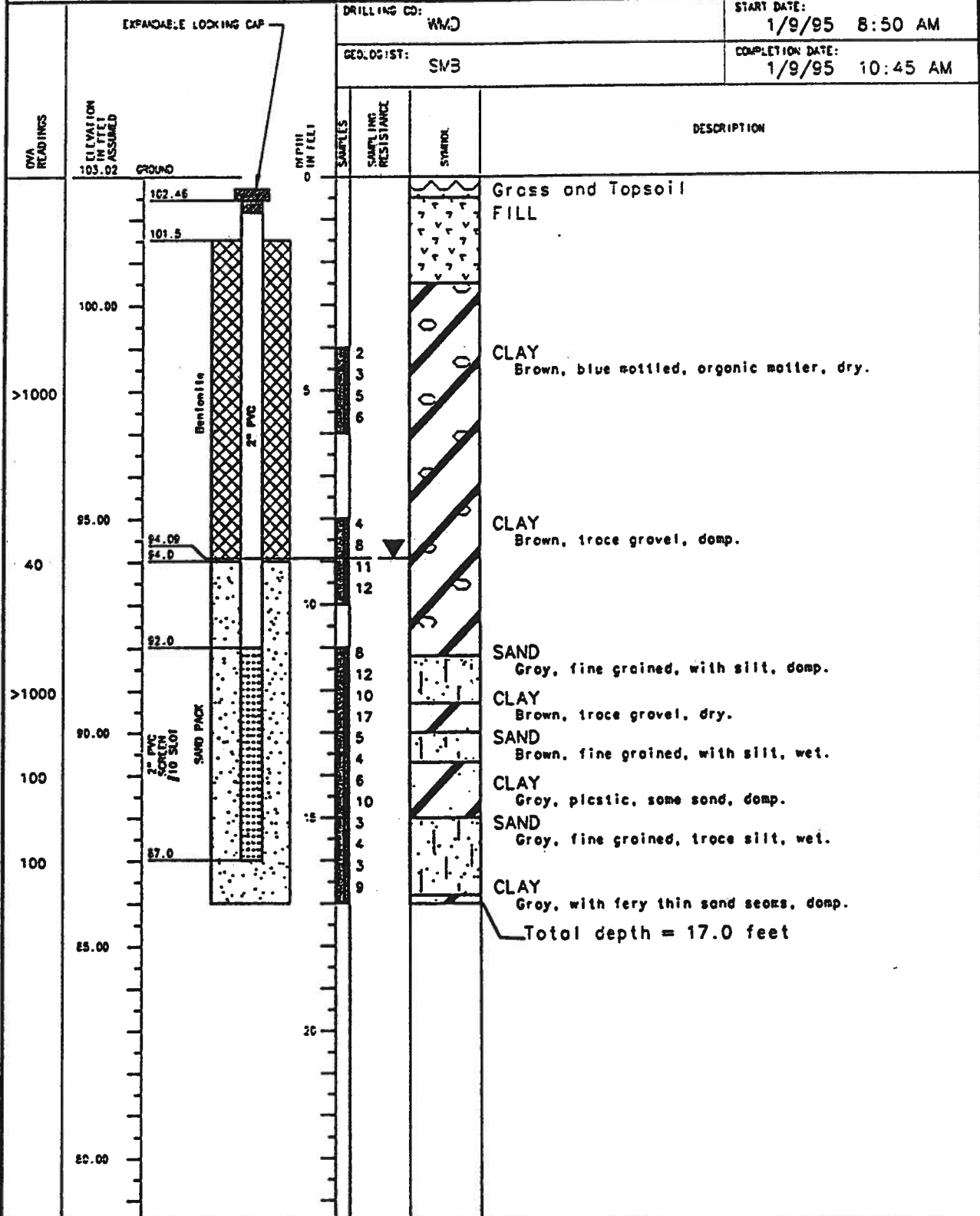
LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD

START DATE: 1/9/95 8:50 AM

GEOLOGIST: SMB

COMPLETION DATE: 1/9/95 10:45 AM



GRAVEL	SILT	ORGANIC	SHALE	MISC. FILL	SATURATION LEVEL AT TIME OF DRILLING
SAND	CLAY	TILL	ROCK	TOPSOIL	STATIC WATER LEVEL
					N.D. NOT DETECTED BY HNU OR OVA

LOG OF RW-1

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

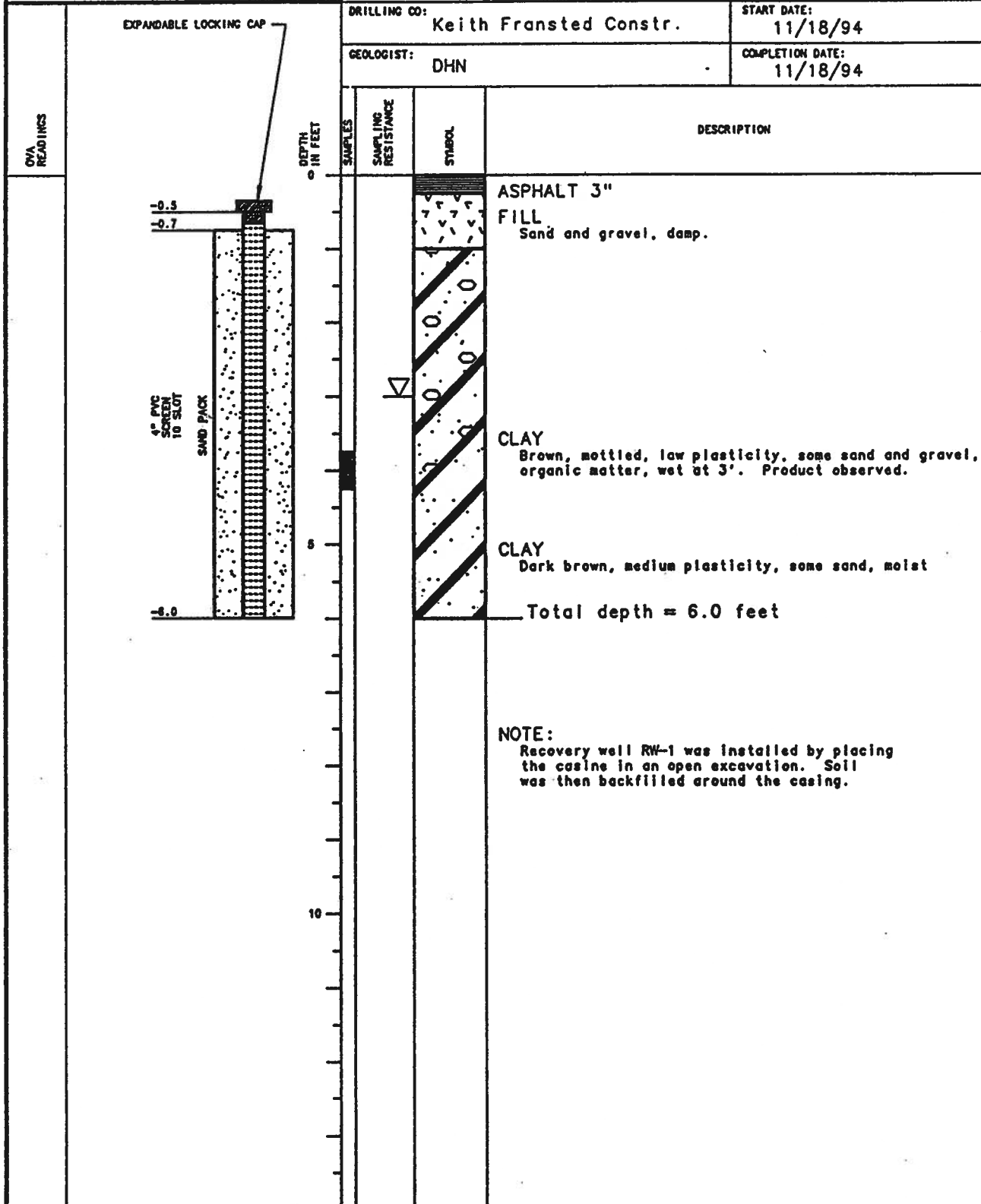
LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: Keith Fransted Constr.

START DATE: 11/18/94

GEOLOGIST: DHN

COMPLETION DATE: 11/18/94



	GRAVEL		SILT		ORGANIC		SHALE		MISC. FILL		SATURATION LEVEL AT TIME OF DRILLING
	SAND		CLAY		TILL		ROCK		TOPSOIL		STATIC WATER LEVEL
										N.D.	NOT DETECTED BY Hnu OR OVA



Drilling Log

Monitoring Well **MW-4 & MW-4D**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 26 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 9.3 ft. Static _____
 Screen: Dia 2 in. Length 5/5 ft. Type/Size slotted/0.020 in.
 Casing: Dia 2 in. Length 12/25 ft. Type SC40PVC
 Fill Material #5 Filter Sand Rig/Core Split Spoon
 Drill Co. ESR DRILLING Method Mobile B-59
 Driller Dan Meihls Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By Jim Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

Black Column = Lithology determined from hand auger and soil cuttings. X = Sample sent to laboratory for analytical analysis.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							Asphalt surface.
0							Brown, organic top soil.
2						SC	Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4							
6		1.7	SS1	7 15 22		CL	Brown with gray mottling, damp, stiff, slightly plastic, CLAY, SOME SILT.
8		2.2	SS2	31 11		CL	
10		2.4	SS3	21 24 4 8 12 10		SW CL SW CL	Brown, saturated, loose, MEDIUM AND FINE SAND.
12		1.7	SS4	8 7 11 12		SW CL	Brown, damp, stiff, slightly plastic, CLAY, SOME SILT.
14						SW	Brown, saturated, loose, MEDIUM AND FINE SAND.
16							Gray, damp, moderately stiff, CLAY, SOME SILT.
18		1.7	SS5	8 21 14 9		SW CL SP	Gray, very moist, moderately stiff, plastic, CLAY, TRACE SILT.
20							Gray, saturated, loose, MEDIUM AND COARSE SAND, SOME FINE GRAVEL.
22		2.0	SS6	3 6 7 10		SW	As above, no gravel.
24							
26							End of Boring = 26 feet

Drilling Log

Monitoring Well **MW-5**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Peckard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 14.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 12.0 ft. Static _____
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 8.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Meihls Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By J. Alfonsi License No. _____

*See Site Map
For Boring Location*

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECIMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
-2						
0				Asp Top		Asphalt surface.
2				SC		Organic top soil. Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8						
10		NA	SS1	CL		Grayish brown, moist, moderately stiff, slightly plastic, CLAY, SOME SILT.
12		NA	SS2	SW		Brown, saturated, loose, MEDIUM and FINE SAND.
14				CL		Grayish brown, moist, moderately stiff, slightly plastic CLAY, SOME SILT. End of exploration = 14.0 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well **MW-6**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 11.0 ft. Static _____
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 7.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Meihls Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0					Top	Grass and organic top soil.
2					SC	Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8						
10		88	SSI		CL	Brown, damp, stiff, slightly plastic, CLAY, SOME SILT.
12					SW	Brown, wet to saturated, loose, MEDIUM AND FINE SAND.
					CL	Brown, damp, stiff, slightly plastic, CLAY, SOME SILT.
14						End of exploration = 13 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well **MW-7**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 12.5 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 7.0 ft. Static _____
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 6.5 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Meihls Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
-2						
0				Top		Grass and organic top soil.
2				SC		Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8		NA	SS1	SW	▽	Brown, saturated, loose, MEDIUM AND COURSE SAND.
10				CL		Brown, damp, stiff, slightly plastic, CLAY, SOME SILT.
12		NA	SS2	CL		Brown, moist, stiff, slightly plastic, CLAY, SOME SILT.
14						End of exploration = 12.5 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well **MW-8**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Peckard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.5 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial _____ Static ft. 3 ft.
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 8.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Meihls Log By Chris Salvador Date 5/7/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECIMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0				Tps		Grass and organic top soil.
2				SC		Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6		1.8	SS1			Brown, damp, stiff, CLAY AND SILT.
8		30.9	SS2			As above, some gray mottling.
10		12.7	SS3			As above, CLAY, SOME SILT, slightly plastic.
12		4.8	SS4			As above.
12				SW		Gray, saturated, loose, FINE and MEDIUM SAND.
14				CL		Gray, moist, moderately stiff, plastic, CLAY.
14						End of exploration = 13.5 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well **MW-9**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial _____ Static 11.0 ft.
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 7.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Meihls Log By Chris Salvador Date 5/7/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0				Asp Top		Asphalt surface.
0						Organic top soil.
2					SC	Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8						
10		2.8	SSI		CL	Gray, damp, moderately stiff, plastic, CLAY.
10					SW	Brown, wet to saturated, loose, FINE and MEDIUM SAND.
12					CL	Gray, damp, moderately stiff, plastic, CLAY.
14						End of exploration = 13.0 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well **MW-10**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Peckard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial _____ Static 10.0 ft.
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 7.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Meihls Log By Chris Salvador Date 5/7/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0				Asp Tps		Asphalt surface.
2				SC		Organic top soil. Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8						
10		85	SSI	SW		Brown, saturated, loose, MEDIUM and FINE SAND.
12				SC		Brown, saturated to wet, moderately stiff, SAND AND CLAY.
14						End of exploration = 13.0 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well **MW-11**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 11.2 ft. Static _____
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 7.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Meihls Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

x - Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECIMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0					Top	Grass and organic top soil.
2					SC	Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8						
10		NA	SSI		CL	Brown, moist, stiff, plastic, CLAY, SOME SILT.
12					SW	Brown, saturated, loose, MEDIUM AND FINE SAND.
					CL	Brown, moist, stiff, slightly plastic, CLAY, SOME SILT.
14						End of exploration = 13 feet.
16						
18						
20						
22						
24						

Drilling Log


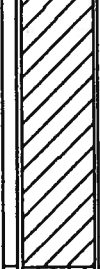

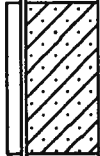
Monitoring Well MW-12

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 1969 Michigan Ave. Clinton, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 12.0 ft. Diameter 2.25 in.
 Top of Casing _____ Water Level Initial _____ Static _____
 Screen: Dia 1.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.010 in.
 Casing: Dia 1.0 in. Length 5.0 ft. Type Sch 40 PVC
 Fill Material #10 Filter Sand Rig/Core Geoprobe
 Drill Co. Fibertec Environmental Method Geoprobe
 Driller John Zimmer Log By Chris Salvador Date 7/18/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

Box Column - Samples collected for lithology descriptions.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0			SS1		Tps	Grass and top soil surface.
0					CL	Brown, damp, loose to cohesive, SAND AND SILT. Brown, damp, plastic, CLAY AND SILT.
2						
4			SS2		ML	Brown, damp, very stiff, little plastic, SILT, SOME CLAY.
6						
8						
10			SS3		SC	Gray, damp to moist, stiff, slightly plastic, SILT AND CLAY, SOME SAND
12						End of exploration = 12.0 feet.
14						

Drilling Log

Monitoring Well **MW-13**

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 12.0 ft. Diameter 2.25 in.
 Top of Casing _____ Water Level Initial _____ Static _____
 Screen: Dia 1.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.010 in.
 Casing: Dia 1.0 in. Length 6.0 ft. Type Sch 40 PVC
 Fill Material #10 Filter Sand Rig/Core Geoprobe
 Drill Co. Fibertec Environmental Method Geoprobe
 Driller John Zimmer Log By Chris Salvador Date 7/18/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

Box Column = Samples collected for lithology descriptions.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0			SS1		Tps	Grass and top soil surface.
2						Brown with some gray mottling, damp, stiff, not plastic, SILT, SOME CLAY.
4			SS2		ML	As above, (little plastic).
6						As above.
8			SS3			As above.
10			SS4		SW	Brown, wet, loose, fine and medium SAND.
					ML	Brown with some gray mottling, moist, moderately stiff, little plastic, SILT, SOME CLAY.
						As above, (wet, SOME SAND).
12						End of exploration = 12.0 feet.
14						

Drilling Log

Monitoring Well **MW-14**

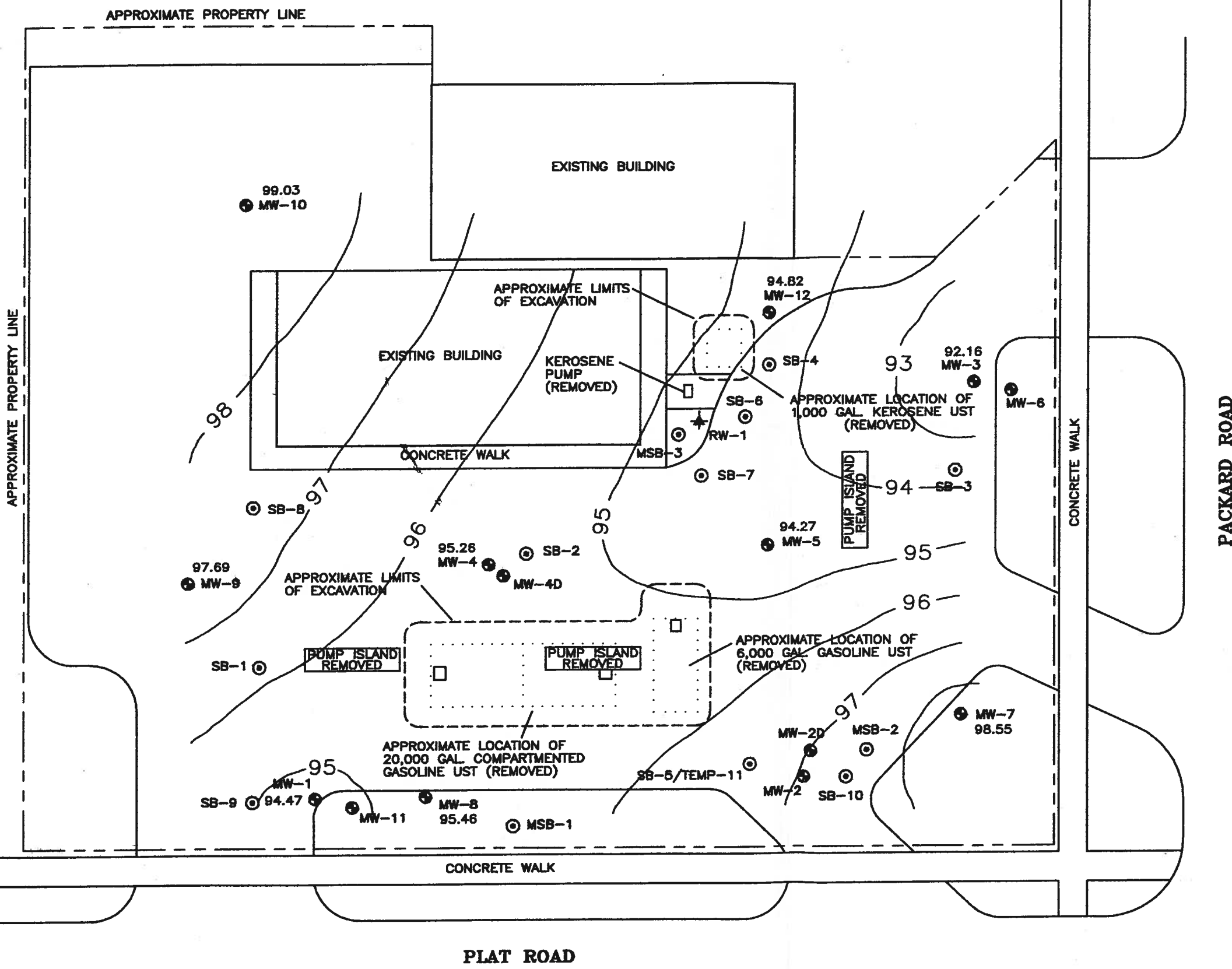
Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 12.0 ft. Diameter 2.25 in.
 Top of Casing _____ Water Level Initial _____ Static _____
 Screen: Dia 1.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.010 in.
 Casing: Dia 1.0 in. Length 6.0 ft. Type Sch 40 PVC
 Fill Material #10 Filter Sand Rig/Core Geoprobe
 Drill Co. Fibertec Environmental Method Geoprobe
 Driller John Zimmer Log By Chris Salvador Date 7/18/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

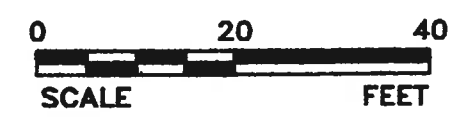
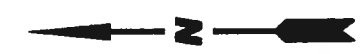
COMMENTS:
Box Column - Samples collected for lithology descriptions.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0	A		SS1	Tps		Grass and top soil surface.
2						Brown, damp, cohesive, moderately stiff, slightly plastic, SILT, SOME CLAY.
4			SS2			As above.
6					ML	
8			SS3			As above.
10			SS4			As above.
12						End of exploration = 12.0 feet.
14						


ATTACHMENT - 11



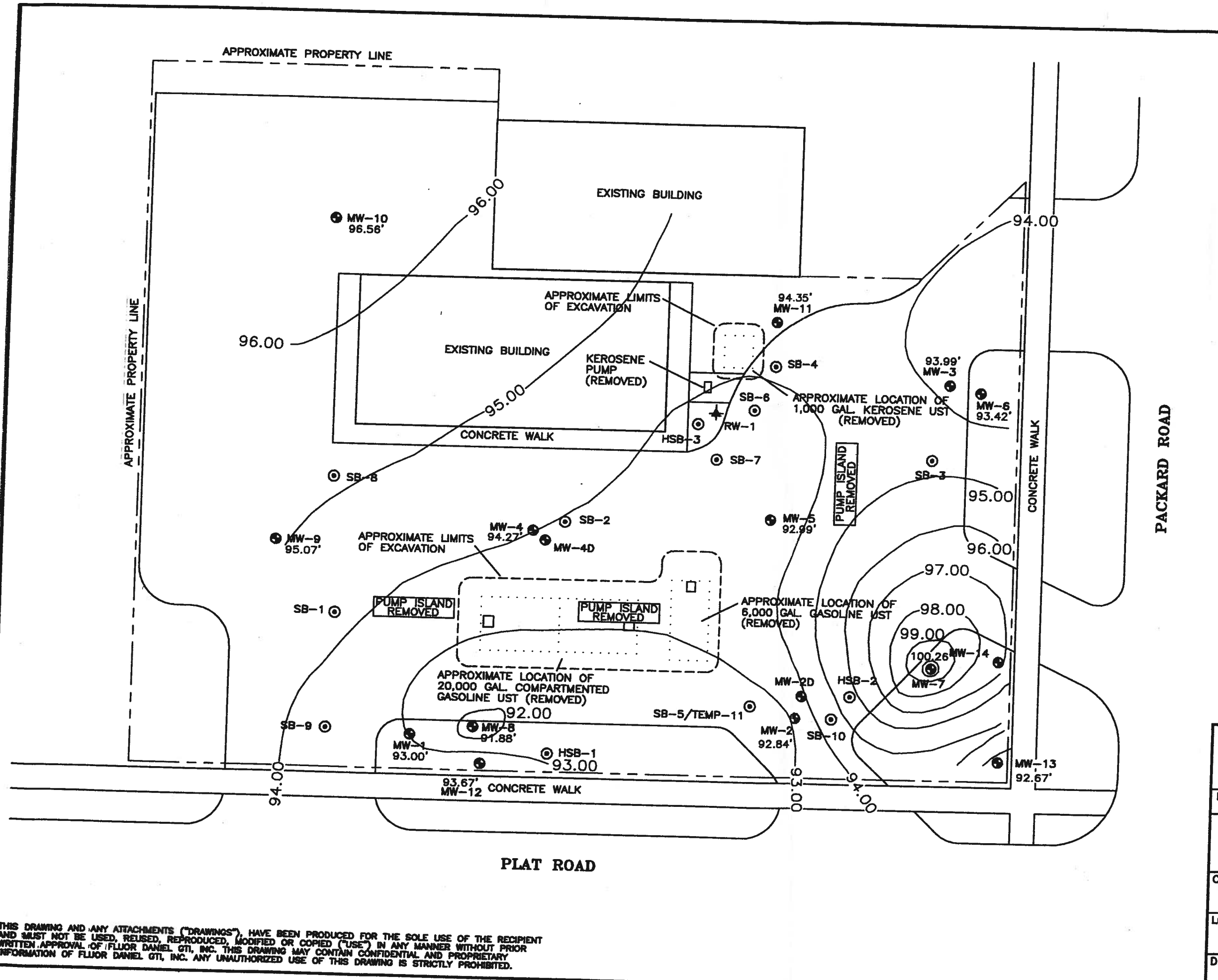
- LEGEND**
- MONITORING WELL
 - ⊙ SOIL BORING
 - ★ FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)



SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

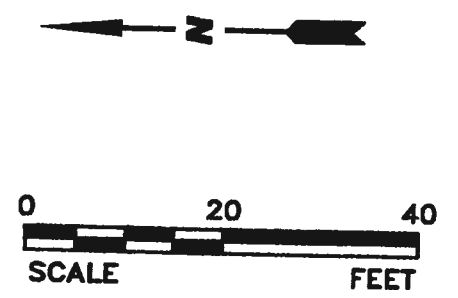
 FLUOR DANIEL GTI		23937 RESEARCH DRIVE FARMINGTON HILLS, MI 48335 (810) 473-0720	
		REV. NO.:	DRAWING DATE: 5/16/97
GRADIENT MAPS MAY 5, 1997			
CLIENT:		PM:	
BUDDY'S PACKARD SUNOCO		JMA	
LOCATION:		PE:	
3005 PACKARD ANN ARBOR, MICHIGAN			
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	JKK/TK	01001-1247	

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LEGEND

- MONITORING WELL
- ⊙ SOIL BORING
- ✦ FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)
- ~ GROUNDWATER CONTOUR LINE
- 92.67' GROUNDWATER ELEVATION INTERVAL = 1.0 Feet



SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

 FLUOR DANIEL GTI		23837 RESEARCH DRIVE FARMINGTON HILLS, MI 48335 (248) 473-0720	
		REV. NO.:	DRAWING DATE: 8/12/97
GRADIENT MAP JULY 18, 1997			
CLIENT:		BUDDY'S PACKARD SUNOCO	
LOCATION:		3005 PACKARD ANN ARBOR, MICHIGAN	
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	JKK/TK	01001-1247	

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ATTACHMENT - 14

FINAL ASSESSMENT REPORT - ATTACHMENT #14

BUDDY'S PACKARD SUNOCO #28
 3005 PACKARD & PLAT
 ANN ARBOR, MICHIGAN

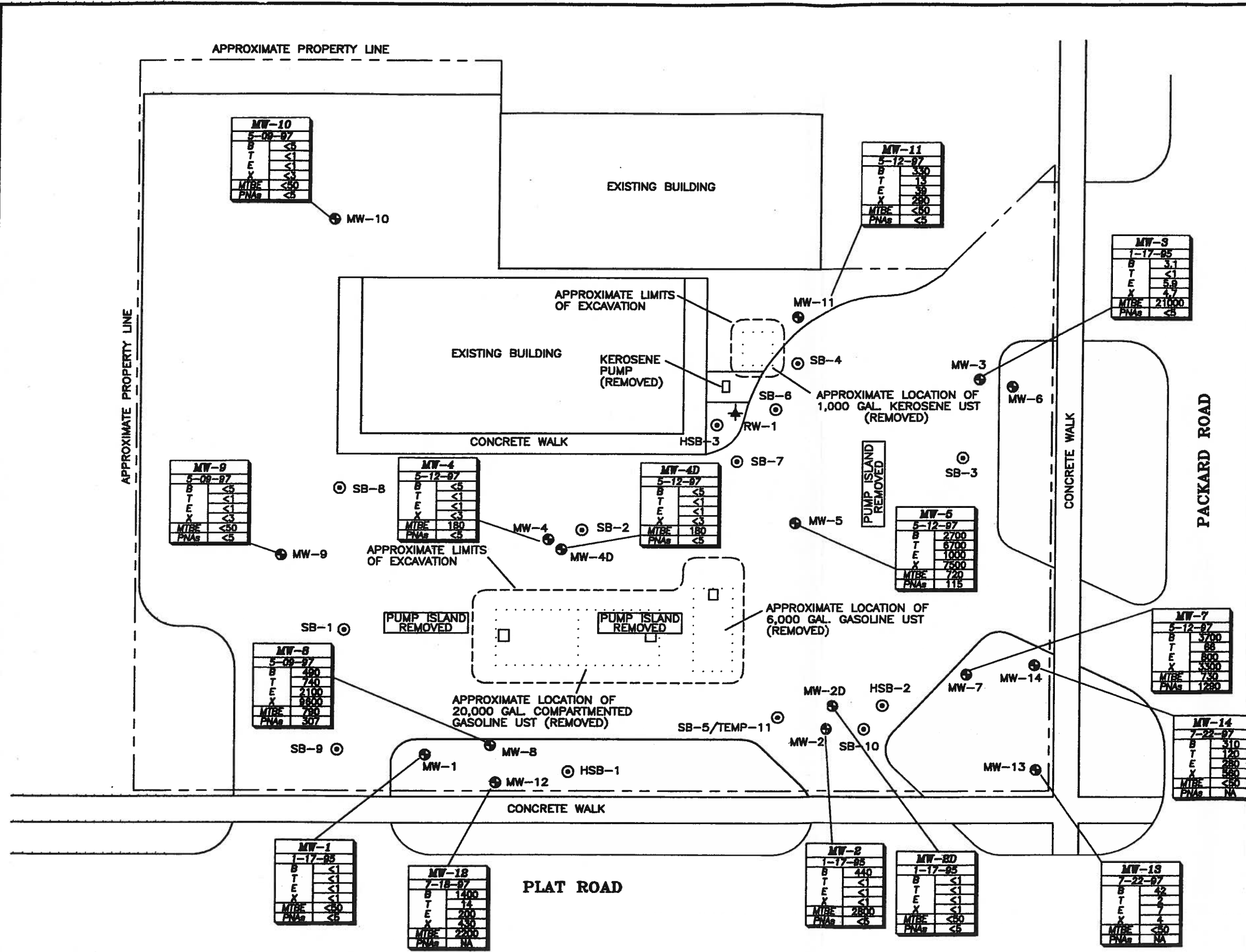
BTEX/MTBE CONCENTRATIONS IN GROUNDWATER (ugl)

Well I.D.	Sample Date	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Lead	PNAS	Comments
SB-5 TMW-1	11/04/94	26000	910	600	2200	9300	NA	20.8	Naphthalene - 15, Acenaphthylene - 5.8
MW-1	01/17/95	<1	<1	<1	<1	<50	<3	<5	
MW-2	01/17/95	440	<1	<1	<1	2800	<3	<5	
MW-2D	01/17/95	<1	<1	<1	<1	<50	<3	<5	
MW-3	01/17/95	3.1	<1	5.9	4.7	21000	<3	<5	
MW-4	05/12/97	<5	<1	<1	<3	180	NA	<5	
MW-4D	05/12/97	<5	<1	<1	<3	180	NA	<5	
MW-5	05/12/97	2700	6700	1000	7500	720	NA	115	Naphthalene - 83, 2-Methylnaphthalene - 32
MW-7	05/12/97	3700	66	800	3300	730	NA	1290	Naphthalene - 670, 2-Methylnaphthalene - 620
MW-8	05/09/97	490	740	2100	9600	790	NA	307	Naphthalene - 250, 2-Methylnaphthalene - 57
MW-9	05/09/97	<5	<1	<1	<3	<50	NA	<5	
MW-10	05/09/97	<5	<1	<1	<3	<50	NA	<5	
MW-11	05/12/97	330	13	39	290	<50	NA	<5	
MW-12	07/18/97	1400	14	200	430	2200	NA	NA	
MW-13	07/22/97	42	2	7	4	<50	NA	NA	
MW-14	07/22/97	310	120	280	560	<50	NA	NA	

NA - Not Analyzed

ATTACHMENT - 15

ATTACHMENT - 16



LEGEND

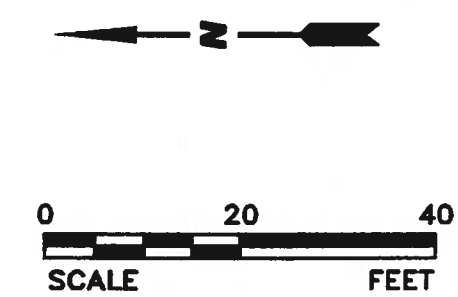
- ⊕ MONITORING WELL
- ⊙ SOIL BORING
- ★ FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)

MW-1 (1-17-85)

B	<1
T	<1
E	<1
X	<1
MTBE	<50
PNA's	<5

Well Identification
Sample Date
Benzene
Toluene
Ethylbenzene
Xylenes
Methyl Tert-Butyl Ether
Methyl Tert-Butyl Ether

All Concentrations in ug/L (ppb)
NA - NOT ANALYZED



SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

FLUOR DANIEL QTI

23937 RESEARCH DRIVE
FARMINGTON HILLS, MI 48335
(248) 473-0720

REV. NO.:	DRAWING DATE: 8/12/97	ACAD FILE: BUD-DBMP
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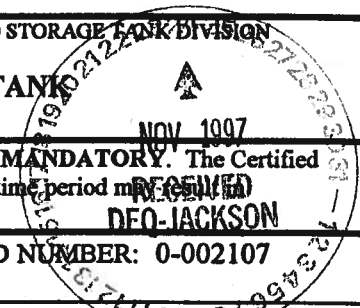
DISSOLVED BTEX/MTBE/PNA'S MAP

CLIENT: BUDDY'S PACKARD SUNOCO	PM: JMA
LOCATION: 3005 PACKARD ANN ARBOR, MICHIGAN	PE:
DESIGNED: JKK/TK	PROJECT NO.:
DETAILED:	01001-1247
FIGURE:	

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LEAKING UNDERGROUND STORAGE TANK CLOSURE REPORT



INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY. The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit this report within the stated time period may result in Administrative Penalties as provided for in Part 213, Section 21313a of Act 451, P.A. 1994 as amended.

FACILITY NAME: Buddy's Sunoco #28 FACILITY ID NUMBER: 0-002107
ADDRESS: 3005 Packard CITY: Ann Arbor ZIP: 48108 COUNTY: Washtenaw CONFIRMED RELEASE NUMBER(S): Not Known
O/O NAME: Pipeline Oil Sales, Inc. DATE(S) RELEASE DISCOVERED: 9/19/94
O/O ADDRESS: 744 E. South Street, Jackson STATE: MI ZIP: 49203
CONTACT PERSON: Jeffery Hanson PHONE NUMBER: (517) 782-0467

ANSWER ALL QUESTIONS, (DO NOT LEAVE BLANKS):

- 1. a. Has the UST been emptied? X Yes No (If no, explain why):
b. Has the UST system been properly closed? X Yes No (If no, explain why):
2. Free product present: a. Currently? YES X NO If YES, total gallons recovered since last report:
b. Previously? X YES NO If YES, total gallons recovered to date: 5.25
3. Have vapors been identified in any confined spaces (basement, sewers, etc.)? YES X NO
4. State the number of homes where drinking water is or was affected as a result of a release from this facility: None
5. Estimated distance and direction from point of release to nearest:
a. Private well: 1 mile to NE b. Municipal well: >1 Mile a. Surface water/wetland: Swift Drain located 1100 feet to southeast
6. Since last report: a. cubic yards of soil remediated: 0 b. gallons of groundwater remediated: 0
7. Totals to date: a. cubic yards of soil remediated: 870 b. gallons of groundwater remediated: 0
8. Michigan RBCA Site Classification (1-4): 4 Previous RBCA Site Classification (1-4): 4
9. Has contamination migrated off-site above Tier 1 Residential RBSLs YES X NO
If YES, have off-site impacted parties been notified YES X NO (per Section 21309a(3) of Part 213)
10. Is an institutional control required for contamination that has migrated or will migrate off-site? Yes X No

CERTIFICATION OF REPORT COMPLETION

I, the undersigned CP, hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate and complete. I certify that it was submitted to the USTD on November 14, 1997.

Signature: L.N. Sastry Date: 11/14/97 James M. Alfonsi PRINT QC Project Manager's Name
L.N. Sastry, CPG PRINT CP's Name Fluor Daniel GTI, Inc. CONSULTANT
23937 Research Drive, Farmington Hills, Michigan 48335 ADDRESS (248) 473-0720 TELEPHONE NO. (248) 473-0892 FAX NO.

CERTIFICATION OF CLOSURE

- 1. Type of RBCA Evaluation: X Tier 1 Tier 2 Tier 3
2. Closure report based on which type of land use?: X Residential Commercial III Commercial IV Industrial
3. Institutional Controls: None Notice of Corrective Action Restrictive Covenant Other

I certify under penalty of law that corrective actions associated with the above referenced release at this facility were completed in accordance with Part 213, Act 451, P.A. 1994 as amended, and current departmental guidance and procedures available at the time the work was completed.

I further certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature: L.N. Sastry Date: 11/14/97
CP Signature - (REQUIRED) Date

PLEASE RETURN THIS COMPLETED REPORT AND ASSOCIATED ATTACHMENTS TO THE APPROPRIATE USTD DISTRICT OFFICE, LISTED ON THE BACK OF THIS PAGE.

C-960-94 1 m45FA 6190 1143055

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
CLOSURE REPORT (Continued)

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UNDERGROUND STORAGE TANK DIVISION OFFICES AND LOCATIONS

Determine in which county/city the UST is located. Return all completed forms and associated reports to the USDID office listed next to that county/city in the following table. Addresses for the USDID offices are listed below.

COUNTY	USTD OFFICE	COUNTY	USTD OFFICE	COUNTY	USTD OFFICE	COUNTY	USTD OFFICE
Alcona	Gaylord	Dickinson	Marquette	Lake	Cadillac	Oceana	Grand Rapids
Alger	Marquette	Eaton	Shiawassee	Lapeer	Shiawassee	Ogemaw	Gaylord
Allegan	Plainwell	Emmet	Gaylord	Leelanau	Cadillac	Oshtemo	Marquette
Alpena	Gaylord	Genesee	Shiawassee	Lenawee	Jackson	Oscoda	Cadillac
Antrim	Gaylord	Gladwin	Gaylord	Livingston	Shiawassee	Tacoma	Gaylord
Arenac	Gaylord	Gogebic	Marquette	Luce	Marquette	Otsego	Gaylord
Baraga	Marquette	Grand Traverse	Cadillac	Mackinac	Marquette	Otsego	Grand Rapids
Barry	Plainwell	Gratiot	Shiawassee	Macomb	SE Michigan	Presque Isle	Gaylord
Bay	Saginaw-Bay	Hillsdale	Jackson	Manistee	Cadillac	Robinson	Gaylord
Benzie	Cadillac	Houghton	Marquette	Marquette	Marquette	Saginaw	Saginaw-Bay
Berrien	Plainwell	Huron	Saginaw-Bay	Mason	Cadillac	Saginaw	Saginaw-Bay
Branch	Jackson	Ingham	Shiawassee	Mecosta	Grand Rapids	Schoolcraft	Marquette
Calhoun	Jackson	Ionia	Grand Rapids	Merominee	Marquette	Shiawassee	Shiawassee
Cass	Plainwell	Iosco	Gaylord	Midland	Saginaw-Bay	St Clair	SE Michigan
Charlevoix	Gaylord	Iron	Marquette	Missaukee	Cadillac	St Joseph	Plainwell
Cheboygan	Gaylord	Isabella	Saginaw-Bay	Monroe	SE Michigan	Tuscola	Saginaw-Bay
Chippewa	Marquette	Jackson	Jackson	Montcalm	Grand Rapids	Van Buren	Plainwell
Clare	Gaylord	Kalamazoo	Plainwell	Montmorency	Gaylord	Washtenaw	Jackson
Clinton	Shiawassee	Kalkaska	Cadillac	Muskegon	Grand Rapids	Wayne	SE Michigan
Crawford	Gaylord	Kent	Grand Rapids	Newaygo	Grand Rapids	Wexford	Cadillac
Delta	Marquette	Keweenaw	Marquette	Oakland	SE Michigan		
CITY	USTD OFFICE	CITY	USTD OFFICE	CITY	USTD OFFICE		
Detroit	Detroit	Highland Park	Detroit	Hemlock	Detroit		

<p><u>CADILLAC OFFICE</u> 120 W CHAPIN ST CADILLAC MI 49601-2158 616-775-3960 (PHONE) 616-775-1511 (FAX)</p>	<p><u>DETROIT OFFICE</u> 300 RIVERPLACE, SUITE 3600 DETROIT MI 48207 313-392-6480 (PHONE) 313-392-6488 (FAX)</p>	<p><u>PLAINWELL OFFICE</u> 1342 SR-89 WEST, SUITE B PLAINWELL MI 49080-1915 616-692-2120 (PHONE) 616-692-3050 (FAX)</p>
<p><u>GAYLORD OFFICE</u> 1732 W M-32, PO BOX 667 GAYLORD MI 49735-0667 517-731-4920 (PHONE) 517-731-6181 (FAX)</p>	<p><u>JACKSON OFFICE</u> 301 E LOUIS GLICK HIGHWAY JACKSON MI 49201-1556 517-780-7690 (PHONE) 517-780-7855 (FAX)</p>	<p><u>SAGINAW-BAY OFFICE</u> 503 N EUCLID AVE SUITE 1 BAY CITY MI 48706-2965 517-686-8025 (PHONE) 517-684-9799 (FAX)</p>
<p><u>GRAND RAPIDS OFFICE</u> 350 OTTAWA ST NW 6TH FLOOR GRAND RAPIDS MI 49503-2341 616-456-5071 (PHONE) 616-456-1239 (FAX)</p>	<p><u>MARQUETTE OFFICE</u> 1990 US 41 SOUTH MARQUETTE MI 49855-9198 906-228-6561 (PHONE) 906-228-5245 (FAX)</p>	<p><u>SHIAWASSEE OFFICE</u> 10650 BENNETT DR MORRICE MI 48857-9792 517-625-5515 (PHONE) 517-625-5000 (FAX)</p>

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
 CLOSURE REPORT (Continued)

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<u>SE MICHIGAN OFFICE</u> 38980 SEVEN MILE RD LIVONIA MI 48152-1008 313-953-8905 (PHONE) 313-432-1295 (FAX)	<u>HEADQUARTERS</u> 333 S CAPITOL AVE PO BOX 30157 LANSING MI 48909-7657 517-373-8168 (PHONE) 517-335-2245 (FAX)
--	---

Instructions - Utilize the following checklist to ensure that all required information is provided in the Closure Report. Include this checklist as the table of contents. The order in which the information is provided is at your discretion. Each page of the report (including the cover sheet, table of contents, appendices, figures, etc.) should be consecutively numbered. The location column should be completed with the appropriate page number for each item. You may reference previously submitted materials by specifying the location within that document. Maps, tables, figures, etc. should be combined as appropriate.

All information required by Part 213 to be included in the Closure Report must be provided, and all sections of the report must be completed. If any items are not applicable to the site, provide a justification regarding the absence of this information in the appropriate section of the report.

If an Initial Assessment Report (IAR) and/or a Final Assessment Report (FAR) have not been submitted for this release, provide all required information from the IAR and/or FAR not included below.

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1.0 PROJECT CHRONOLOGY

A. Provide the date and time the confirmed release(s) was/were discovered and reported. 1

B. Provide the IAR submittal date. 1

C. Provide the FAR submittal date. 2

D. Provide dates for any other submittals. 1, 2

2.0 SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED

2.1 IMMEDIATE RESPONSE ACTION IMPLEMENTATION

If an IAR has not been previously submitted, provide all information requested in Section 1.0 of the IAR 1, 2, 3

2.2 FREE PRODUCT DISCOVERY AND REMOVAL

If free product has not been discovered, then proceed to Section 2.3.

A. Describe initial response actions performed at this site to address the presence of free product as specified in Sections 21307(2)(c) and (f), and (3)(b) and (c), 21308a(1)(b)(xviii). Refer to the USTD Operational Memorandum No. 7, *Identification, Reporting, and Recovery of Free Product at LUST Sites*. 3

B. Attach a final USTD Free Product Recovery Status Report (EQP 3850) if not 3

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previously submitted. 3

2.3 SITE ASSESSMENT ACTIVITIES

A. If an IAR has not been previously submitted, provide all information requested in Section 3.0 of the IAR. 3, 4

B. If a FAR has not been previously submitted, provide all information requested in Section 2.0 of the FAR. 3, 4

2.4 SITE CLASSIFICATION

A. Indicate the current Site Classification Level, in accordance with USTD Operational Memorandum No. 5, *Leaking Underground Storage Tank (LUST) Site Classification System*, (Attachment 10 of the RBCA Guidance Document). 4

B. Provide a justification for this classification. Identify the current conditions that are the basis of the classification. 4

C. Indicate whether the site classification has changed since the submission of the last report. 4

2.5 TIERED EVALUATIONS AND CLEANUP GOALS

A. Indicate whether a site-specific Tier II or Tier III evaluation has been conducted for this site. 5

B. If applicable, identify and justify where alternate assumptions or site-specific information were used in place of the default assumptions as defined in the USTD Operational Memorandum No. 4, *Tier 1 Lookup Tables for Risk-Based Corrective Action at Leaking Underground Storage Tank (LUST) Sites*, (Attachment No. 11 of the RBCA Guidance Document). 5

NOTE: If a Tier II evaluation was performed and described in the IAR or the FAR, explicitly indicate where different assumptions or site-specific information were used in this Tier II or Tier III evaluation and why the change was justified.

C. Provide the calculations and reference citations supporting the development of the relevant Tier II or Tier III SSTLs. 5

D. Provide a table which compares the maximum remaining contaminant concentrations for each required parameter for all media to the appropriate RBSLs (as provided in the USTD Operational Memorandum No. 4), and/or the calculated SSTLs. Identify all applicable land use scenario(s). 5

2.6 MODELING

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Provide all modeling documentation. Refer to the USTD Operational Memorandum No. 10 *Presentation of Tier 2 and 3 Groundwater Modeling Evaluations*. 5

2.7 NOTICES AND RESTRICTIONS

If the closure does not require the use of institutional controls to restrict land or resource use, then proceed to Section 2.8.

NOTE: Draft copies of all Restrictive Covenants and Notices of Corrective Action for off-site institutional controls must be submitted to the USTD for approval prior to filing. Refer to Operational Memorandum No. 12, *Institutional Controls and Public Notice Requirements and Procedures*, (Attachment 20 of the RBCA Guidance Document).

A. Submit copies of all notices or restrictions which have been filed, and provide proof of filing these notices or restrictions. If the person filing is not the property owner, attach a copy of the written permission for the filing from the property owner. 5

B. Identify the individuals or segments of the public which have been provided with notice of the proposed land use restrictions or limitations to be placed on resource use. Include the names and addresses of the affected parties (unless large segments of the public will be provided notice, e.g., users of a municipal water supply system). Include proof that notice was provided to the affected parties. 5

C. Provide a map depicting the location(s) of the individuals or segments of the noticed public. 5

D. Describe any alternate mechanism utilized to restrict exposure to regulated substances as defined in Section 324.21310a(3), and justify how this mechanism reliably restricts exposure to the regulated substances. 5

2.8 PERMITS

List all discharge permits and/or permit exemptions that were required for the corrective action, and include the type of permit, permit number, application date, approval date and termination date. 5

2.9 CORRECTIVE ACTION PLAN

A. Summarize the corrective action activities that resulted in release closure. Include the operating history of any active treatment systems. 5

B. Summarize the types of monitoring activities performed, including the media and parameters monitored. 5

C. Attach performance monitoring data. 5

D. Describe and justify changes to the previously submitted Corrective Action Plan. 5

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- | | |
|---|---|
| <p>E. Provide the total volume of soil remediated, and include disposal location and proof of disposal (e.g., invoices, not load tickets) for all soils excavated subsequent to submittal of the last report, if appropriate.</p> | <p style="text-align: center;"><u>5</u></p> |
| <p>F. Provide the total volume of groundwater actively remediated to date, and include disposal documentation, if appropriate.</p> | <p style="text-align: center;"><u>5</u></p> |

3.0 CLOSURE VERIFICATION SAMPLING

3.1 SOIL CLOSURE VERIFICATION

NOTE: Verification sampling must be conducted whenever contaminated soils are identified but not remediated, including when contaminated soil is returned to an excavation after the removal of a UST.

- | | |
|--|---|
| <p>A. Describe the soil verification sampling strategy applied at the site by providing the following:</p> | |
| <p>1. A scaled site map which identifies the former extent of the soil contamination, and the soil verification sampling locations relative to existing site features. <i>(Multiple chemical contaminants and multiple sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility)</i></p> | <p style="text-align: center;"><u>5</u></p> |
| <p>2. For a corrective action involving excavation, a scaled drawing(s) showing the floor and walls of the excavation and the associated sampling locations. The drawing should also depict the subsurface stratigraphy, soil types, fractures, discolored soil locations, adjoining conduits or potential migration pathways, and locations of former and existing UST system components, as appropriate</p> | <p style="text-align: center;"><u>5</u></p> |
| <p>3. A description of how the number and location of samples collected for soil verification purposes was established. If your sampling strategy differs from the MDEQ guidance document <i>Verification of Soil Remediation Guidance Document</i> (Attachment No. 25 of the RBCA Guidance Document) and USTD Operational Memorandum No. 9, <i>Groundwater and Soil Closure Verification Guidance</i> (Attachment No. 26 of the RBCA Guidance Document) provide justification</p> | <p style="text-align: center;"><u>5</u></p> |
| <p>4. A list of the analytical parameters used to verify the soil remediation</p> | <p style="text-align: center;"><u>5</u></p> |
| <p>5. A justification if all soil verification samples were not analyzed, preserved, and handled in accordance with the USTD guidance document entitled <i>Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases</i> (Attachment No. 12 of the RBCA Guidance Document)</p> | <p style="text-align: center;"><u>5</u></p> |
| <p>B. Provide a table with laboratory data showing the results of all verification soil sampling performed to date for the required parameters. Refer to Attachment 12 of the RBCA Guidance Document. The table should include the following:</p> | |
| <p>1. Sample ID</p> | |
| <p>2. Sample depth</p> | |
| <p>3. Date of collection</p> | |
| <p>4. Dates of extraction and analysis</p> | <p style="text-align: center;"><u>5</u></p> |

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- 5. Method Detection Limits
- 6. Analytical method

(NOTE: The USTD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)

- C. Provide copies of all soil boring logs not previously submitted. 5

3.2 GROUNDWATER CLOSURE VERIFICATION

- A. Describe the groundwater verification sampling strategy applied at the site by providing the following:
 - 1. A scaled site map which identifies the former extent of groundwater contamination, the groundwater verification sampling locations relative to existing site features, and the groundwater flow direction(s). *(Multiple chemical contaminants and multiple aquifer/sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility)* 5, 6
 - 2. A description of how the sampling frequency and duration of sampling for groundwater verification purposes was established. If your sampling strategy differs from the USTD Operational Memorandum No. 9, (Attachment No. 26 of the RBCA Guidance Document) provide a justification 6
 - 3. A list of the analytical parameters used to verify groundwater closure 6
 - 4. A justification if all groundwater verification samples were not analyzed, preserved, and handled in accordance with Attachment No. 12 of the RBCA Guidance Document 6

- B. Provide a table with laboratory data showing the results of all verification groundwater sampling performed to date for the required parameters. Refer to Attachment 12 of the RBCA Guidance Document. The table should include the following: Tables
 - 1. Sample ID
 - 2. Sampling depth or screened interval
 - 3. Date of collection
 - 4. Dates of extraction and analysis
 - 5. Method Detection Limits
 - 6. Analytical method

(NOTE: The USTD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)

- C. Attach copies of the following:
 - 1. Boring logs not previously submitted Appendix
 - 2. Well construction diagrams not previously submitted Appendix
 - 3. Potentiometric surface maps for each groundwater verification sampling event Figures
 - 4. Elevation data (USGS datum preferred), including top-of-casing and grade elevations, and depth to groundwater for each groundwater verification sampling event. Figures

Section	Table of Contents	Page
---------	-------------------	------

3.3 CLOSURE VERIFICATION FOR OTHER MEDIA

- | | |
|--|----------|
| A. Describe the verification sampling strategy for other media applied at the site. | <u>6</u> |
| B. Provide a scaled site map which identifies the verification sampling locations relative to existing site features and boundaries, if appropriate. | <u>6</u> |
| C. Provide a table with the laboratory data showing the results of all verification sampling performed to date in the other specified environmental media. | <u>6</u> |

(NOTE: The USTD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)



FLUOR DANIEL GTI

November 7, 1997

Mr. Terry Hiske
Environmental Quality Analyst
Underground Storage Tank Division
Michigan Department of Environmental Quality
Jackson District Office
301 E. Louis Glick Hwy.
Jackson, MI 49201-1556

**RE: Closure Report for Buddy's Packard Sunoco
3005 Packard, Ann Arbor, Michigan**

Dear Mr. Hiske:

Fluor Daniel GTI, Inc. (Fluor Daniel GTI) prepared this report on behalf of Pipeline Oil Sales, Inc. (Pipeline). This report provides closure documentation as required by Part 213 of Michigan Public Act 451, as amended. The closure report was prepared following the Michigan Department of Environmental Quality (MDEQ) October 1995 "Guidance Document for Risk Based Corrective Action at LUST Sites" and as outlined by the MDEQ checklist. The following attachments have been included in this report:

Figures

Figure 1 Adsorbed BTEX /MTBE/PNAs Concentration Map
Figure 2 Dissolved BTEX Concentration Map
Figure 3 Cross Section A-A'
Figure 4 May 5, 1997 Gradient Map
Figure 5 July 18, 1997 Gradient Map

Tables

Table 1 Historical BTEX/MTBE/Lead/ PNAs in Soil
Table 2 Historical BTEX/MTBE/Lead/ PNAs in Groundwater

Appendix

Appendix A Boring Logs

1.0 PROJECT CHRONOLOGY

Initial Abatement Activities (September 29, 1994)

As requested by Pipeline, Envirologic Technologies, Inc. (Envirologic) conducted a subsurface investigation to gather data for an underground storage tank (UST) removal and upgrade project and during the investigation discovered a release of hydrocarbons to the subsurface. The release was confirmed on September 19, 1994 based on laboratory reports of soil samples collected during the subsurface investigation indicating the presence of hydrocarbons.

As requested by Pipeline, Envirologic conducted initial abatement activities by conducting tank testing of four underground storage tanks (USTs). The 12,500, 7,500, 60,016 gallon unleaded gasoline USTs and the 1,020 gallon kerosene UST passed tank and line testing. The results of the testing was submitted to the MDEQ in the Initial Abatement Report on September 29, 1994.

60 Day Initial Assessment Report (November 4, 1994)

On November 10, 1994 a 60 Day Initial Assessment report was submitted to the MDEQ including the analytical results of soil and groundwater sampling conducted during the drilling of ten soil borings. The

Mr. Terry Hlske
Michigan Department of Environmental Quality

RE: Closure Report for Buddy's Packard Sunoco, 3005 Packard, Ann Arbor, Michigan

investigation indicated that kerosene was discovered on the water table when soil borings SB-6 and SB-7 were advanced. On November 4, 1994 Envirollogic submitted a free product fax transmittal sheet to the MDEQ while 60 Day Initial Assessment activities were occurring.

Between November 16-18, 1997 the existing four tank UST system was removed and a new UST system installed. A total of 870 cubic yards of hydrocarbon impacted soil was excavated and disposed prior to installation of the new UST system. During the new UST system installation activities a recovery well was installed between soil borings SB-6 and SB-7 and recovery of kerosene free product began using a bailer. A free product recovery report was filed with the MDEQ on November 21, 1997 indicating that 0.125 gallons of free product had been recovered.

Phase I Hydrogeologic Study Report (February 8, 1995)

On February 8, 1995 Envirollogic, on behalf of Pipeline, submitted a Phase I Hydrogeologic Study Report to the MDEQ outlining investigation activities that occurred in January 1995. The investigation included the advancement of five soil borings, the installation of four monitoring wells, and the collection and laboratory analysis of soil and groundwater samples. Three monitoring wells were set at depth of 15 feet below grade and one monitoring well was set at 30 feet below grade.

Results of the investigation indicated that the geology of the property consisted of four distinct units consisting of an upper fill unit, a fractured gray clay unit, an inter bedded clay and fine sand unit, and a lower gravel unit. The depth to water at the property was between 6 and 8 feet below grade. The groundwater gradient at the site was toward the north-northeast. Results of the investigation indicated that selected benzene, toluene, ethyl benzene, and xylenes (BTEX) were above Michigan Environmental Response Act (MERA) Type B Cleanup Criteria. Polynuclear aromatic hydrocarbons (PNAs) and methyl tert butyl ether (MTBE) were detected in soil samples at concentrations below MERA Type B Cleanup Criteria. Total lead was detected in soil samples collected from all borings at concentrations below MERA Default Type A Cleanup Criteria. Laboratory results for groundwater samples indicated that BTEX and MTBE concentrations exceeded MERA Type B Cleanup Criteria. PNAs and dissolved lead were below method detection limits for the groundwater samples. The recommendation of the Phase I Hydrogeologic Study Report was to conduct additional investigation to define the extent of BTEX and MTBE in groundwater. The MDEQ conducted an audit of the Phase I Hydrogeologic Study Report on February 15, 1997 and found the report to be adequate.

Phase II Hydrogeologic Study Work Plan (April 7, 1995)

Envirollogic, on behalf of Pipeline, submitted a Phase II Hydrogeologic Study Work Plan on April 7, 1995 proposing the advancement of 11 soil borings and the installation of eight monitoring wells for the purpose of completing the horizontal and vertical delineation of the kerosene release. The work plan also proposed the collection and laboratory analysis of soil and groundwater samples for BTEX, PNAs, and lead. The report cover sheet indicated that a total of 5.25 gallons of free product had been recovered as of April 7, 1995. The MDEQ conducted an audit of the Phase II Hydrogeologic Study Work Plan on April 14, 1997 and found the work plan to be acceptable.

Final Assessment Report (August 28, 1997)

Fluor Daniel GTI, Inc. (Fluor Daniel GTI), on behalf of Pipeline, submitted a Final Assessment Report (FAR) dated August 28, 1997 to the MDEQ. The FAR included the results of additional subsurface investigation which included the advancement of 13 soil borings, installation of 13 monitoring wells, and the collection and laboratory analysis of groundwater samples to complete the vertical and horizontal extent of BTEX and MTBE in groundwater.

Results of the investigation indicated that the subsurface soils consisted of the following:

- Clay from 6 inches below grade (BG) to 8 feet BG;
- Interbedded sand and clays from 8 feet to 15 feet BG;



Mr. Terry Hiske
Michigan Department of Environmental Quality

RE: Closure Report for Buddy's Packard Sunoco, 3005 Packard, Ann Arbor, Michigan

- Clay from 15 feet to 18 feet below grade above; and,
- Sand and gravel from 18 feet to 30 feet BG.

Water was encountered 6-8 feet BG perched on top of the clay layer 15-18 feet below grade.

Laboratory results for groundwater samples indicated that BTEX, MTBE and PNA concentrations were below Michigan Tier I generic utility worker groundwater contact criteria (GCC). Free product was not detected in any of the site wells.

The lateral groundwater flow appeared to vary across the property; however, on May 5, 1997 groundwater appeared to flow toward the south west and on July 18, 1997 toward the west. Water mounding was evident in the southwest corner of the site due the possible effects of surface water recharge from an adjacent grass covered area. Based on the apparent groundwater flow to the west and south west, the UST Closure Report for a former Shell Service Station located directly across Platt Road, west of the subject site, at 2995 Packard was obtained from the MDEQ and was reviewed under the Freedom of Information Act. The closure report was reviewed to determine if BTEX and MTBE in groundwater migrated from the subject property to the former Shell Service Station Property. The closure report indicated that soil samples collected from borings adjacent to Platt Road were not impacted with BTEX and MTBE. The final assessment investigation activities resulted in completion of the vertical and horizontal delineation of BTEX and MTBE in groundwater.

2.0 SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED

2.1 IMMEDIATE RESPONSE ACTION IMPLEMENTATION

Immediate response actions were conducted by Envirollogic and detailed in the *September 29, 1994 Initial Abatement Activities Report* and the *November 4, 1994 60 Day Initial Assessment Report*.

2.2 FREE PRODUCT DISCOVERY AND REMOVAL

A total of 5.25 gallons of kerosene was recovered from a recovery well recovery well installed adjacent to the former kerosene UST. Free product was not detected during the final assessment or subsequent groundwater sampling event.

2.3 SITE ASSESSMENT ACTIVITIES

Initial Assessment

On November 10, 1994 a *60 Day Initial Assessment Report* was submitted to the MDEQ including the analytical results of soil and groundwater sampling conducted during the drilling of ten soil borings.

Delineation of Contamination

Fluor Daniel GTI submitted a FAR dated August 28, 1997 to the MDEQ. The FAR included the results of additional subsurface investigation which included the advancement of 13 soil borings, installation of 13 monitoring wells, and the collection and laboratory analysis of soil and groundwater samples. The final assessment investigation activities resulted in completion of the vertical and horizontal delineation of BTEX and MTBE in groundwater.

Soil Conditions and Characteristics

Subsurface investigations indicated the following lithology:



Mr. Terry Hiske
Michigan Department of Environmental Quality

RE: Closure Report for Buddy's Packard Sunoco, 3005 Packard, Ann Arbor, Michigan

- Clay from 6 inches below grade (BG) to 8 feet BG;
- Interbedded sand and clays from 8 feet to 15 feet BG;
- Clay from 15 feet to 18 feet below grade above; and,
- Sand and gravel from 18 feet to 30 feet BG.

Water was encountered 6-8 feet BG on top of the clay layer 15-18 feet below grade.

Approximately 870 cubic yards of soil generated from UST system removal has been disposed from the site to date. No other active soil remediation has been initiated at the site. None of the impacted soil remaining at the site exceeds Tier I direct contact cleanup criteria.

Please refer to Figure 1 - Adsorbed BTEX /MTBE/PNAs Concentration Map, Figure 3 - Cross Section A-A', Table 1 - Historical BTEX/MTBE/Lead/ PNAs in Soil, and Appendix A - Boring Logs.

Groundwater Conditions and Characteristics

A continuous water bearing zone was encountered across the site approximately 6-8 feet below grade perched on top of clay layer located 15 to 18 feet BG. Dissolved BTEX and MTBE concentrations are below Tier I GCC.

Groundwater encountered at the site is not part of an aquifer based on the subsurface soils indicating that the groundwater is perched on a clay layer. Private and municipal water wells are more than one mile from the site. Contact with the City of Ann Arbor Building Department indicates there are no known crock wells in the area of the site and water supply wells are not allowed to be installed within the city limits. Contact with the Michigan Department of Environmental Quality Drinking Water and radiological Protection Division indicates the area of the site is not within a well head protection area. Larry Sander of the Ann Arbor Water Treatment Plant (313) 971-4542 indicated that Ann Arbor's water supply is taken from the Huron River, one well south of the city airport and one well on Montgomery Street. All drinking water sources for the City of Ann Arbor are located more than one mile from the site.

The lateral groundwater flow appeared to vary across the property; however, on May 5, 1997 groundwater appeared to flow toward the south west and on July 18, 1997 toward the west. Water mounding was evident in the southwest corner of the site due the effects of surface water recharge from an adjacent grass covered area.

Please refer to Figure 2 - Dissolved BTEX Concentration Map, Figure 4 - May 5, 1997 Gradient Map, and Figure 5 - July 18, 1997 Gradient Map.

2.4 SITE CLASSIFICATION

Based on the data collected to date, the current site classification has been determined to be *Class 4 - No demonstrable long-term threat to human health, safety, or sensitive environmental receptors*. This classification has not changed since the last report.

This classification is justified by the following current conditions:

- Health-based criteria are not applicable since the groundwater does not qualify as a relevant pathway.
- Adsorbed phase hydrocarbon concentrations are below Tier I Residential Direct Contact Criteria.
- Dissolved phase hydrocarbon concentrations are below groundwater contact criteria.



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Michigan Department of Environmental Quality

RE: Closure Report for Buddy's Packard Sunoco, 3005 Packard, Ann Arbor, Michigan

- Volatilization of hydrocarbons into indoor air is not a relevant pathway based on the depth to groundwater being 6-8 feet below grade.

2.5 TIERED EVALUATIONS AND CLEANUPS

Based on adsorbed phase hydrocarbon concentrations below Tier I Residential Direct Contact and dissolved phased hydrocarbons concentrations below GCC, Tier II or Tier III evaluation were not necessary for regulatory closure.

2.6 MODELING

Based on Adsorbed phase hydrocarbon concentrations below Tier I Residential Direct Contact and dissolved phased hydrocarbons concentrations below GCC, modeling was not necessary for regulatory closure.

2.7 NOTICES AND RESTRICTIONS

Site closure does not require the use of institutional controls to restrict land or resource use.

2.8 PERMITS

Permits are not required for site closure.

2.9 CORRECTIVE ACTION PLAN

Implementation of a corrective action plan is not required for site closure. Based on a Tier I Evaluation, all soil and groundwater concentrations are below appropriate cleanup criteria. However, approximately 870 cubic yards of hydrocarbon impacted soil was removed and disposed of at the BFI Arbor Hills Landfill during initial abatement activities.

3.0 CLOSURE VERIFICATION SAMPLING

3.1 SOIL CLOSURE VERIFICATION

Twenty seven soil samples were analyzed from the site as part of the initial assessment and subsequent investigations. None of the laboratory analytical results of the samples exceed the Tier I Residential Direct Contact Criteria.

The initial sampling event performed during the initial assessment by Envirologic included BTEX & MTBE (8020), PNA (8310), and lead (7421). Flour Daniel GTI's follow-up investigation included BTEX & MTBE (8020) and PNAs (8310).

Please refer to the following attachments for details of the soil concentrations:

Figure 1- Adsorbed BTEX /MTBE/PNAs Concentration Map

Table 1 - Historical BTEX/MTBE/Lead/ PNAs in Soil

3.2 GROUNDWATER CLOSURE VERIFICATION

The site's fourteen monitoring wells were sampled twice in 1997. None of the laboratory analytical results of the samples exceeded GCC.



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RE: Closure Report for Buddy's Packard Sunoco, 3005 Packard, Ann Arbor, Michigan

The initial sampling event performed during the real estate assessment by Envirollogic included BTEX & MTBE (8020) and PNA (8310). Fluor Daniel GTI's follow-up investigation included BTEX & MTBE (8020) and PNA (8310).

Please refer to the following attachments for details of the groundwater analytical data:

Figure 2 - Dissolved BTEX Concentration Map

Table 2 - Historical BTEX/MTBE/Lead/ PNAs in Groundwater

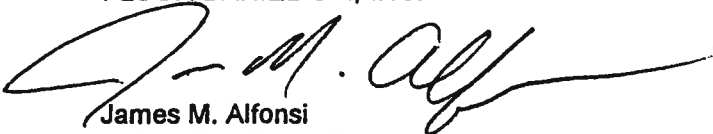
3.3 CLOSURE VERIFICATION FOR OTHER MEDIA

There was no evidence of contamination to other media.

Based on information provided in this and previous reports, Fluor Daniel GTI certifies that regulatory closure has been achieved as required under Part 213 of Public Act 451, as amended. If you have any questions or required further information, please contact our office at (248)473-0720.

Sincerely,

FLUOR DANIEL GTI, INC.



James M. Alfonsi
Project Manager
Geologist

cc: Jeffery Hanson - Pipeline Oil Sales, Inc.
Lakshmi Sastry - Fluor Daniel GTI, Inc.

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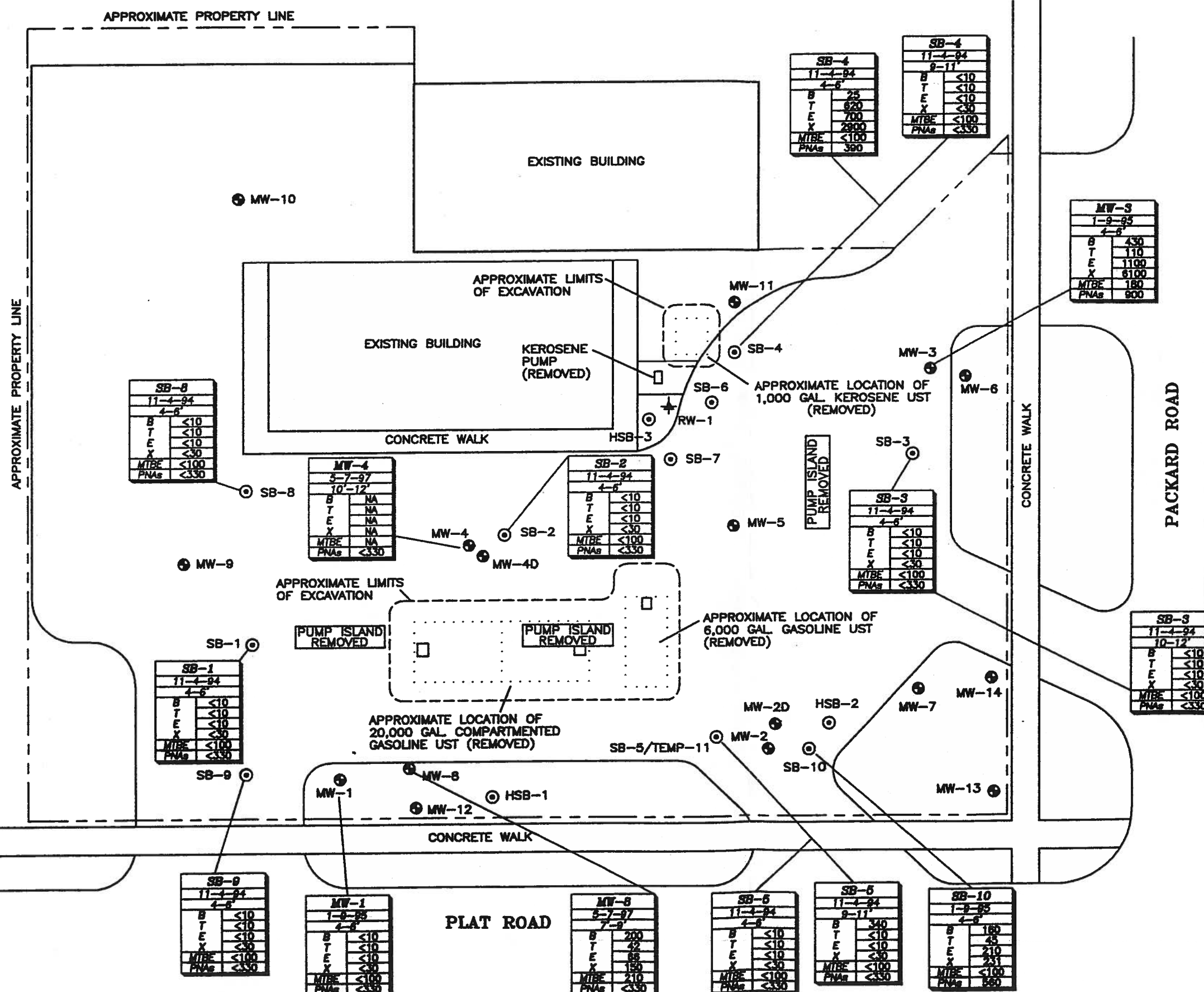


LEGEND

- ⊕ MONITORING WELL
- ⊙ SOIL BORING
- ★ FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)

SB-1		Well Identification
11-04-94	←	Sample Date
4-6'	←	Sample Depth
B	<10	Benzene
T	<10	Toluene
E	<10	Ethylbenzene
X	<30	Xylenes
MTBE	<100	Methyl Tert-Butyl Ether
PNA's	<330	Polynuclear Aromatic

All Concentrations in ug/kg (ppb)



SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

<p>FLUOR DANIEL GTI</p>		23937 RESEARCH DRIVE FARMINGTON HILLS, MI 48335 (248) 473-0720	
		REV. NO.:	DRAWING DATE:
	11/14/97	BUD-ABMP	
ABSORBED BTEX/MTBE/PNA'S MAP (1 OF 2)			
CLIENT:	BUDDY'S PACKARD SUNOCO		PM: JMA
LOCATION:	3005 PACKARD ANN ARBOR, MICHIGAN		PE:
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	JKK/TK	01001-1247	1

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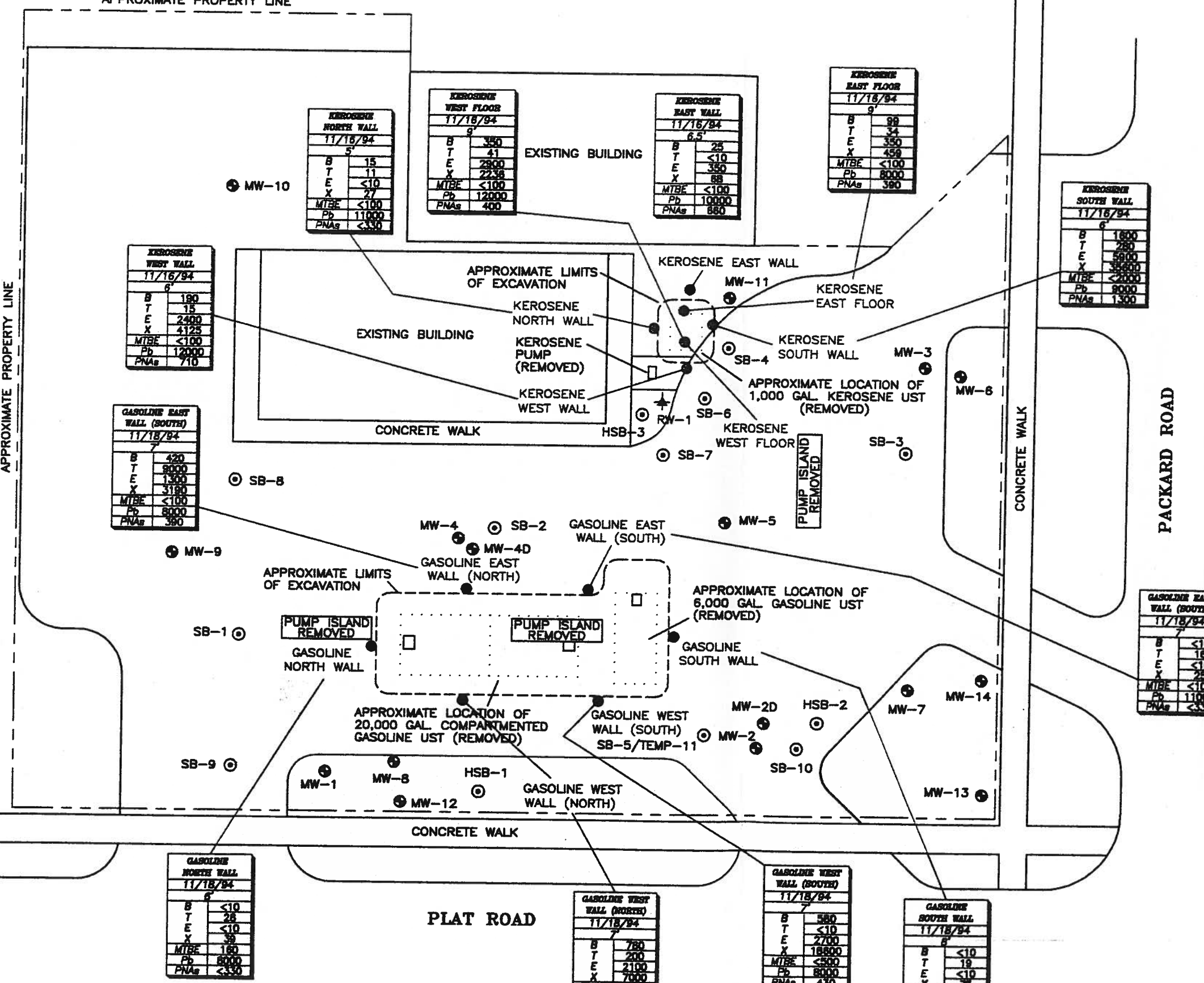
APPROXIMATE PROPERTY LINE

LEGEND

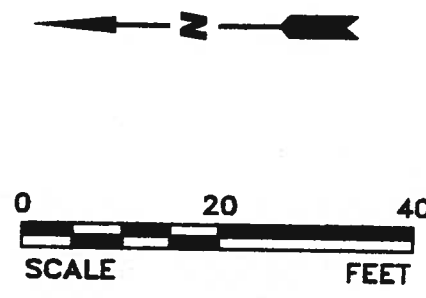
- ⊕ MONITORING WELL
- ⊙ SOIL BORING
- ⊕ FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)

KEROSENE NORTH WALL 11/18/94		Well Identification
B	15	Sample Date
T	11	Sample Depth
E	<10	Benzene
X	27	Toluene
MTBE	<100	Ethylbenzene
Pb	11000	Xylenes
PNA's	<330	Methyl Tert-Butyl Ether
		LEAD
		Polynuclear Aromatic

All Concentrations in ug/kg (ppb)



GASOLINE EAST WALL (SOUTH) 11/18/94	
B	<10
T	18
E	<10
X	25
MTBE	<100
Pb	11000
PNA's	<330



SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

FLUOR DANIEL GTI

23937 RESEARCH DRIVE
FARMINGTON HILLS, MI 48335
(248) 473-0720

REV. NO.:	DRAWING DATE: 11/14/97	ACAD FILE: BUD-ABMP1
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ABSORBED BTEX/MTBE/LEAD/PNA'S MAP 12 OF 21

CLIENT: BUDDY'S PACKARD SUNOCO	PM: JMA
LOCATION: 3005 PACKARD ANN ARBOR, MICHIGAN	PE: 1
DESIGNED: JKK/TK	PROJECT NO.: 01001-1247
DETAILED:	FIGURE:

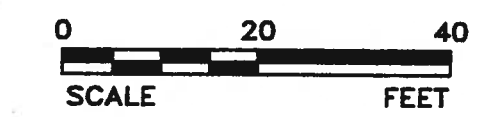
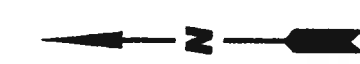
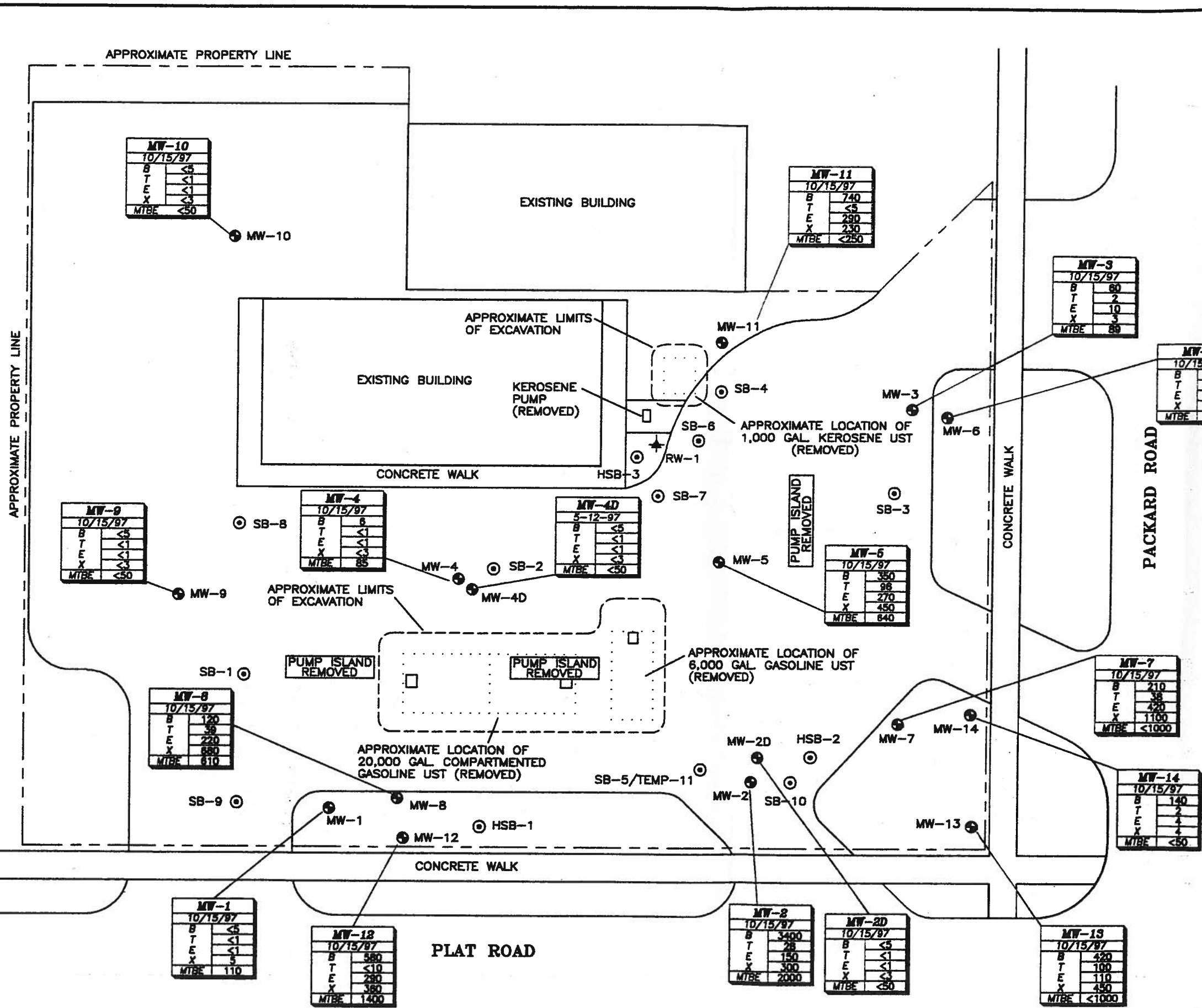
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LEGEND

- MONITORING WELL
- ⊙ SOIL BORING
- ★ FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)

MW-1		Well Identification
10/15/97		Sample Date
B	<5	Benzene
T	<1	Toluene
E	<1	Ethylbenzene
X	5	Xylenes
MTBE	110	Methyl Tert-Butyl Ether

All Concentrations in ug/L (ppb)
NA - NOT ANALYZED



SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

FLUOR DANIEL GTI

23937 RESEARCH DRIVE
FARMINGTON HILLS, MI 48335
(248) 473-0720

REV. NO.: DRAWING DATE: ACAD FILE:
11/11/97 BUD-DHC

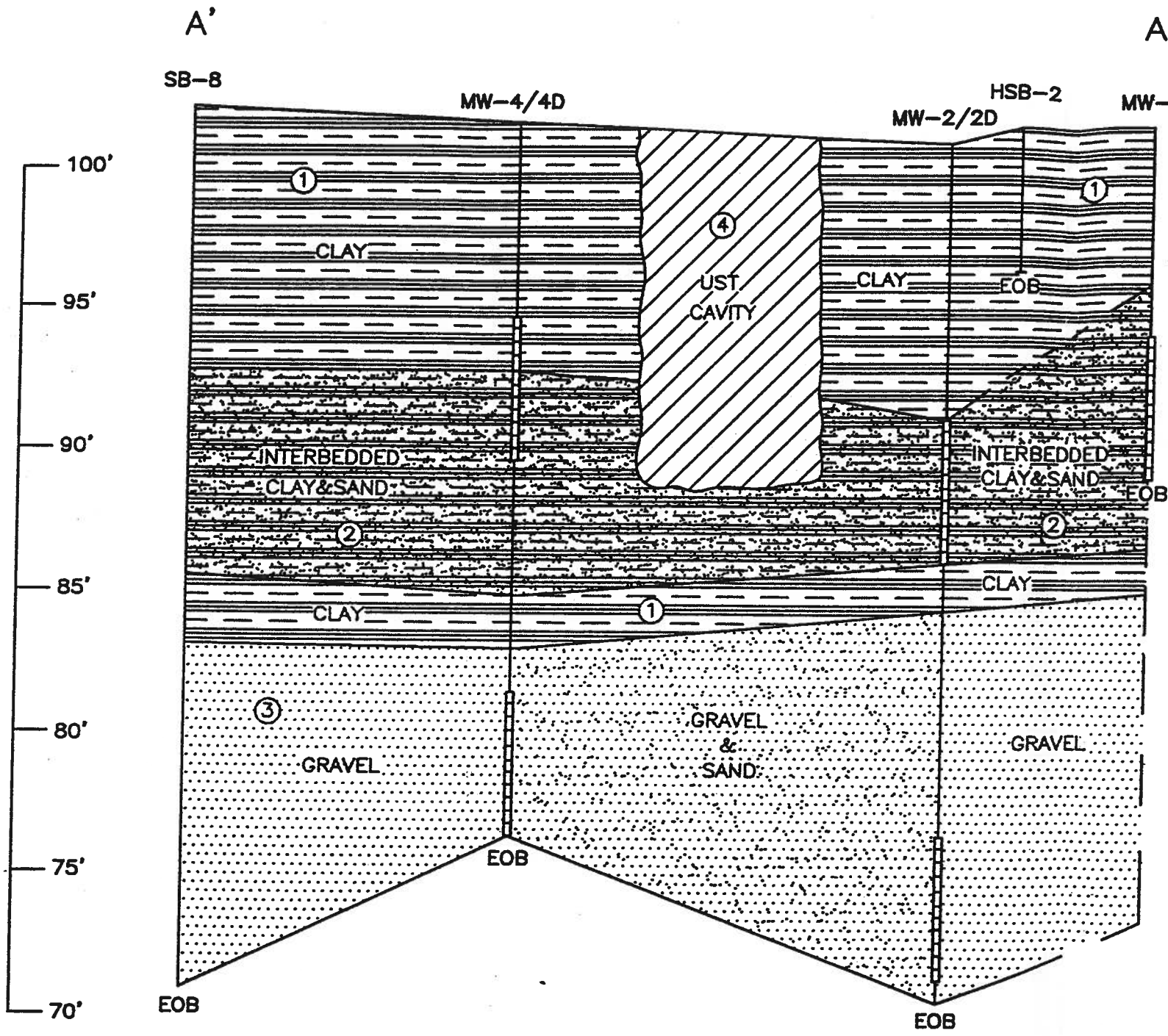
**DISSOLVED HYDROCARBON
BTEX/MTBE MAP**

CLIENT: BUDDY'S PACKARD SUNOCO PM: JMA






LOCATION: 3005 PACKARD ANN ARBOR, MICHIGAN PE:

DESIGNED: DETAILED: PROJECT NO.: FIGURE:
JKK/TK 01001-1247 2

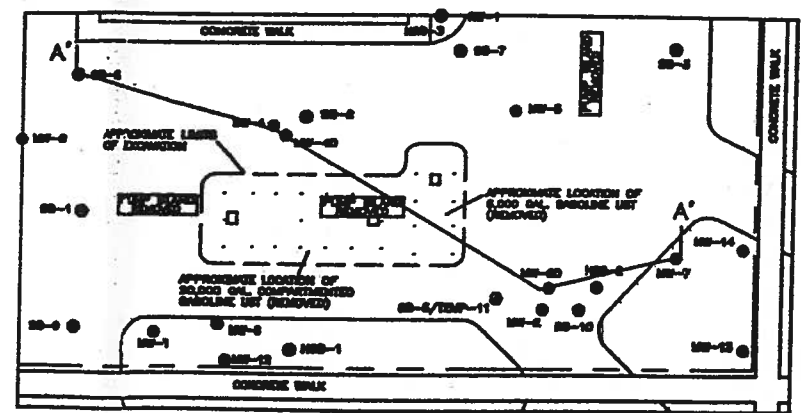
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LEGEND

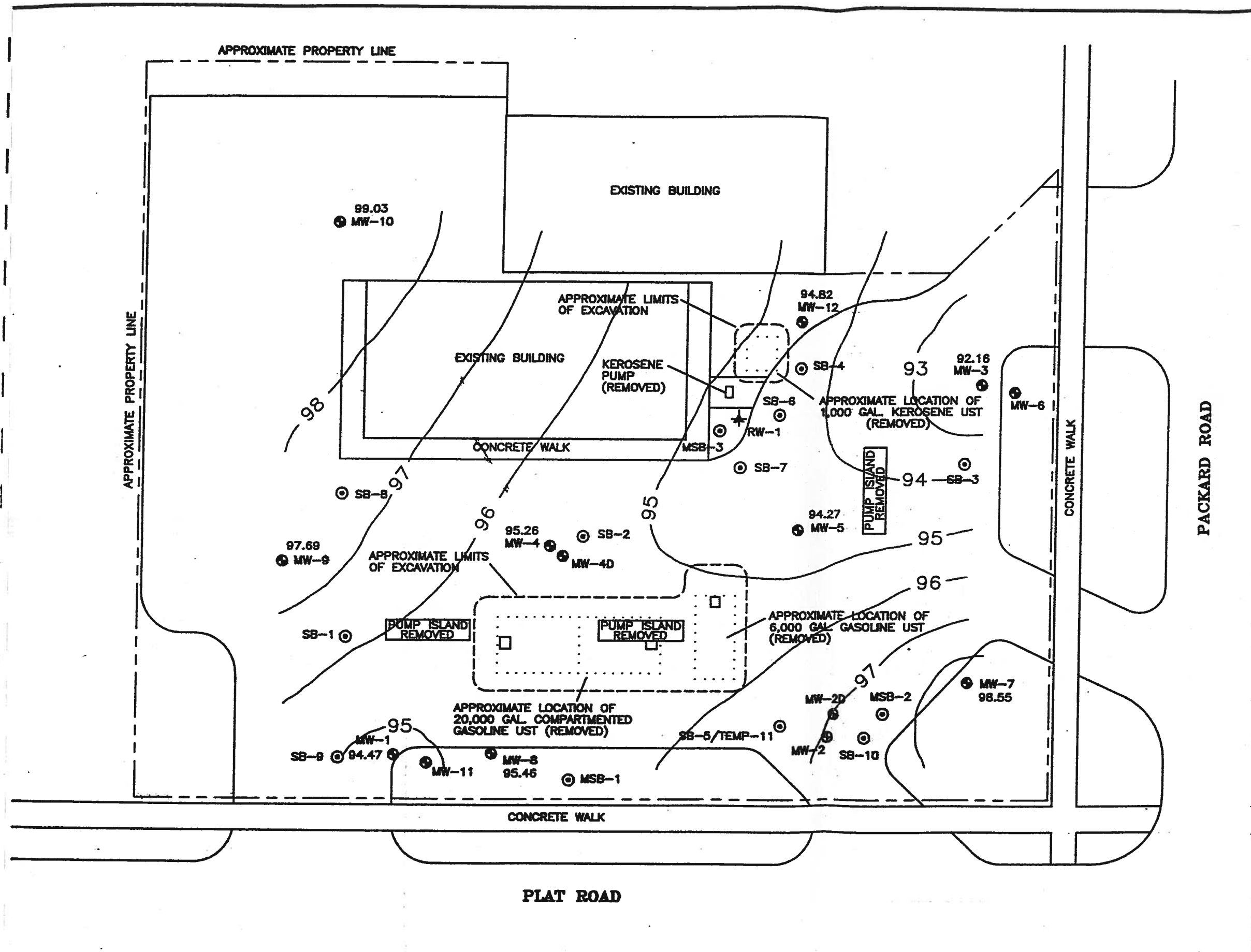
 - WELL SCREEN
 ① - CLAY
 ② - INTERBEDDED CLAY & SAND
 ③ - GRAVEL & SAND
 ④ - UST CAVITY, BACKFILL

NOTE: HORIZONTAL SCALE 1" = 20'
 VERTICAL SCALE 1" = 5'



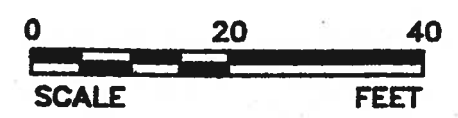
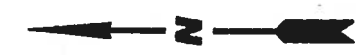
		23937 RESEARCH DRIVE FARMINGTON HILLS, MI 48335 (248) 473-0720	
REV. NO.:	DRAWING DATE: 8/12/97	ACAD FILE:	BUDA-A
CROSS SECTION A-A'			
CLIENT: BUDDY'S PACKARD SUNOCO		PM: JMA	
LOCATION: 3005 Packard Ann Arbor, Michigan		PE:	
DESIGNED:	TK	PROJECT NO.:	01001-1247
		FIGURE:	3

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LEGEND

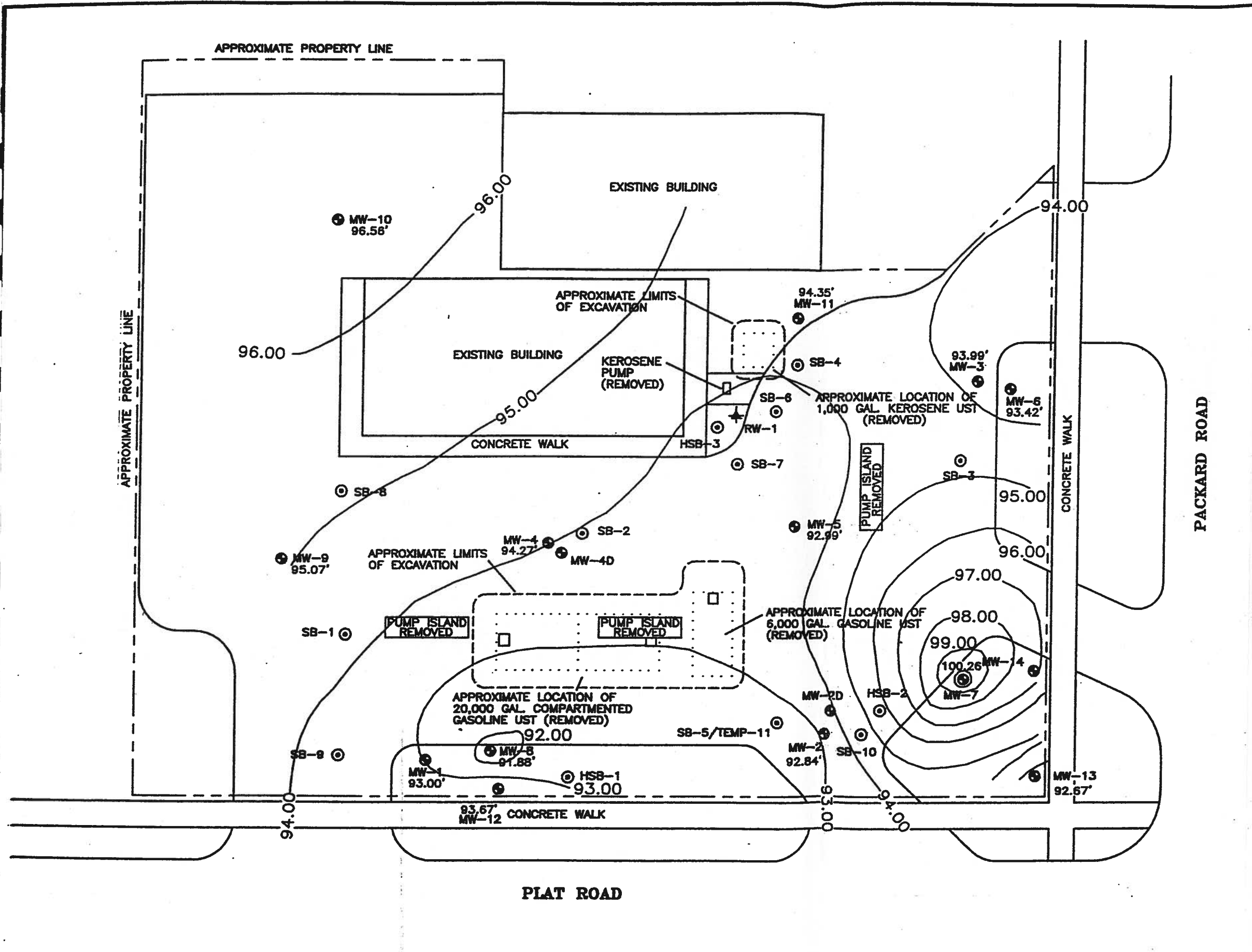
- ⊙ MONITORING WELL
- ⊙ SOIL BORING
- + FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)



SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

 FLUOR DANIEL GTI		23937 RESEARCH DRIVE FARMINGTON HILLS, MI 48335 (810) 473-0720	
		REV. NO.:	DRAWING DATE: 5/18/97
GRADIENT MAPS MAY 5, 1997			
CLIENT: BUDDY'S PACKARD SUNOCO			PM: JMA
LOCATION: 3005 PACKARD ANN ARBOR, MICHIGAN			PE:
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	JKK/TK	01001-1247	4

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LEGEND

- ⊕ MONITORING WELL
- ⊙ SOIL BORING
- + FREE PRODUCT MONITORING/RECOVERY WELL LOCATION (INSTALLED 11/18/94)
- ~ GROUNDWATER CONTOUR LINE
- 92.67' GROUNDWATER ELEVATION INTERVAL = 1.0 Feet

N

0 20 40
SCALE FEET

SOURCE: ENVIROLOGIC TECHNOLOGIES, INC.

FLUOR DANIEL GTI		23837 RESEARCH DRIVE FARMINGTON HILLS, MI 48335 (248) 473-0720	
REV. NO.:	DRAWING DATE:	ACAD FILE:	BUD-GM1
	8/12/97		
GRADIENT MAP			
JULY 18, 1997			
CLIENT:	BUDDY'S PACKARD SUNOCO		PM: JMA
LOCATION:	3005 PACKARD ANN ARBOR, MICHIGAN		PE:
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
	JKK/TK	01001-1247	5

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TABLE 1

HISTORICAL BTEX/MTBE/PNAs/LEAD CONCENTRATIONS IN SOIL (ug/kg)

BUDDY'S PACKARD SUNOCO #28
3005 PACKARD & PLAT
ANN ARBOR, MICHIGAN

Sample Location	Sample Depth	Sample Date	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Lead
Tier I Residential Direct Contact Criteria			88,000	620,000	380,000	40,000	3,600,000	400,000
SB-1	4-6'	11/04/94	<10	<10	<10	<30	<100	6400
SB-2	4-6'	11/04/94	<10	<10	<10	<30	<100	6300
SB-3	4-6'	11/04/94	<10	<10	<10	<30	<100	9200
SB-3	10-12'	11/04/94	<10	<10	<10	<30	<100	5100
SB-4	4-6'	11/04/94	25	620	700	2900	<100	12100
SB-4	9-11'	11/04/94	<10	<10	<10	<30	<100	3500
SB-5	4-6'	11/04/94	<10	<10	<10	<30	<100	4500
SB-5	9-11'	11/04/94	340	<10	<10	<30	<100	5300
SB-8	4-6'	11/04/94	<10	<10	<10	<30	<100	5500
SB-9	4-6'	11/04/94	<10	<10	<10	<30	<100	5700
MW-1	4-6'	01/09/95	<10	<10	<10	<30	<100	8000
SB-10	4-6'	01/09/95	160	45	210	231	<100	8000
MW-3	4-6'	01/09/95	430	110	1100	6100	180	12000
Kerosene East Wall	6.5'	11/16/94	25	<10	350	68	<100	10000
Kerosene North Wall	5'	11/16/94	15	11	<10	27	<100	11000
Kerosene West Wall	6'	11/16/94	190	15	2400	4125	<100	12000
Kerosene South Wall	6'	11/16/94	1600	280	5900	35600	<2000	9000
Kerosene East Floor	9'	11/16/94	99	34	350	459	<100	8000
Kerosene West Floor	9'	11/16/94	350	41	2900	2236	<100	12000
Gasoline South Wall	8'	11/18/94	<10	19	<10	75	<100	9000
Gasoline North Wall	6'	11/18/94	<10	28	<10	39	160	8000
Gasoline East Wall (North)	7'	11/18/94	420	9000	1300	3190	<100	8000
Gasoline East Wall (South)	7'	11/18/94	<10	16	<10	25	<100	11000
Gasoline West Wall (North)	7'	11/18/94	780	200	2100	7000	<100	8000
Gasoline West Wall (South)	7'	11/18/94	580	<10	2700	18600	<500	8000
MW-4	10' - 12'	05/07/97	NA	NA	NA	NA	NA	NA
MW-8	7' - 9'	05/07/97	200	42	66	150	210	NA

NA - Not Analyzed

TABLE 2

BTEX/MTBE/PNA_s/LEAD CONCENTRATIONS IN GROUNDWATER (ug/l)

BUDDY'S PACKARD SUNOCO #28
3005 PACKARD & PLAT
ANN ARBOR, MICHIGAN

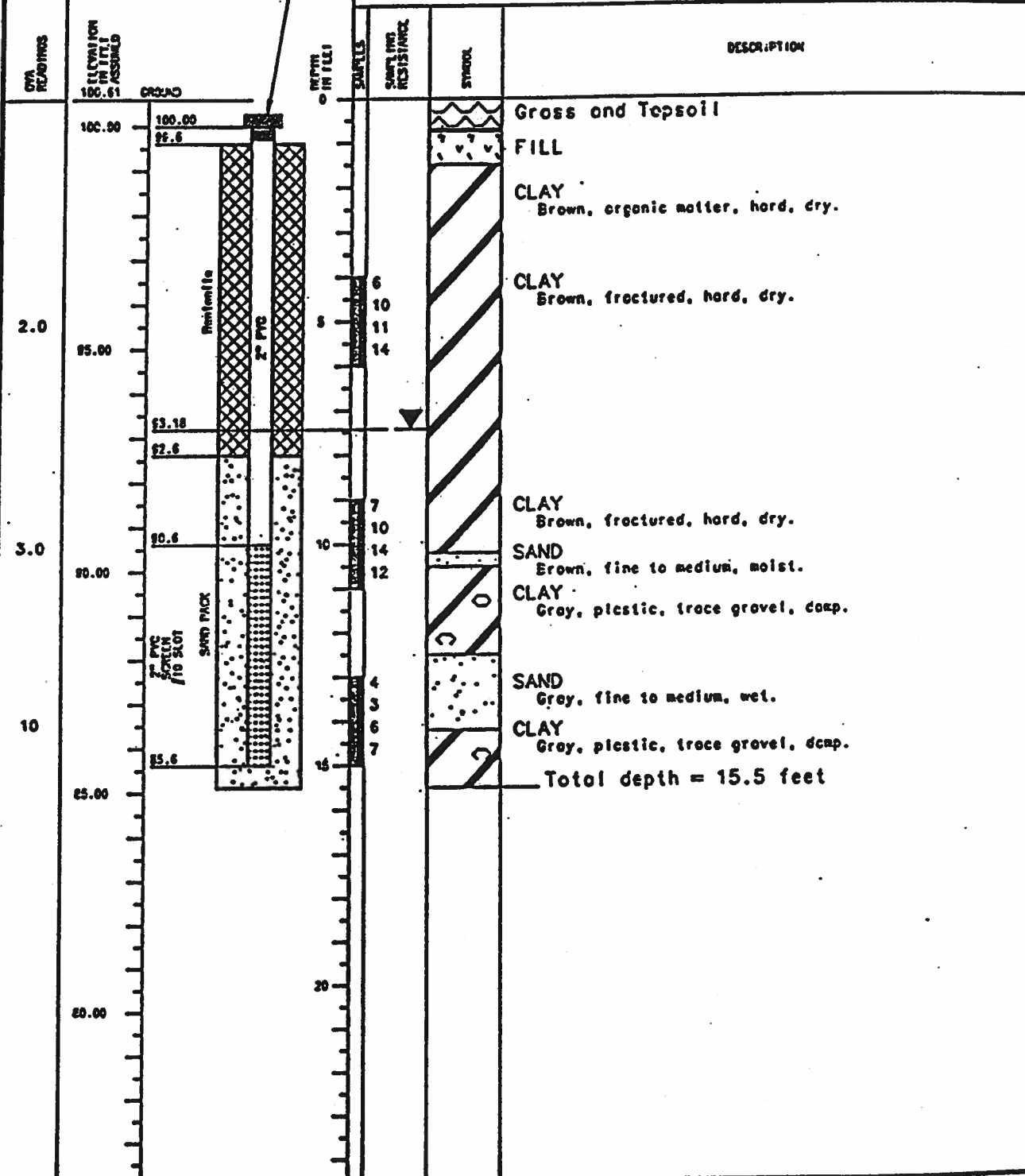
Well I.D.	Sample Date	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Lead	PNA _s	
Groundwater Utility Worker GCC		9,300	526,000	169,000	186,000	1,700,000	ID	NC	Naphthalene 3
SB-5 TMW-1	11/04/94	26,000	910	600	2,200	9,300	NA	21	Naphthalene -
MW-1	01/17/95	<1	<1	<1	<1	<50	<3	<5	
MW-1	10/15/97	<5	<1	<1	5	110	NA	NA	
MW-2	01/17/95	440	<1	<1	<1	2,800	<3	<5	
MW-2	10/15/97	3,400	28	150	300	2,000	NA	NA	
MW-2D	01/17/95	<1	<1	<1	<1	<50	<3	<5	
MW-2D	10/15/97	<5	<1	<1	<3	<50	NA	NA	
MW-3	01/17/95	3	<1	6	5	21,000	<3	<5	
MW-3	10/15/97	60	2	10	3	89	NA	NA	
MW-4	05/12/97	<5	<1	<1	<3	180	NA	<5	
MW-4	10/15/97	6	<1	<1	<3	85	NA	NA	
MW-4D	05/12/97	<5	<1	<1	<3	180	NA	<5	
MW-4D	10/15/97	<5	<1	<1	<3	<50			
MW-5	05/12/97	2,700	6,700	1,000	7,500	720	NA	115	Naphthalene -
MW-5	10/15/97	350	96	270	450	640	NA	NA	
MW-6	10/15/97	<50	<10	<10	<30	7,600	NA	NA	
MW-7	05/12/97	3,700	66	800	3,300	730	NA	1,290	Naphthalene -
MW-7	10/15/97	210	38	420	1,100	<50	NA	NA	
MW-8	05/09/97	490	740	2,100	9,600	790	NA	307	Naphthalene -
MW-8	10/15/97	120	39	220	680	610	NA	NA	
MW-9	05/09/97	<5	<1	<1	<3	<50	NA	<5	
MW-9	10/15/97	<5	<1	<1	<3	<50	NA	NA	
MW-10	05/09/97	<5	<1	<1	<3	<50	NA	<5	
MW-10	10/15/97	<5	<1	<1	<3	<50	NA	NA	
MW-11	05/12/97	330	13	39	290	<50	NA	<5	
MW-11	10/15/97	740	<1	290	230	<250	NA	NA	
MW-12	07/18/97	1,400	14	200	430	2,200	NA	NA	
MW-12	10/15/97	580	<10	290	360	1,400	NA	NA	
MW-13	07/22/97	42	2	7	4	<50	NA	NA	
MW-13	10/15/97	420	100	110	450	<1000	NA	NA	
MW-14	07/22/97	310	120	280	560	<50	NA	NA	
MW-14	10/15/97	140	2	4	4	<50	NA	NA	

NA - Not Analyzed

NC-No Criteria

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150
 LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD START DATE: 1/8/95 11:50 AM
 GEOLOGIST: SMS COMPLETION DATE: 1/9/94 2:15 PM



GRAVEL	SILT	ORGANIC	SHALE	MISC. FILL	SATURATION LEVEL AT TIME OF DRILLING
SAND	CLAY	TILL	ROCK	TOPSOIL	STATIC WATER LEVEL
					NOT DETECTED BY H ₂ O OR OVA



ENVIROLOGIC TECHNOLOGIES, INC.
 2960 INTERSTATE PARKWAY
 KALAMAZOO, MI 49001
 (616) 342-1100

LOG OF MW-2

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 840150

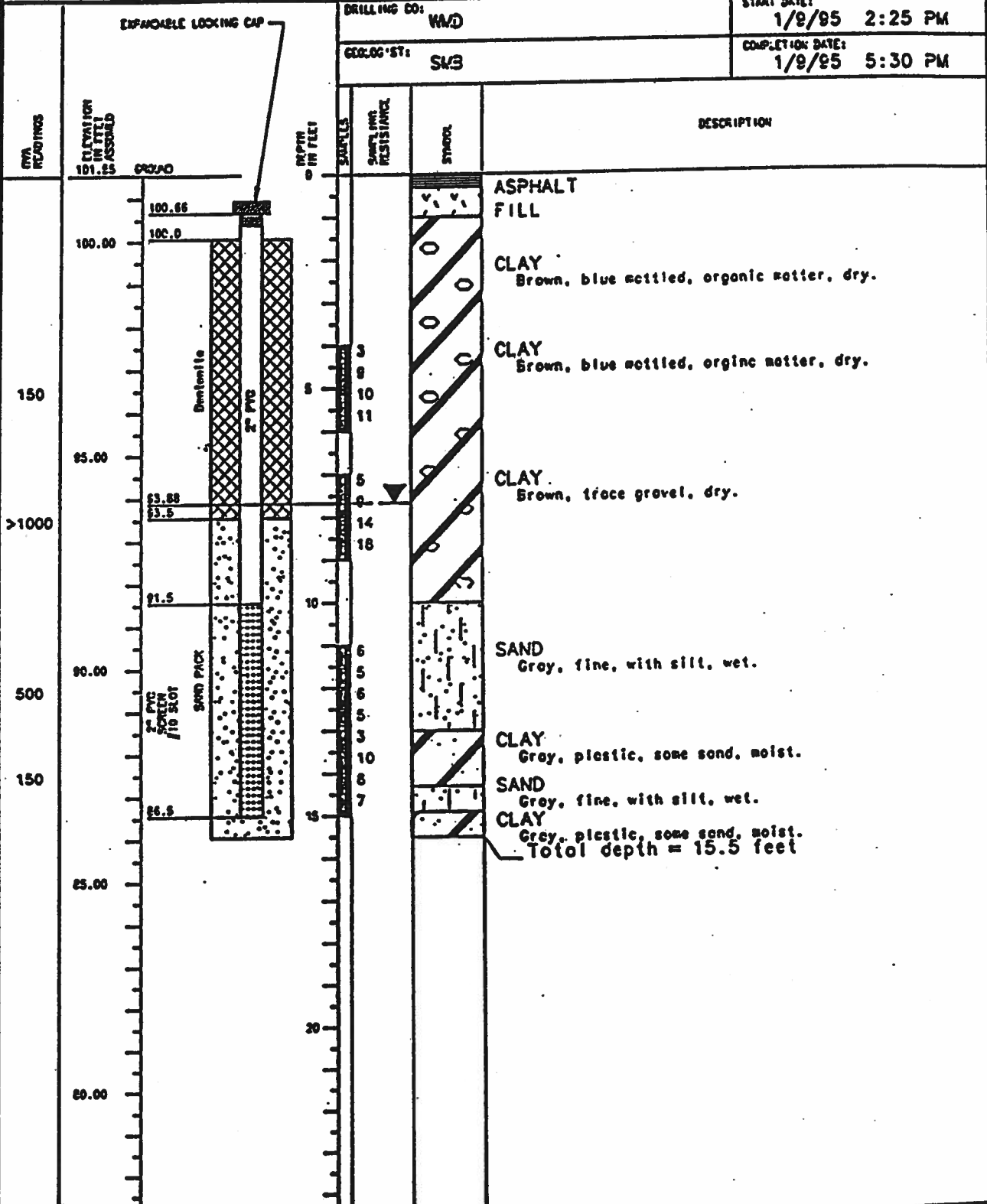
LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WWD

START DATE: 1/9/95 2:25 PM

GEOLOGIST: SWB

COMPLETION DATE: 1/9/95 5:30 PM



GRAVEL	SILT	ORGANIC	SHALE	MISC. FILL	SATURATION LEVEL AT TIME OF DRILLING
SAND	CLAY	TILL	ROCK	TOPSOIL	STATIC WATER LEVEL
					NOT DETECTED BY MWD OR OVA



ENVIROLOGIC TECHNOLOGIES, INC.
 2960 INTERSTATE PARKWAY
 KALAMAZOO, MI 49001
 (616) 342-1100

LOG OF MW-2D

SHEET 1 of 1

CLIENT: PIPELINE - BUDDY'S FACKARD SUNOCO 940150

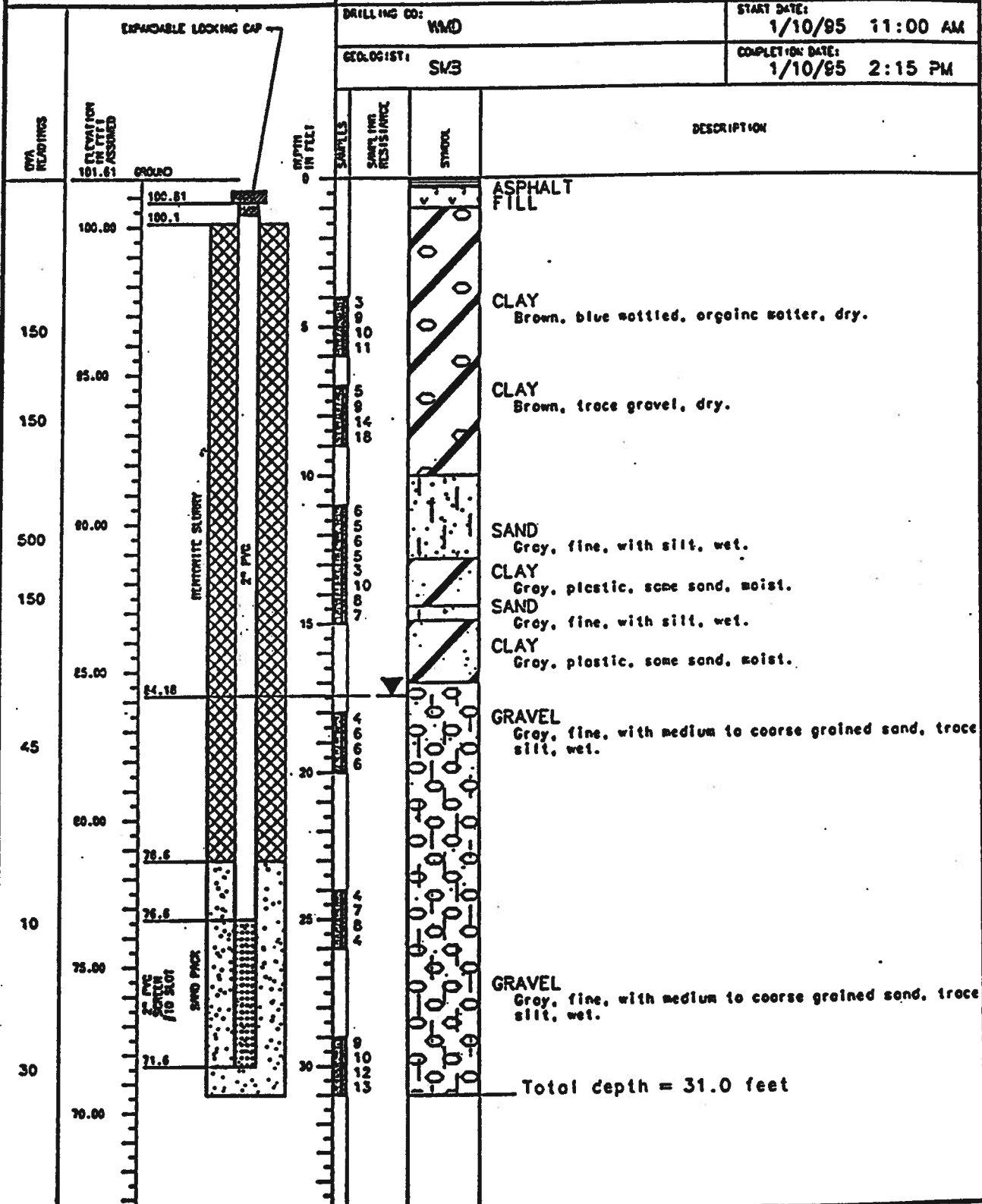
LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WMD

START DATE: 1/10/95 11:00 AM

GEOLOGIST: SVS

COMPLETION DATE: 1/10/95 2:15 PM



GRAVEL	SILT	ORGANIC	SHALE	MISC. FILL	SATURATION LEVEL AT TIME OF DRILLING STATIC WATER LEVEL N.D. NOT DETECTED BY H ₂ O OR OVA
SAND	CLAY	TILL	ROCK	TOPSOIL	

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

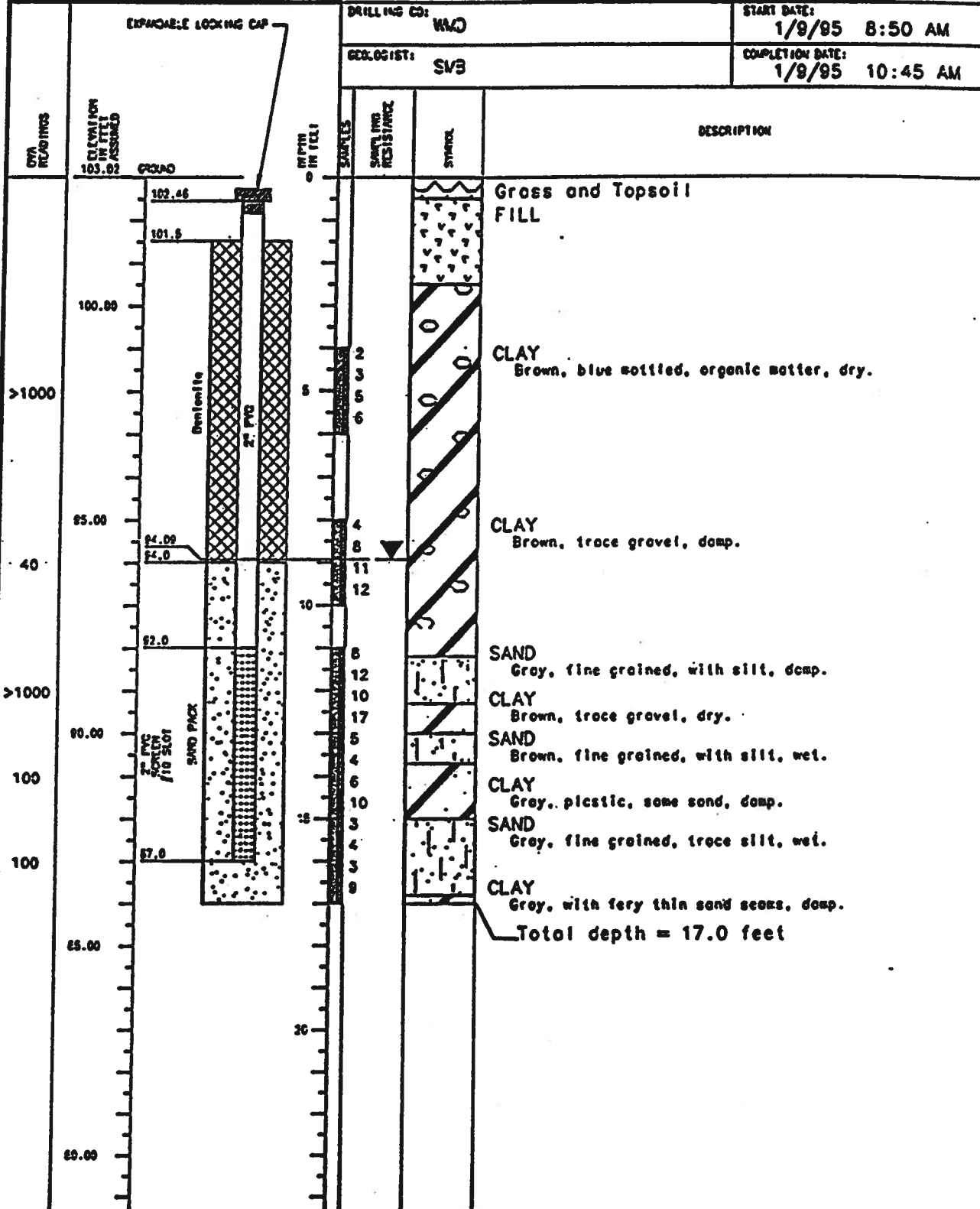
LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: WJO

START DATE: 1/9/95 8:50 AM

GEOLOGIST: SVS

COMPLETION DATE: 1/9/95 10:45 AM



GRAVEL	SILT	ORGANIC	SHALE	MISC. FILL	SATURATION LEVEL AT TIME OF DRILLING
SAND	CLAY	TILL	ROCK	TOPSOIL	STATIC WATER LEVEL
					N.D. NOT DETECTED BY H ₂ O OR O ₂ A

ENVIROLOGIC TECHNOLOGIES, INC.

2860 INTERSTATE PARKWAY
KALAMAZOO, MI 49001
(616) 342-1100

LOG OF RW-1

CLIENT: PIPELINE - BUDDY'S PACKARD SUNOCO 940150

LOCATION: ANN ARBOR, MICHIGAN

DRILLING CO: Keith Fransted Constr.

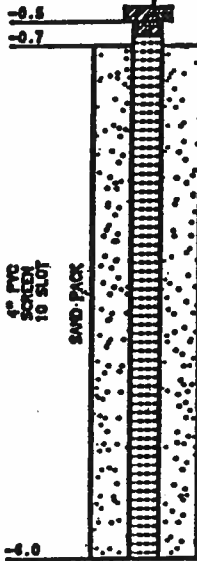
START DATE: 11/18/94

GEOLOGIST: DHN

COMPLETION DATE: 11/18/94

OVA READINGS

EXPANDABLE LOCKING CAP



DEPTH
IN FEET

SAMPLES

SAMPLING
RESISTANCE

STRODOL

DESCRIPTION

ASPHALT 3"
FILL
Sand and gravel, damp.

CLAY
Brown, mottled, low plasticity, some sand and gravel,
organic matter, wet at 3'. Product observed.

CLAY
Dark brown, medium plasticity, some sand, moist

Total depth = 6.0 feet

NOTE:

Recovery well RW-1 was installed by placing the casing in an open excavation. Soil was then backfilled around the casing.



GRAVEL



SILT



ORGANIC



SHALE



MISC. FILL



SAND



CLAY



TILL



ROCK



TOPSOIL



SATURATION LEVEL
AT TIME OF DRILLING



STATIC WATER LEVEL

N.D.

NOT DETECTED BY
H₂O OR OVA



Drilling Log

Monitoring Well MW-4 & MW-4D

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Peckard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 26 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 0.3 ft. Static _____
 Screen: Dia 2 in. Length 5/5 ft. Type/Size slotted/0.020 in.
 Casing: Dia 2 in. Length 12/25 ft. Type SC40PVC
 Fill Material #5 Filter Sand Rig/Core Spit Spoon
 Drill Co. ESR DRILLING Method Mobile B-59
 Driller Dan Melhs Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By Jim Alfonsi License No. _____

See Site Map For Boring Location

COMMENTS:

Black Clown = Lithology determined from hand auger and soil cuttings. X = Sample sent to laboratory for analytical analysis.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ Recovery	Graphic Log	USCS Class.	Description
							(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 60%
-2							
0						Asp	Asphalt surface.
0						Tps	Brown, organic top soil.
2						SC	Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4							
6		1.7	SS1	7 15 22 31		CL	Brown with gray mottling, damp, stiff, slightly plastic, CLAY, SOME SILT.
8		2.2	SS2	11 14 21 24		CL	
10		2.4	SS3	4 6 12 16		SW CL SW CL	Brown, saturated, loose, MEDIUM AND FINE SAND.
12		1.7	SS4	6 7 11 12		SW CL	Brown, damp, stiff, slightly plastic, CLAY, SOME SILT.
14						SW	Brown, saturated, loose, MEDIUM AND FINE SAND.
16							Gray, damp, moderately stiff, CLAY, SOME SILT.
18		1.7	SS5	8 21 14 9		SW CL SP	Gray, very moist, moderately stiff, plastic, CLAY, TRACE SILT.
20							Gray, saturated, loose, MEDIUM AND COARSE SAND, SOME FINE GRAVEL.
22		2.0	SS6	3 6 7 10		SW	As above, no gravel.
24							
26							End of Boring = 26 feet

Drilling Log

Monitoring Well MW-5

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Peckard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 14.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 12.0 ft. Static _____
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 8.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Melhs Log By Chris Salvador Date 5/8/87 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECFMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0				Asp Top		Asphalt surface.
2						Organic top soil.
4				SC		Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
6						
8						
10		NA	SS1	CL		Grayish brown, moist, moderately stiff, slightly plastic, CLAY, SOME SILT.
12		NA	SS2	SW		Brown, saturated, loose, MEDIUM and FINE SAND.
14				CL		Grayish brown, moist, moderately stiff, slightly plastic CLAY, SOME SILT.
14.0						End of exploration = 14.0 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well MW-6

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Peckard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 11.0 ft. Static _____
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 7.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Melhs Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X - Sample sent to laboratory for analysis. Black Boxes - Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
-2						
0				Tps		Grass and organic top soil.
2				SC		Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8						
10		88	SSI	CL		Brown, damp, stiff, slightly plastic, CLAY, SOME SILT.
12				SW		Brown, wet to saturated, loose, MEDIUM AND FINE SAND.
12				CL		Brown, damp, stiff, slightly plastic, CLAY, SOME SILT.
14						End of exploration = 13 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well MW-7

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 12.5 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 7.0 ft. Static _____
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 6.5 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Nobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Melhs Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil outcrop observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
-2						Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0					Tps	Grass and organic top soil.
2					SC	Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8		NA	SSI		SW	Brown, saturated, loose, MEDIUM AND COURSE SAND.
8					CL	Brown, damp, stiff, slightly plastic, CLAY, SOME SILT.
10		NA	SS2		CL	Brown, moist, stiff, slightly plastic, CLAY, SOME SILT.
12						End of exploration = 12.5 feet.
14						
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well MW-8

Project PIPELINE Buddy's #28 **Owner** PIPELINE OIL SALES
Location 3005 Peckerd, Ann Arbor, Michigan **Proj. No.** 01001-1247
Surface Elev. _____ **Total Hole Depth** 13.5 ft. **Diameter** 6.25 in.
Top of Casing _____ **Water Level Initial** _____ **Static** 11.3 ft.
Screen: Dia 2.0 in. **Length** 5.0 ft. **Type/Size** Sch 40 PVC/0.020 in.
Casing: Dia 2.0 in. **Length** 8.0 ft. **Type** Sch 40 PVC
Fill Material #5 Filter Sand **Rig/Core** Mobil B59
Drill Co. ESR DRILLING **Method** Hollow Stem Auger
Driller Dan Melhs **Log By** Chris Salvador **Date** 5/7/97 **Permit #** _____
Checked By J. Alfonsi **License No.** _____

See Site Map
 For Boring Location

COMMENTS:
 X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
						Trace <.10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0				Grass	Tps	Grass and organic top soil.
2				Diagonal lines	SC	Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4				Diagonal lines	CL	
6		1.8	SS1	Diagonal lines	CL	Brown, damp, stiff, CLAY AND SILT.
8		30.8	SS2	Diagonal lines	CL	As above, some gray mottling.
10		12.7	SS3	Diagonal lines	CL	As above, CLAY, SOME SILT, slightly plastic.
12		4.8	SS4	Diagonal lines	SW	As above.
12				Dotted	SW	Gray, saturated, loose, FINE and MEDIUM SAND.
12				Diagonal lines	CL	Gray, moist, moderately stiff, plastic, CLAY.
14						End of exploration = 13.5 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well MW-9

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Peckard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial _____ Static 11.0 ft.
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 7.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Melhs Log By Chris Salvador Date 5/7/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil outcrop observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0				Asp		Asphalt surface.
0				Top		Organic top soil.
2				SC		Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8						
10		2.8	SSI	CL		Gray, damp, moderately stiff, plastic, CLAY.
10				SW		Brown, wet to saturated, loose, FINE and MEDIUM SAND.
12				CL		Gray, damp, moderately stiff, plastic, CLAY.
14						End of exploration = 13.0 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well MW-10

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Peckard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial _____ Static 10.0 ft.
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 7.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Hobli B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Methis Log By Chris Salvador Date 5/7/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:
X = Sample sent to laboratory for analysis. Black Boxes = Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECIMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 60%
-2						
0				Asp Top		Asphalt surface.
2						Organic top soil.
4				SC		Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
6						
8						
10		85	SSI	SW		Brown, saturated, loose, MEDIUM and FINE SAND.
12				SC		Brown, saturated to wet, moderately stiff, SAND AND CLAY.
14						End of exploration = 13.0 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well MW-11

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 13.0 ft. Diameter 6.25 in.
 Top of Casing _____ Water Level Initial 11.2 ft. Static _____
 Screen: Dia 2.0 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.020 in.
 Casing: Dia 2.0 in. Length 7.0 ft. Type Sch 40 PVC
 Fill Material #5 Filter Sand Rig/Core Mobil B59
 Drill Co. ESR DRILLING Method Hollow Stem Auger
 Driller Dan Melhs Log By Chris Salvador Date 5/8/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

X - Sample sent to laboratory for analysis. Black Boxes - Lithologies determined by hand auger and soil cutting observations.

Depth (ft.)	Well Completion	SPECMETER (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
-2						Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0					Top	Grass and organic top soil.
2					SC	Brown, damp, loose to slightly cohesive, SAND, SILT AND CLAY.
4						
6						
8						
10		NA	SSI		CL	Brown, moist, stiff, plastic, CLAY, SOME SILT.
12					SW	Brown, saturated, loose, MEDIUM AND FINE SAND.
					CL	Brown, moist, stiff, slightly plastic, CLAY, SOME SILT.
14						End of exploration = 13 feet.
16						
18						
20						
22						
24						

Drilling Log

Monitoring Well MW-12

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 1909 Michigan Ave. Clinton, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 12.0 ft. Diameter 2.25 in.
 Top of Casing _____ Water Level Initial _____ Static _____
 Screen: Dia 10 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.010 in.
 Casing: Dia 10 in. Length 5.0 ft. Type Sch 40 PVC
 Fill Material #10 Filter Sand Rig/Core Geoprobe
 Drill Co. Fibertec Environmental Method Geoprobe
 Driller John Zimmer Log By Chris Salvador Date 7/18/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

Box Column - Samples collected for lithology descriptions.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 60%
-2						
0			SS1		Tps CL	Grass and top soil surface. Brown, damp, loose to cohesive, SAND AND SILT. Brown, damp, plastic, CLAY AND SILT.
2						
4			SS2		ML	Brown, damp, very stiff, little plastic, SILT, SOME CLAY.
6						
8						
10			SS3		SC	Gray, damp to moist, stiff, slightly plastic, SILT AND CLAY, SOME SAND
12						End of exploration = 12.0 feet.
14						

Drilling Log








Monitoring Well MW-13

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 12.0 ft. Diameter 2.25 in.
 Top of Casing _____ Water Level Initial _____ Static _____
 Screen: Dia 10 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.010 in.
 Casing: Dia 10 in. Length 6.0 ft. Type Sch 40 PVC
 Fill Material #10 Filter Sand Rig/Core Geoprobe
 Drill Co. Fibertec Environmental Method Geoprobe
 Driller John Zimmer Log By Chris Salvador Date 7/18/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
For Boring Location

COMMENTS:

Box Column = Samples collected for lithology descriptions.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0			SS1		Tpe	Grass and top soil surface.
2						Brown with some gray mottling, damp, stiff, not plastic, SILT, SOME CLAY.
4			SS2		ML	As above, (little plastic).
6						
8			SS3			As above.
10			SS4		SW	Brown, wet, loose, fine and medium SAND.
					ML	Brown with some gray mottling, moist, moderately stiff, little plastic, SILT, SOME CLAY.
						As above, (wet, SOME SAND).
12						End of exploration = 12.0 feet.
14						

Drilling Log

Monitoring Well MW-14

Project PIPELINE Buddy's #28 Owner PIPELINE OIL SALES
 Location 3005 Packard, Ann Arbor, Michigan Proj. No. 01001-1247
 Surface Elev. _____ Total Hole Depth 12.0 ft. Diameter 2.25 in.
 Top of Casing _____ Water Level Initial _____ Static _____
 Screen: Dia 10 in. Length 5.0 ft. Type/Size Sch 40 PVC/0.010 in.
 Casing: Dia 10 in. Length 6.0 ft. Type Sch 40 PVC
 Fill Material #10 Filter Sand Rig/Core Geoprobe
 Drill Co. Fibertec Environmental Method Geoprobe
 Driller John Zimmer Log By Chris Salvador Date 7/18/97 Permit # _____
 Checked By J. Alfonsi License No. _____

See Site Map
 For Boring Location

COMMENTS:
 Box Column - Samples collected for
 lithology descriptions.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0			SS1	Tps		Grass and top soil surface.
2						Brown, damp, cohesive, moderately stiff, slightly plastic, SILT, SOME CLAY.
4			SS2			As above.
6					ML	
8			SS3			As above.
10			SS4			As above.
12						End of exploration = 12.0 feet.
14						



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48906-7673

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

JACKSON DISTRICT OFFICE
STATE OFFICE BUILDING
301 E LOUIS GLICK HWY
JACKSON MI 49201-1556

January 27, 1998

Mr. Jeffrey Hanson
Pipeline Oil Sales
744 East. South Street
Jackson, Michigan 49203

Dear Mr. Hanson:

SUBJECT: Audit of Corrective Actions
Confirmed Release Date:
Location of Tank(s): Buddy's Sunoco #28,
3005 Packard, Ann Arbor, Washtenaw County, Michigan
Facility ID #: 0-002107
MERA Site ID #: 810449
MUSTFA Claim #: 6190

Under the authority of Section 21315 of Part 213 Leaking Underground Storage Tanks (LUST) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), the Department of Environmental Quality (DEQ), Underground Storage Tank Division (USTD), has conducted an audit of the corrective actions undertaken as the result of a release from an underground storage tank (UST) system at the above referenced site. The audit consisted of a review of district file documents.

Based on the audit of these documents and information provided by Mr. L.N. Sastry, Certified Professional (CP) with Fluor Daniel GTI, Inc., the Qualified Underground Storage Tank Consultant (QC), the USTD DOES NOT concur with the conclusion of the CP that corrective actions have been completed. The reasons for our decision are:

- The closure report does not address off site contamination or restrict the possible usage of impacted groundwater. Monitoring well #12 (MW-12) is located on or approximate to the site property line and contains 1400 parts per billion of dissolved benzene along with other gasoline constituents. The levels found in this monitoring well and its location indicates that contamination has migrated off site. Information found in the file for the former Shell station, located west of the Buddy's site, directly across Platt Road, does not indicate that this contamination has crossed the roadway. Utilities (natural gas, domestic water, sanitary sewer and storm sewer) are located beneath the roadways along this property's south and west frontages. The utilities may be intercepting dissolved phase contamination.
- Soils at this site consists of interbedded clays and sands to approximately 18 feet below ground level where sand of an undetermined depth occurs. This sand layer could be utilized as a source of drinking water. There may be communication between the interbedded layers and the sand layer (18 feet and greater). The levels of contaminants found at this site are above drinking water and soil leaching to groundwater criteria but are below soil direct contact and utility worker groundwater direct contact criteria.

- It may be possible to close this site if deed restrictions are placed on this property forbidding the installation of groundwater wells for any use other than monitoring groundwater quality and/or groundwater remediation and if an alternate mechanism to restrict exposure is placed into effect for the off site contamination.

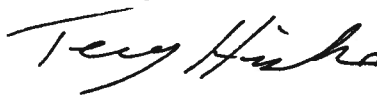
The owner or operator of this facility is required, under the provisions of Section 21315(3) of Act 451, to do the following:

1. Provide additional information related to the requirements of Part 213, as specified above.
2. Retain a consultant to make additional corrective actions necessary to comply with Part 213 or to protect public health, safety, welfare or the environment.

Please provide your written commitment, together with a schedule, to provide the required information or to voluntarily undertake the necessary corrective actions at the facility within 30 days of receipt of this letter.

If you have any questions, please contact me at the telephone number below.

Sincerely,



Terry Hiske
Environmental Quality Analyst
Underground Storage Tank Division
517-780-7928

TH:lkg

cc: Mr. L.N. Sastry, Fluor Daniel GTI, Inc.
Sedgwick James of Michigan, Inc.
Mr. Lee Carter, MDEQ

23937 Research Drive, Farmington Hills, Michigan 48335



Transmittal

To: Jeffery Hanson	From: Suzanne Park
Address:	
744 E. South Street	IT Corporation
Jackson, MI 49203	23937 Research Drive
	Farmington Hills, MI 48335
Fax:	Pages:
Phone:	Date: 7/13/99
Re: Off Site Migration Forms	CC:
<input type="checkbox"/> Urgent <input type="checkbox"/> For Review <input type="checkbox"/> Please Comment <input type="checkbox"/> Please Reply <input type="checkbox"/> Please Recycle	

• Comments:

Mr. Hanson-

Enclosed are the two Pipeline sites that require an Off Site Migration Form for the MDEQ. Please sign the second page of both packets and mail the entire packet, in the envelope provided, to the MDEQ.

If you have any questions, please call me or Jim Alfonsi at (248) 473-0720.

Thank you,

Suzanne Park

Environmental Scientist





For DEQ Use Only
ITS # _____
Site ID # _____

NOTICE OF MIGRATION OF CONTAMINATION (FORM EQP4482)

2107

Under the authority of Part 201, 1994 Act 451, as amended, and the Rules promulgated thereunder)

An owner or operator of property that is a facility who has knowledge that a hazardous substance is emanating from, has emanated from, or is likely to be emanating from the property and migrating beyond the boundaries of the property that he or she owns or operates is required under R 299.51017(1) to notify the Michigan Department of Environmental Quality ("DEQ"), unless he or she is exempt from MCL 324.20107a (see MCL 324.20107a(4) for exemptions). With regard to conditions known to the owner or operator prior to March 11, 1999 (the effective date of R 299.51017), this notice must be provided to the DEQ by June 9, 1999 (90 days after the effective date). With regard to conditions that were not known to the owner or operator prior to March 11, 1999, the report must be submitted to the DEQ within 45 days after the owner or operator has knowledge that hazardous substances have migrated, or are likely to have migrated, to or beyond the boundary of his or her property in reportable concentrations. Use of this form is mandatory for the notice required by R 299.51017(1). Completing this notice in no way relieves a person who is subject to MCL 324.20114 from the responsibility to undertake required response activities.

This notice must be sent to the DEQ office that serves the county in which the property is located. A list of DEQ offices is attached. The DEQ will not prepare acknowledgement of receipt of these notices. The sender is responsible for sending the report using a method that provides proof of delivery if such proof is desired. Please label the outside of the envelope "Rule 1017 Notice."

Please answer the following questions as completely as possible.

- 1. Name and address of owner or operator making the report.
Pipeline Oil Sales, Inc.
744 E. South Street
Jackson, MI 49203
- 2. Status relative to the property.
(Check one or both, as applicable.)
Owner
Operator

- 3. Name and telephone number of contact person for owner or operator.
Jefferey Hanson
(517) 782-0467

- 4. Address/location of the property that is the subject of this notice (i.e., owned or operated by the person identified in item #1).
Buddy's Sunoco #28
3005 Packard
Ann Arbor, MI 48108

County Washtenaw

- 5. Complete the Table on Page 3 of this Form for each hazardous substance which has migrated, or is likely to have migrated, up to or beyond the property boundary at a concentration that exceeds a Generic Residential Cleanup Criterion developed by the DEQ pursuant to MCL 324.10120a(1). Complete additional copies of Page 3, if necessary, to list all hazardous substances that must be reported. Include a scaled map or drawing that shows the location of sampling points identified on the Table on Page 3.

6. If a map, report, or other additional information is available which depicts or describes the conditions reported on this form, and the basis for your conclusion that this report is required, that information may be (but is not required to be) submitted with this form. You may also identify by title and date any reports previously submitted to the DEQ that contain relevant information. Include the name of the site or facility that the report addresses. This additional information may assist the DEQ in determining whether response activity is required to address conditions described in this notice.

With my signature below, I certify that I am legally authorized to execute this notice on behalf of the owner or operator named on this form, and that to the best of my knowledge and belief the above representations are complete and accurate. I understand that intentionally submitting false information to the DEQ is a felony and may result in fines up to \$25,000 for each violation.

Signature Jeffrey Hanson Date 7/16/99
(Person legally authorized to bind the person making this report)

Name (Typed or Printed) Jeffrey Hanson

Title (Typed or Printed) VICE PRESIDENT OF FINANCE



JOHN ENGLER, Governor
DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"
HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us
RUSSELL J. HARDING, Director

REPLY TO:

JACKSON DISTRICT OFFICE
STATE OFFICE BUILDING
301 E LOUIS GLICK HWY
JACKSON MI 49201-1558

July 9, 1998

Mr. Jeffrey Hanson
Pipeline Oil Sales, Inc.
744 East South Street
Jackson, Michigan 49203

Dear Mr. Hanson:

SUBJECT: Audit of Corrective Actions
Confirmed Release Date: September 19, 1994
Location of Tank(s): Buddy's Sunoco #28
3005 Packard, Ann Arbor, Washtenaw County, Michigan
Facility ID #: 0-002107
MUSTFA Claim #: 6190

Under the authority of Section 21315 of Part 213 Leaking Underground Storage Tanks (LUST) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), the Department of Environmental Quality (DEQ), Storage Tank Division (STD), has conducted an audit of the corrective actions undertaken as the result of a release from an underground storage tank system at the subject site. The audit was conducted following receipt of a Closure Report submitted by Fluor Daniel GTI, Inc., Qualified Underground Storage Tank Consultant (QC), and certified by Mr. Patrick Conway, Certified Professional (CP).

The audit consisted of a review of district file documents. Based on this audit, the STD agrees with the conclusion by the QC that corrective actions at the site have been completed in accordance with Part 213. Corrective Action at the site has resulted in Restricted use of the site based on a Tier 2 evaluation, utilizing institutional controls. The following land use or resource use restriction mechanisms have been established:

- A notice of corrective action has been recorded with the register of deeds for Washtenaw County as outlined in Section 21310a(1) of Act 451. The notice states that a commercial III use is the basis of the corrective action selected by your QC. Any future change in the land use may necessitate further evaluation of potential risks to the public health, safety, and welfare and to the environment. The STD must be contacted regarding any proposed change in the land use.

- A restrictive covenant has been recorded with the register of deeds for Washtenaw County as outlined in Section 21310a(2) of Act 451. The following land use or resource use restriction mechanisms are included in the restrictive covenant:
 - Land use of the property referenced above shall be consistent with the Commercial III category of land use as defined by the MDEQ-STD. If there is a proposed change in the land use at any time in the future, that change may necessitate further evaluation of potential risks to the public health, safety, and welfare and to the environment. The Department of Environmental Quality shall be contacted regarding any proposed change in the land use, and the change may necessitate further evaluation of potential risks to the public health, safety, and welfare and the environment.
 - Soil shall not be removed from the property unless it is characterized to determine it can be relocated without posing a threat to the public health, safety, welfare, or the environment in the new location.
 - All workers who may come in contact with the groundwater must wear OSHA approved personal protective equipment which protects against chemicals of concern as determined by the most recent groundwater analytical results, as necessary to protect workers' health and safety.
 - All concrete floors in the existing buildings located on the site must be adequately maintained to minimize the potential for vapor intrusion into the building from subsurface soils or groundwater.
 - Construction of any buildings within the restricted area delineated on the site map (exhibit A) shall include the installation and maintenance of concrete floors or other vapor intrusion; removal of soil and groundwater impacted above the appropriate volatilization to indoor air risk based cleanup criteria; or other measures that prevent exposure of building occupants to contaminant vapors above applicable OSHA criteria.
 - Groundwater at the property cannot be used for potable or nonpotable purposes.
 - Installation of groundwater wells for any use other than monitoring quality is prohibited.

The above list is abbreviated and does not necessarily represent a complete list of property or resource uses which are prohibited at the site. Any activities which would interfere with corrective action, operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of the corrective action, or which would result in exposure to regulated substances above levels established in the corrective action plan are similarly prohibited.

Any conveyance of title, easement, or other interest in the property must include adequate and complete provision for compliance with the corrective action plan and prevention of exposure to regulated substances.

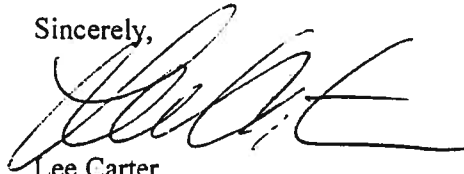
July 9, 1996

Please note that when contaminated soil and/or groundwater as a result of a release of a regulated substance remains on site consistent with site closure requirements, the owner/operator shall not remove or allow this soil and/or groundwater to be removed from the site to an off-site location without properly characterizing the soils and/or groundwater to determine that they can be lawfully relocated without posing a threat to the public health safety, or welfare, or the environment. The determination shall consider whether the soil and/or groundwater is subject to regulations under Part 111 of Act 451.

All groundwater monitoring wells and other similar devices installed as part of the corrective action activities at the site will need to be properly abandoned when they are no longer needed for their original purpose or modified purpose, in accordance with Part 625, Mineral Wells of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; and Part 127 Water Supply and Sewer Systems of the Public Health Code, 1978 PA 368, as amended and the rules promulgated thereunder. Proper abandonment of groundwater monitoring wells and other potential conduits for contamination should be performed within 60 days after use has been discontinued. Documentation of abandonment should be submitted to the STD District Office responsible for oversight.

If you have any questions, please contact Mr. Terry Hiske, Project Manager, at the Jackson District Office, Department of Environmental Quality, Storage Tank Division, 301 East Louis Glick Highway, Jackson, Michigan, or at telephone number 517-780-7928.

Sincerely,



Lee Carter
District Supervisor
Storage Tank Division
517-780-7920

LC:lkg

cc: Fluor Daniels, GTI
Sedgwick James of Michigan, Inc
Mr. Terry Hiske, DEQ



SUPPLEMENTAL REPORT COVER SHEET

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY. Underground Storage Tank Professional (CP) MUST sign below. Failure to submit this report within the stated time period may result in Administrative Penalties as provided for in Part 213, Section 21313a of Act 451, P.A. 1994 as amended.

FACILITY NAME: Buddy's Sunoco #28

FACILITY ID NUMBER: 0-002107
MDEQ - STORAGE TANK DIVISION JACKSON

ADDRESS: 3005 Packard

CONFIRMED RELEASE NUMBER(S):

CITY: Ann Arbor

ZIP: 48108

COUNTY: Washtenaw

Not Known

O/O NAME: Pipeline Oil Sales, Inc.

DATE(S) RELEASE DISCOVERED: 9/19/94

O/O ADDRESS: 744 E. South Street, Jackson

STATE: MI

ZIP: 49203

CONTACT PERSON: Jeffery Hanson

PHONE NUMBER: (517) 782-0467

ANSWER ALL QUESTIONS. (DO NOT LEAVE BLANKS):

1. a. Has the UST been emptied? Yes No (If no, explain why):b. Has the UST system been properly closed? Yes No (If no, explain why):2. Free product present: a. Currently? YES NO If YES, total gallons recovered since last report:b. Previously? YES NO If YES, total gallons recovered to date: 5.253. Have vapors been identified in any confined spaces (basement, sewers, etc.)? YES NO

4. State the number of homes where drinking water is or was affected as a result of a release from this facility: None

5. Estimated distance and direction from point of release to nearest:

a. Private well: 1 mile to NE

b. Municipal well: >1 Mile

a. Surface water/wetland: Swift Drain located 1100 feet to southeast

6. Since last report: a. cubic yards of soil remediated: 0

b. gallons of groundwater remediated: 0

7. Totals to date: a. cubic yards of soil remediated: 870

b. gallons of groundwater remediated: 0

8. Michigan RBCA Site Classification (1-4): 4

Previous RBCA Site Classification (1-4): 4

9. Has contamination migrated off-site above Tier 1 Residential RBSLs YES NOIf YES, have off-site impacted parties been notified YES NO (per Section 21309a(3) of Part 213)10. Is an institutional control required for contamination that has migrated or will migrate off-site? Yes No

CERTIFICATION OF REPORT COMPLETION

I, the undersigned CP, hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate and complete. I certify that it was submitted to the USTD on 6-29-98

date submitted (REQUIRED)

CP Original Signature - (REQUIRED)

Date

James M. Alfonsi

PRINT QC Project Manager's Name

Patrick Conway, CPG

PRINT CP's Name

Fluor Daniel GTI, Inc.

CONSULTANT

23937 Research Drive, Farmington Hills, Michigan 48335

ADDRESS

(248) 473-0720

TELEPHONE NO.

(248) 473-0892

FAX NO.

CERTIFICATION OF CLOSURE

1. Type of RBCA Evaluation: Tier 1 Tier 2 Tier 32. Closure report based on which type of land use?: Residential Commercial III Commercial IV Industrial3. Institutional Controls: Yes Notice of Corrective Action Restrictive Covenant Other

I certify under penalty of law that corrective actions associated with the above referenced release at this facility were completed in accordance with Part 213, Act 451, P.A. 1994 as amended, and current departmental guidance and procedures available at the time the work was completed.

I further certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

CP Signature - (REQUIRED)

Date

PLEASE RETURN THIS COMPLETED REPORT AND ASSOCIATED ATTACHMENTS TO THE APPROPRIATE USTD DISTRICT OFFICE, LISTED ON THE BACK OF THIS PAGE.



FLUOR DANIEL GTI

June 29, 1998

Mr. Terry Hiske
Environmental Quality Analysis
Underground Storage Division
Michigan Department of Environmental Quality
4th Floor State Office Building
301 Louis Glick Highway
Jackson, MI 49201

Subject: Pipeline Oil Sales (Buddy's #28)
3005 Packard Road
Ann Arbor, Washtenaw County, Michigan
Facility ID#: 0-002107
MERA Site ID#: 810449

Dear Mr. Hiske:

Fluor Daniel GTI, Inc. (Fluor Daniel GTI), on behalf of Pipeline Oil Sales (Pipeline), has prepared this letter and enclosures in response to the Michigan Department of Environmental Quality's (MDEQ) audit of corrective actions dated January 27, 1998. As suggested in the MDEQ January 27, 1998 letter, a restriction has been placed on the property limiting land use to obtain regulatory closure under Part 213, of Michigan Public Act 451, as amended.

Exposure to adsorbed and dissolved phased hydrocarbons remaining in the property's subsurface has been limited by a restrictive covenant filed with the Washtenaw County Register on May 6, 1998. The restrictive covenant restricts the property to commercial use and restricts the use the property's groundwater for potable or non-potable applications. For a more specific description of the land use restrictions see the enclosed restrictive covenant.

The Notice to Local Unit of Government of Corrective Action and Land Restriction form, notifying the City of Ann Arbor of the property restrictions, was sent by certified mail to the City of Ann Arbor on June 23, 1998.

Exposure to dissolved phased hydrocarbons in the vicinity monitoring well MW-12 adjacent to Platt Road, which is a City of Ann Arbor right of way, is restricted by the use of an alternate institutional control mechanism. Based on the following criteria outlined in the MDEQ Storage Tank Division's (STD) Operational Memorandum No. 12, Platt Road provides an alternative institutional control mechanism for exposure to dissolved phased hydrocarbons:

1. The right-of-way is developed and maintained and used as a highway.
Platt Road is an existing roadway and reliably restricts the possibility that drinking water wells may be installed for potable water or other uses which may result in exposure to groundwater contamination at levels in excess of the Tier I risk based screening levels (RBSLs).
2. Platt Road has indications of being permanent.
Platt Road is not likely to ever be relocated, vacated, or abandoned.



Mr. Terry Hiske
Michigan Department of Environmental Quality

Subject: Pipeline Oil Sales (Buddy's #28), 3006 Packard Road, Ann Arbor, Michigan
Facility ID#: 0-002107, MERA Site ID#: 810449

3. A determination that groundwater contamination will not migrate beyond the boundaries of the highway.

Platt Road provides a reliable means to prevent unacceptable exposure to groundwater within the right-of-way. Based on the review of the environmental information of the former Shell station located west and across the street (Platt Road) from the subject property, dissolved phased hydrocarbons are not migrating past Platt Road; therefore, the dissolved phase hydrocarbon plume attenuates underneath Platt Road.

4. All other relevant exposure pathways have been evaluated and eliminated under the RBCA criteria.

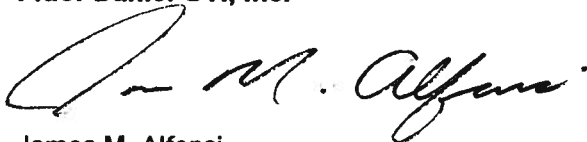
The dissolved phased hydrocarbon concentrations in the vicinity of monitoring well MW-12 do not exceed Tier 1 RBSLs for direct contact with groundwater, soil, inhalation or other relevant pathways.

Based upon the use of property restrictions and alternative institutional control mechanisms limiting exposure to dissolved phased hydrocarbons at the subject property, the objectives of a Tier II risk based corrective action regulatory closure under Part 213, of Michigan Public Act 451, as amended have been obtained.

If you have any questions or comments please contact me at (248) 473-0720.

Sincerely,

Fluor Daniel GTI, Inc.



James M. Alfonsi
Project Manager
Geologist

Cc: Jeffery Hanson, Pipeline Oil Sales, Inc.
Patrick Conway, Fluor Daniel GTI, Inc.

Enclosures

p:\projects\pline\pline#28\cls2.wpd



NOTICE TO PUBLIC AND LOCAL UNIT OF GOVERNMENT OF CORRECTIVE ACTION AND LAND USE RESTRICTIONS

This information and form is required under Sections 21309a(3), 21310a(5) and 21316 of Part 213, Leaking Underground Storage Tanks (LUST), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Failure to comply with the provisions of this Act may result in civil fines not to exceed \$10,000 for each day the violation continues or failure to comply continues.

Instructions: (1) Use this form for the notification requirements when the corrective action does not result in unrestricted use of the property. (2) If corrective action is based on the use of institutional controls regarding off-site migration of regulated substances, submit a draft copy of this notification with the corrective action plan and wait for USTD approval before providing notice to impacted persons. (3) Send the notice to persons that are directly impacted by the release and the proposed corrective action. (4) Send the notice to Local Units of Government (LUG). (5) Submit a copy of the notice and proof of providing the notice with the Closure Report (EQP 3843) to the appropriate USTD District Office listed on the back of the Closure Report Cover Sheet. This form must be completed in its entirety.

Owner or Operator: H&A Investments Company, Inc.

Site Name: Buddy's Sunoco #28

Site Address: 3005 Packard City: Ann Arbor State: Michigan Zip: 48108

Contact Person: Jeffrey Hanson Phone Number: (517) 782-0467

Mailing Address: 744 East South Street City: Jackson State: Michigan Zip: 49203

Qualified Consultant: Fluor Daniel GTI, Inc.

Address: 23937 Research Drive City: Farmington Hills State: Michigan Zip: 48335

Contact Person: Diane C. Pawelec Phone Number: (248) 473 - 0720

A corrective action plan for the above site has been developed as a result of a release from an underground storage tank. The corrective action plan relies on the following land use or resource use limitation(s):

Refer to Exhibit A (attached) for a listing of the land use limitations.

(DESCRIBE THE SCOPE OF LAND USE OR RESOURCE USE LIMITATIONS)

A copy of the Notice of Corrective Action(s), and/or Restrictive Covenant(s), and/or alternate mechanism is attached.

I hereby attest to the accuracy of the statements in this document and all attachments. I further certify that the language on this form has not been modified.

Jeff Hanson, VICE PRESIDENT
Owner or Operator's Signature

3/16/98
Date

Pursuant to Section 21309a(3) of Part 213, site release information and the corrective action plan are available for public inspection upon request from the Underground Storage Tank Division District Office located at

Jackson District office, 301 E. Louis Glick Hwy., Jackson, Michigan 49201-1556

EXHIBIT 1

RESTRICTIVE COVENANT

3005 PACKARD ROAD, ANN ARBOR, MICHIGAN

Proposed Scope of land use or resource use restriction (Note: Additional land use restrictions or resources use restrictions may be added if necessary):

- **Land use of the property referenced above shall be consistent with the Commercial III category of land use as defined by the MDEQ-USTD. If there is a proposed change in the land use at any time in the future, that change may necessitate further evaluation of potential risks to the public health, safety, and welfare and to the environment. The Department of Environmental Quality shall be contacted regarding any proposed change in the land use, and the change may necessitate further evaluation of potential risks to the public health, safety, and welfare and the environment.**
- **Soil shall not be removed from the property unless it is characterized to determine it can be relocated without posing a threat to the public health, safety, welfare, or the environment in the new location.**
- **All workers who may come in contact with the groundwater must wear OSHA approved personal protective equipment which protects against chemicals of concern as determined by the most recent groundwater analytical results, as necessary to protect workers' health and safety.**
- **All concrete floors in the existing buildings located on the site must be adequately maintained to minimize the potential for vapor intrusion into the building from subsurface soils or groundwater.**
- **Construction of any buildings within the restricted area delineated on the site map (exhibit A) shall include the installation and maintenance of concrete floors or other barrier to vapor intrusion; removal of soil and groundwater impacted above the appropriate volatilization to indoor air risk based cleanup criteria; or other measures that prevent exposure of building occupants to contaminant vapors above applicable OSHA criteria.**
- **Groundwater at the property cannot be used for potable or nonpotable purposes.**
- **Installation of groundwater wells for any use other than monitoring quality is prohibited.**

RECORDED
WASHTENAW COUNTY, MI

MAY 6 10 08 AM '98

REC'D IN DEEDS
COUNTY REGISTER**RESTRICTIVE COVENANT****DEQ** MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION

This information and form is required under Sections 21310a(2) and 21316 of Part 213, Leaking Underground Storage Tanks (LUST), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Failure to comply with the provisions of this Act may result in civil fines not to exceed \$10,000 for each day the violation continues or failure to comply continues.

INSTRUCTIONS: Use this form for filing the restrictive covenant with the register of deeds. This form is needed when the corrective action is based on a restrictive covenant for institutional controls. This form is not needed if an alternate mechanism is approved by the Department of Environmental Quality (Department) pursuant to Section 21310a(3) and 21310(4) of Part 213. If corrective action is based on the use of institutional controls regarding off-site migration of regulated substances, wait for USTD approval before recording the Restrictive Covenant with the register of deeds for contamination that has migrated or will migrate off-site. If the institutional controls are for on-site contamination, the owner/operator may proceed with recording the Restrictive Covenant with the register of deeds. In all cases, submit a copy of the Restrictive Covenant and proof of recording with the Closure Report (EQP 3843) to the appropriate USTD District Office listed on the back of the Closure Report Cover Sheet. This form must be completed in its entirety.

The below listed owner/operator has implemented a corrective action plan requiring institutional controls in the form of a restrictive covenant. The corrective action plan was developed as a result of a release from a Leaking Underground Storage Tank(s) (LUST) and was prepared pursuant to the provisions in Section 21310a(2) of Part 213. Regulated substances were discovered during the investigation and/or removal of Underground Storage Tanks (USTs).

This restrictive covenant is filed with the County Register of Deeds and covers the land identified in the following, and more fully described in Attachment A, attached. (*Attach a legal property description as Attachment A for the land where the restrictive covenant would apply, and a survey map of the areas addressed by this restrictive covenant.*). The restrictive covenant defines the areas addressed by the corrective action plan and the scope of any land use or resources limitations. The survey defining the areas addressed by the corrective action plan is attached. (*Describe the scope of any land use or resource use limitations.*)

Land use of the property referenced below shall be consistent with the commercial III category of land use as defined by the MDEQ-USTD. If there is a proposed change in land use at any time in the future, that change may necessitate further evaluation of potential risks to the public health, safety, and welfare and to the environment. The Department of Environmental Quality shall be contacted regarding any proposed change in the land use, and the change may necessitate further evaluation of potential risks to the public health, safety, and welfare and the environment. Soil shall not be removed from the property unless it is characterized to determine it can be relocated without posing a threat to the public health, safety, welfare, or the environmental of the new location. All workers who may come in contact with the groundwater must wear OSHA approved personal protective equipment which protects against chemicals of concern as determined by the most recent groundwater analytical results, as necessary to protect worker's health and safety. All concrete floors in the existing buildings located on the site must be adequately maintained to minimize the potential for vapor intrusion into the building from subsurface soils or groundwater. Construction of any buildings within the restricted area delineated on the site map shall include the installation and maintenance of concrete floors or other barriers to vapor intrusion; removal of soil and groundwater impacted above appropriate volatilization to indoor air risk based cleanup criteria; or other measures that prevent exposure of building occupants to containment vapors above applicable OSHA criteria. Groundwater at the property cannot be used for potable or nonpotable purposes. Installation of groundwater monitoring wells for any use other than monitoring groundwater quality is prohibited.

The restrictive covenant is being filed by the below listed legal titleholder or with the express written permission of the legal titleholder. (*Attach permission statement from the legal titleholder if he/she is not signing this document.*)

Owner/Operator implementing the corrective action plan: H&A Investments Company, Inc.

Release Date(s): September 19, 1994

County where deed is registered: Washtenaw County

Common description of land, township/city, County: 3005 Packard, Ann Arbor, Washtenaw County, Michigan

Now Therefore H&A Investments Company, Inc., 744 E. South Street, Jackson, Michigan 49203, (hereinafter referred to as the "titleholder"), hereby imposes restriction on the property and covenants and agrees that:

1. The Titleholder shall restrict activities on the property that may interfere with corrective action, operation and maintenance, monitoring, or other measures necessary to assure the effectiveness and integrity of the corrective action.
2. The Titleholder shall restrict activities that may result in exposure to regulated substances above levels established in the corrective action plan.
3. The Titleholder shall prevent a conveyance of title, an easement, or any other interest in the property from being consummated without adequate and complete provision for compliance with the corrective action plan and prevention of exposure to regulated substances described in item 2 above.
4. The Titleholder shall grant to the Department of Environmental Quality (Department) and its designated representatives the right to enter the property at reasonable times for the purpose of determining and monitoring compliance with the corrective action plan, including but not limited to the right to take samples, inspect the operation of the corrective action measures, and inspect records.
5. Soil shall not be removed from the property described herein, unless it is characterized to determine if it can be relocated without posing a threat to the public health, safety, welfare or environment in the new location.
6. The state may enforce the restrictions set forth in the covenant by legal action in a court of appropriate jurisdiction.

The restrictions and other requirements described in this Restrictive Covenant shall run with the land and be binding to the titleholder's successors, assigns, and lessees or their authorized agents, employees or persons acting under their direction or control. The restrictions shall apply until the Department determines that regulated substances no longer present an unacceptable risk to the public health, safety or welfare or to the environment. A copy of this Restrictive Covenant shall be provided to all heirs, successors, assigns, and transferees.

This Restrictive Covenant shall not be amended, modified or terminated except by a written instrument executed by and between the Titleholder at the time of the proposed amendment, modification, or termination, and the Department. Within five (5) days of executing an amendment, modification or termination of the Restrictive Covenant, the Titleholder shall record such amendment, modification or termination with the County Register of Deeds, previously named, and within five (5) days thereafter, the Titleholder shall provide a true copy of the recorded amendment, modification or termination to the Department.

If any provision of this Restrictive Covenant is also the subject of any laws or regulations established by any federal, state or local government, the stricter of the two standards shall prevail.

The undersigned person, if executing this Restrictive Covenant on behalf of the Titleholder, represents and certifies that they are duly authorized and have been fully empowered to execute and deliver this Restrictive Covenant.

I hereby attest to the accuracy of the statements in this document and all attachments. I further certify that the language on this form has not been modified in any way.

H&A Investments Company, Inc
Corporation Name/Titleholder

Jeffrey L. Hanson
Legal Titleholder or Authorized Representative's Signature

4-14-98
Date

JEFFREY L. HANSON TREASURER
Print Legal Titleholder or Authorized Representative's Name

IN WITNESS WHEREOF, the said Titleholder of the above described property has caused the Restrictive Covenant to be executed on the 14th day of April, 1998.

Signed in the presence of:

Marsha S. Sparks
Witness

Janice Sietka
Witness

Marsha S. Sparks
Print Witness' Name

Janice Sietka
Print Witness' Name

Jeffrey L. Hanson, Treasurer of H&A Investments Company, Inc. subscribed and sworn to me before this 14th day of April, 1998.
Janet M. Hilleary
Notary Public Janet M. Hilleary
Jackson County, Michigan
(Insert County)

My Commission Expires: Dec. 19, 2001

Drafted by:
Fluor Daniel GTI, Inc.
Diane C. Pawelec, CPG
23937 Research Drive, Farmington Hills, Michigan 48335

ATTACHMENT A**Legal Description**

All of Lot 1 and partial of Lot 2 described as beginning in the southwest corner of Lot 2 thence north 174.4 feet thence east 70 feet thence south 74.43 feet thence south 89 degrees 48 minutes 30 seconds west 40 feet thence south 80 feet thence south 45 degrees 05 minutes 45 seconds east 28.24 feet thence south 89 degrees 48 minutes 30 seconds west 50 feet to point of beginning at Darlington Subdivision in the City of Ann Arbor, Washtenaw County, Michigan. Tax I.D. # 12-02-325-011

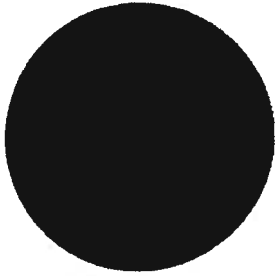
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ISO 9001 REGISTERED

*Phase I Environmental Site Assessment Update of the
Marathon Gasoline Dispensing Station and
Convenience Store
Located at 3005 Packard Road, Ann Arbor, Michigan
PM Environmental, Inc. Project No. 01-244*

INTRODUCTION

PM Environmental, Inc., (PME) has completed a Phase I Environmental Site Assessment (ESA) Update for the Marathon Gasoline Dispensing Station and Convenience Store located at 3005 Packard Road, Ann Arbor, Washtenaw County, Michigan (hereafter referred to as the "subject site"). This information contains the project summary and site investigation results, including field observations and environmental background research, in general accordance with Section 4.7.3 of the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I ESA Process (ASTM Designation: E-1527-00) and with Comerica Bank's Phase I ESA requirements.

The subject site consists of a 0.5-acre parcel of land located at the northeast corner of Packard Road and Platt Road. The subject site is occupied by a 1,860 square foot convenience store located in the central portion of the parcel. Two gasoline pump islands are present to the west of the building and one gasoline pump island is present to the south of the building, all of which are covered by metal canopies. One 20,000-gallon dual-compartment gasoline UST is located in a single basin west of the subject building and western pump islands.

The current UST system consists of one 20,000-gallon compartmental gasoline UST installed in 1997. The UST is constructed of composite steel and fiberglass (Glasteel II). All associated piping and product lines are constructed of double walled fiberglass reinforced plastic. An automatic tank and piping leak detection system is operated on the property. The UST system meets current 1998 Federal upgrade requirements.

PME updated the Phase I ESA report completed by PME in January 2004. The previous report was completed in general conformance with the scope and limitations of the ASTM Standard Practice for Environmental Site Assessments: Phase I ESA Process (Designation: E-1527-2000). The information provided in the January 2004 report sufficiently addressed conditions of the subject site property from 2004 to 1930, at which time data failure occurred. In accordance with Sections 4.7.1 and 4.7.2 of the ASTM Practice E-1527-00, the information provided in the previous report has been adopted for use in this Update Report. This adoption is justified by ASTM because, in PME's professional opinion, conditions at the subject site property likely to affect Recognized Environmental Conditions (RECs) in association with the subject site have not materially changed since the January 2004 Phase I ESA was conducted.

THIS REPORT WAS PREPARED FOR THE EXCLUSIVE USE OF FUSION OIL COMPANY, AND COMERICA BANK, EACH OF WHOM MAY RELY ON THE REPORT'S CONTENTS.

In accordance with Section 4.7.3 of the ASTM Practice E-1527-00, the minimum requirements for an update of a Phase I ESA include: 1) interviews, 2) a new site reconnaissance, and 3) an update of the records review. Any exceptions or deletions from this practice are described in the Limitations section included in Appendix G.

PREVIOUS SITE INVESTIGATIONS

PME reviewed the previous Phase I ESA completed by PME in January 2004 for the subject property. The current property layout is similar to that discussed in the previous Phase I ESA.

PME identified five on-site recognized environmental conditions (RECs) and three off-site RECs associated with the subject property. The RECs pertained to the unknown heating source for former buildings associated with the property; the possibility for orphan USTs from former operations; the former service operations performed on the subject property, the former hoist systems, and the possibility for a release from the current system. PME identified the east and south adjoining drycleaners, the southwest adjoining property, and a closed LUST site within one-eighth of a mile to the west of the subject property as off-site RECs.

In March 2004, PME completed a Phase II ESA on the subject property, which consisted of the completion of an electromagnetic (EM-31) survey, the advancement of five soil borings, all of which were converted into temporary monitoring wells, and the collection of groundwater samples from six existing permanent monitoring wells.

The EM-31 survey did not identify any anomalies in the area surrounding the current building. However, the entire property was not surveyed.

Geology encountered during previous site investigation activities consisted of clay to 8.0 feet bgs, interbedded sand and clay from 8.0 to 15.0 feet bgs, clay from 15.0 to 18.0 feet bgs, and sand and gravel from 18.0 to 30.0 feet bgs, the maximum depth explored. Groundwater was previously encountered at 6.0 to 8.0 feet bgs perched on top of the clay layer. The groundwater flow direction is to the west-southwest.

PME has identified the following RECs associated with the previous site investigations:

- Review of previous LUST closure activities indicates previous soil and groundwater samples collected on the subject property were not analyzed for the current required gasoline parameters. Specifically, samples collected between 1994 and 1997 were only analyzed for benzene, toluene, ethyl benzene, xylenes (BTEX), methyl-tert-butyl ether (MTBE), polynuclear aromatic compounds (PNAs) and lead. Current additional parameters required by the MDEQ since December 2004 include n-propylbenzene, isopropyl benzene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene for unleaded gasoline and 1,2-dibromoethane and 1,2-dichloroethane for leaded gasoline.
- No verification sampling was completed in the areas of the former gasoline and kerosene pump islands to the west and south of the subject building. The possibility exists for additional contamination to be present in these areas above the applicable Risk Based Screening Levels (RBSLs).

*Phase I ESA Update of the Marathon Gasoline Dispensing Station and Convenience Store
Located at 3005 Packard Road, Ann Arbor, Michigan
PME Project No. 01-244; October 18, 2005*

- Review of analytical results from previous site investigations indicates soil contaminant concentrations are not delineated to the east and south of PSB-5 and MW-3, and to the west of PSB-3, PSB-5, SB-10, SB-5, and MW-8, to the current Part 213 Tier I Soil Drinking Water Protection RBSLs, which are the current Part 213 LUST closure requirements.
- Review of analytical results from PME's March 2004 sampling event indicates soil contaminant concentrations of xylenes were identified at PSB-5 above the current Part 213 Tier I Commercial III Soil Volatilization to Indoor Air Inhalation RBSLs and Soil Direct Contact RBSLs, and above the Part 213 Soil Saturation Concentration (C_{sat}) Screening levels. No free product was observed in the temporary monitoring well set at the boring location. However, the possibility exists for free product to exist in the area of PSB-5. Additionally, current MDEQ Part 213 LUST closure requirements include remediation of all areas containing contaminant concentrations above C_{sat}.
- Review of analytical results from previous site investigations indicates groundwater contamination is not delineated to the east of MW-11, MW-3, and MW-6, to the south of MW-6, MW-14, and MW-13, and to the west of MW-13, MW-2, MW-1, MW-8, MW-12, and TMW-3, to the current Part 213 Tier I Groundwater Drinking Water RBSLs, which are the current Part 213 LUST closure requirements.

Refer to Appendix B for a copy of the previous Phase I ESA and Phase II ESA completed by PME.

INTERVIEWS

PME interviewed Mr. Jeff Hanson of Pipeline Oil Sales, Inc, the current owner of the subject site. According to Mr. Hansen, the occupants and operations at the subject site have remained the same since January 2004. Documentation of individuals interviewed for this Phase I ESA Update report is included in Appendix A.

SITE RECONNAISSANCE

Ms. Beth Bailey, Project Consultant for PME, completed the site reconnaissance on September 22, 2005 at 1:45 p.m. Qualification statements for the environmental professionals involved in this Phase I ESA Update are included as Appendix C. At the time of reconnaissance weather conditions were approximately 75° F and sunny. The site was inspected in a meander and search pattern. Photographs taken at the time of the site reconnaissance have been included as Appendix D.

The subject site consists of a 0.5-acre parcel of land located at the northeast corner of Packard Road and Platt Road. The subject site is occupied by a 1,860 square foot convenience store located in the central portion of the parcel. Two gasoline pump islands are present to the west of the building and one gasoline pump island is present to the south of the building, all of which are

*Phase I ESA Update of the Marathon Gasoline Dispensing Station and Convenience Store
Located at 3005 Packard Road, Ann Arbor, Michigan
PME Project No. 01-244; October 18, 2005*

covered by metal canopies. One 20,000-gallon dual-compartment gasoline UST is located in a single basin west of the subject building and western pump islands.

The current UST system consists of one 20,000-gallon compartmental gasoline UST installed in 1997. The UST is constructed of composite steel and fiberglass (Glasteel II). All associated piping and product lines are constructed of double walled fiberglass reinforced plastic. An automatic tank and piping leak detection system is operated on the property. The UST system meets current 1998 Federal upgrade requirements.

The subject site layout and the interior of the subject building were similar to the January 2004 site reconnaissance observations.

PME also completed a visual inspection of the adjoining properties from the subject site and public thoroughfares during the September 22, 2005 site reconnaissance. Adjoining properties were similar to those observed during the January 2004 site reconnaissance.

The north adjoining property, identified as 2881 Platt Road, is occupied by a dental office. The dental office occupies the previously identified residential dwelling.

The east adjoining property, identified as 3025-3033 Packard Road, is occupied by the Wash & Dry cleaners (3031 Packard) and Nabalee Produce Market (3033 Packard). During the site reconnaissance, PME observed condensation leaking from a pipe in the back of the cleaners building and onto the subject property. Significant staining was observed in the area. **PME previously identified this property as a REC, and based on the observed site conditions, this property remains a REC to the subject property.**

The south adjoining property, identified as 3000-3022 Packard Road, is occupied by a retail strip mall. Occupants of the retail strip mall were similar to those identified in the previous Phase I ESA. PME previously identified the drycleaners on this property to represent a REC. However, the drycleaners appears to be for drop off only, and is not registered as a small quantity generator with the MDEQ. Additionally, groundwater flow in the area has been documented to the west-southwest, away from the subject site. Therefore, PME no longer identifies this property as an off-site REC.

The west adjoining property, identified as 2995 Packard Road, is occupied by a BP gasoline dispensing station and convenience store.

UPDATE OF RECORDS REVIEW

PME reviewed the following records to fill in data gaps and update records since the January 2004 file reviews.

LOCAL ASSESSING DEPARTMENT

No assessing records which were different from those reviewed in the previous Phase I ESA were available at the City of Ann Arbor Assessing Department. A copy of the current assessing records is included in Appendix E.

LOCAL BUILDING DEPARTMENT

City of Ann Arbor Building Department records from 2001 to 2005 were not available for review because the files were being placed on microfiche. Therefore, PME was unable to review current building records for the subject property.

LOCAL FIRE DEPARTMENT

PME reviewed City of Ann Arbor Fire Department records for the subject property. No recent inspections or violations were on record for the subject property.

REGULATORY FILE REVIEW

PME subcontracted a third party environmental database report from FirstSearch Technology Corporation (FirstSearch), Indianapolis, Indiana. PME has included the Environmental FirstSearch Report in Appendix F. The following sites were identified as issues which should be discussed.

Buddy's Packard Marathon – This site is identified as 3005 Packard Road, Ann Arbor, and is the subject site. Review of the FirstSearch database indicates this site as a closed LUST site and an active UST site. Information about the subject property is referenced throughout this report.

Packard Amoco – This site is identified as 2995 Packard Road, Ann Arbor, and adjoins the subject site to the west. Review of the FirstSearch database indicates no changes have occurred since the January 2004 Phase I ESA (i.e. no new releases have been reported and no documented changes have been made to the UST system). PME previously reviewed MDEQ-RRD files for this property, which indicated the property does not represent an off-site REC to the subject property.

Carl Read – This site is identified as 3050 Platt Road, Ann Arbor, and is located at the southwest corner of Platt and Packard. PME previously identified this site as a REC based on the unknown condition of the USTs removed from the property in July 1991. No release has been reported for this property. Based on the distance from the subject property, across Platt Road and Packard Road, and the documented regional groundwater flow direction to the west-southwest away from the subject property, PME no longer identifies this site as an off-site REC.

Wash and Dry – This site is identified as 3031 Packard Road, Ann Arbor, and adjoins the subject site to the east. Review of the FirstSearch database indicates this site is a conditionally

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exempt small quantity generator with no violations reported. Additionally, this property historically contained a dry cleaning solvent UST that was closed in place in November 1990. PME previously identified this property as a REC. **Based on the on-going dry cleaning activities on the property, this site represents a REC to the subject site.**

Sakstrups Towing Inc. – This site is identified as 3055 Parckard Road, Ann Arbor, and is located within one-eighth of a mile to the east of the subject site. Review of the FirstSearch database indicates this site as a closed LUST site with one release reported and an inactive UST site. Review of MDEQ-RRD files indicates one 200-gallon waste oil UST was removed from the property in 1997. Review of analytical results from samples collected from the former basin location indicate limited contaminant concentrations were identified above the current Part 213 Tier I Soil Drinking Water Protection RBSLs. Contamination is delineated towards the subject property. Based on review of the MDEQ-RRD file for the property, PME no longer identifies this site as a REC.

SUMMARY AND CONCLUSIONS

PME has completed the Phase I ESA Update for the Marathon Gasoline Dispensing Station and Convenience Store located at 3005 Packard Road, Ann Arbor, Washtenaw County, Michigan in general accordance with Section 4.7.3 of the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I ESA Process (ASTM Designation: E-1527-00) and with Comerica Bank's Phase I ESA requirements.

PME previously identified the following on-site RECs in the January 2004 Phase I ESA:

- PME was unable to identify the heat source associated with the building constructed on the property between 1940 and 1947 and demolished between 1964 and 1967. The possibility exists that the building was heated with fuel oil stored in a UST. The possibility exists for an orphan UST to be present on the property and/or for a release of fuel oil to have occurred.
- Limited historical records for USTs associated with the subject property were obtained from reasonable sources (MDEQ, City of Ann Arbor, etc.) The possibility exists for orphan USTs associated with the former station may exist on the subject property.
- The subject property was occupied by two automotive service garages, one constructed between 1940 and 1947 and demolished between 1964 and 1967, and one occupying the current building was construction between 1964 and 1967 and conversion into the current convenience store in 1988. The initial building constructed on the property was located in the same general area as the current building. Waste streams associated with the service garages would have consisted of used motor oils, transmission fluids, radiator fluids, antifreeze, etc. The historical waste management practices associated with the former service operations are unknown and could be a source of subsurface contamination.

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- The possibility exists that the former service garages that occupied the subject property from development until 1988 operated in-ground hydraulic hoists. In-ground hydraulic hoists have associated underground hydraulic oil reservoirs, which can be a source of contamination from leaks.
- The former service garage constructed on the subject property between 1940 and 1947 may have historically operated a septic field on the property. The historical waste management practices associated with the former septic field are unknown.

PME identified these additional on-site RECs through review of previous site investigations:

- Review of previous LUST closure activities indicates previous soil and groundwater samples collected on the subject property were not analyzed for the current required gasoline parameters. Specifically, samples collected between 1994 and 1997 were only analyzed for benzene, toluene, ethyl benzene, xylenes (BTEX), methyl-tert-butyl ether (MTBE), polynuclear aromatic compounds (PNAs) and lead. Current additional parameters required by the MDEQ since December 2004 include n-propylbenzene, isopropyl benzene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene for unleaded gasoline and 1,2-dibromoethane and 1,2-dichloroethane for leaded gasoline.
- No verification sampling was completed in the areas of the former gasoline and kerosene pump islands to the west and south of the subject building. The possibility exists for additional contamination to be present in these areas above the applicable Risk Based Screening Levels (RBSLs).
- Review of analytical results from previous site investigations indicates soil contaminant concentrations are not delineated to the east and south of PSB-5 and MW-3, and to the west of PSB-3, PSB-5, SB-10, SB-5, and MW-8, to the current Part 213 Tier I Soil Drinking Water Protection RBSLs, which are the current Part 213 LUST closure requirements.
- Review of analytical results from PME's March 2004 sampling event indicates soil contaminant concentrations of xylenes were identified at PSB-5 above the current Part 213 Tier I Commercial III Soil Volatilization to Indoor Air Inhalation RBSLs and Soil Direct Contact RBSLs, and above the Part 213 Soil Saturation Concentration (Csat) Screening levels. No free product was observed in the temporary monitoring well set at the boring location. However, the possibility exists for free product to exist in the area of PSB-5. Additionally, current MDEQ Part 213 LUST closure requirements include remediation of all areas containing contaminant concentrations above Csat.
- Review of analytical results from previous site investigations indicates groundwater contamination is not delineated to the east of MW-11, MW-3, and MW-6, to the south of MW-6, MW-14, and MW-13, and to the west of MW-13, MW-2, MW-1, MW-8, MW-12, and TMW-3, to the current Part 213 Tier I Groundwater Drinking Water RBSLs, which are the current Part 213 LUST closure requirements.

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The following off-site REC has been identified:

- The east adjoining property is currently and has historically been occupied by a drycleaners. Dry cleaning operations commonly involve the usage of bleaches, detergents, fungicides, solvents, and turpentine, which, if improperly managed and/or disposed of, can be a source of contamination. The historical waste management practices associated with the property are unknown.

These RECs have been brought to the attention of the client within the requirements of the ASTM Standard Designation E-1527-2000.

The additional investigation, which we believe to be necessary to investigate the on-site and off-site RECs, would consist of the advancement of sixteen soil borings and the sampling of seven on-site monitoring wells at an estimated cost of \$18,360. This cost estimate does not include any off-site delineation of contamination. This cost estimate does not include an optional QA/QC package, which will be necessary if the data obtained will be used for a Part 201/213 closure and/or BEA.

This report was reviewed for its completeness and accuracy. Please feel free to contact us at (248) 336-9988 to discuss this report.

REPORT PREPARED BY:
PM Environmental, Inc.



Beth Bailey
Project Consultant

REPORT REVIEWED BY:
PM Environmental, Inc.



Steve Price
Vice President – Due Diligence

PM ENVIRONMENTAL, INC., PROJECT NUMBER 21-557
PHASE I ENVIRONMENTAL SITE ASSESSMENT

Location:

*Retail Gasoline Station and
Convenience Store
3005 Packard Road
Ann Arbor, Michigan 48108*

Prepared For:

*Mr. Salem Salamey
6053 Chase Road
Dearborn, Michigan 48126*

***PHASE I ENVIRONMENTAL SITE ASSESSMENT
OF THE RETAIL GASOLINE STATION AND
CONVENIENCE STORE LOCATED AT 3005
PACKARD ROAD, ANN ARBOR, MICHIGAN 48108***

January 15, 2004

Prepared by:

*PM Environmental, Inc.
1035 East Saginaw Highway
Lansing, Michigan 48906*

EXECUTIVE SUMMARY

PM Environmental, Inc. (PME) was retained by Mr. Salem Salamey, Dearborn, Michigan ("user") to perform a Phase I Environmental Site Assessment (ESA) of the property located at 3005 Packard Road, Ann Arbor, Washtenaw County, Michigan (hereafter referred to as the "subject site"). The Phase I ESA was completed in general accordance with the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I ESA Process (ASTM Designation: E-1527-2000) and Comerica's Guidance Document for Phase I ESAs.

THIS REPORT WAS PREPARED FOR THE EXCLUSIVE USE OF MR. SALEM SALAMEY AND COMERICA BANK AND EACH MAY RELY ON THE REPORT'S CONTENTS.

The scope of this Phase I ESA includes a review of reasonably ascertainable historical records, including aerial photography, city directories, county plat maps, Sanborn Fire Insurance Maps, city tax assessment records, city fire department records, city building department records, and county health department records. The scope also includes a review of any previous site investigations, the current topographical map, and regulatory databases. A visual inspection of the subject site and buildings therein and an inspection of the adjoining properties is also completed. Michigan Department of Environmental Quality (MDEQ) files for the subject site and any properties that PME has determined to be a potential Recognized Environmental Condition (REC) to the subject site, based on the database and site observations, are also reviewed. Additionally, interviews with knowledgeable site contacts are conducted. No subsurface investigation of the property was undertaken as part of this Phase I ESA.

The subject site consists of a 0.5-acre parcel of land located north of Packard Road and east of Platt Road. The current subject site building is located on the central portion of the property, with two gasoline dispensers located to the west of the subject building and one gasoline dispenser located to the south of the current subject building. The UST basin is located to the west of the subject building. Maintained grass is located on the west and south portion of the property along the Packard and Platt Road right-of-ways.

An understanding of the subject site area was obtained from reasonably ascertainable standard and other historical sources extending back to 1930. Data failure occurred prior to that date and between 1931 and 1939, between 1941 and 1954 and between 1955 and 1962. Standard and other historical sources were able to document that the first developed use of the subject site occurred between 1940 and 1955 as a retail gasoline station with automotive service. Historically, two separate subject buildings have existed at the subject property. It appears that the initial subject building was located in approximately the same location as the current subject building. Due to the scale and resolution of the aerial photographs, the location of the former gasoline dispensers and UST basin are unknown from initial development of the property until 1969. It appears that the initial subject building was demolished sometime between 1964 and 1967 when the current subject building was constructed. The current subject building was fully remodeled in 1988 and 1995. The use of the subject building from 1967 until 1988 consisted of a retail gasoline station with automotive service. Automotive service has

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not been performed at the subject site since 1988. Records pertaining to the USTs likely associated with the subject building from initial development until 1969 were not identified by PME. One 20,000-gallon gasoline UST was installed at the subject property in 1969. One 6,000-gallon gasoline and one 1,000-gallon fuel oil (later converted to kerosene) UST was installed at the subject property in 1976. The three USTs were removed in 1997 and replaced with the current USTs. The USTs were located in approximately the same location as the current UST basin. Currently the site contains one 20,000-gallon compartmental gasoline UST located west of the subject building. Prior to original development, the subject site consisted of undeveloped land that was potentially used as agricultural cropland.

The subject site is currently connected to natural gas and municipal water and sanitary sewer. Municipal sewer and water service were provided to the subject site in 1966, which is not consistent with the first developed use of the subject property. An onsite septic system and potable water well were likely used on the subject property from initial development until 1966 (see bullet below). A 1,000-gallon kerosene UST was installed south of the subject building in 1976 and removed in 1997. The heating source from the initial building construction is unknown and may have been fuel oil with an associated UST (see bulleted item below).

PME reviewed various reports that were previously completed for the subject site and adjoining properties at the Michigan Department of Environmental Quality (MDEQ), Remediation & Redevelopment Division (RRD), Jackson District Office, Jackson, Michigan. A confirmed release was reported to the MDEQ on August 29, 1994, based upon analytical results from a sampling event completed prior to a UST upgrade. Several site investigations were completed from 1994 to 1998, and Fluor Daniel submitted a closure report to the MDEQ on August 27, 1997. An Audit of Corrective Actions was completed by the MDEQ in July 1998, which indicated that the MDEQ concurs that corrective actions have been completed and the site has a Tier II Restricted Use Commercial III Closure. Based upon review of these reports, PME agrees that adequate corrective actions have been completed regarding the 1994 UST release.

The state and federal regulatory records review identified the following sites within the ASTM's approximate minimum search distance (AMSD):

- o Three Leaking Underground Storage Tank (LUST) sites (including the subject site and west adjoining property)
- o One State Hazardous Waste Site (SHWS)
- o Two Small Quantity Generators of Hazardous Waste Sites (subject site and east adjoining property)
- o Four Registered Underground Storage Tank (UST) Sites (subject site, southwest, west, and east adjoining properties)

PME contacted the MDEQ-RRD regarding environmental liens on the subject site, and no environmental liens exist.

Historical RECs

- Several site investigations were completed from 1994 to 1998 associated with a confirmed release in 1994, and Fluor Daniel submitted a closure report to the MDEQ on August 27, 1997. An Audit of Corrective Actions was completed by the MDEQ in July 1998, which indicated that the MDEQ concurs that corrective actions have been completed and the site has a Tier II Restricted Use Commercial III Closure. Based upon review of these reports, PME agrees that adequate corrective actions have been completed regarding the 1994 UST release.

Non CERCLA Related Concerns

PME did not complete an asbestos inspection since the current building was fully remodeled in 1988 and 1995.

No sensitive ecological areas, including potential wetlands, were observed on the subject site property.

PME observed two pole-mounted transformers located along the northern property boundary. The transformers, which are owned by MichCon, appeared to be in good condition with no evidence of leaks or staining and contained labels indicating the transformers are non-PCB containing.

Environmental Non Compliance

Environmental non-compliance was not identified associated with the subject site.

UST System Compliance

The current UST system consists of one 20,000-gallon compartmental (12,500-gallon and 7,500-gallon) gasoline UST that was installed in 1992. The UST is located to the west of the current subject site building. The UST system meets current 1998 Federal upgrade requirements, including current pollution liability insurance.

PME assumes the prospective buyer of the subject site intends on using the existing USTs. In PME's opinion it would be difficult to get a "Baseline Environmental Assessment (BEA)" affirmed by the MDEQ due to length of time the current UST system has been operating.

Current RECs

In the professional opinion of PME, an appropriate level of inquiry has been made into the previous ownership and uses of the property consistent with good commercial and customary practice in an effort to minimize liability, and no evidence or indication of RECs has been revealed, with the exception of the following on-site RECs:

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- The possible former use of heating oil and an associated UST to heat the historical building at the subject site represents a REC in connection with the subject site. It is possible that an orphaned UST exists.
- Based on the limited information available for the original USTs that were installed prior to 1955 and used until 1969, a possibility that additional orphan USTs remain present at the subject site, which represents a REC. Additionally, records pertaining to the removal of the 550-gallon and 1,000-gallon USTs installed in 1966 identified by the Ann Arbor Building Department were not identified by PME; therefore, the possibility that additional orphan USTs remain present at the subject site, which represents a REC.
- The potential for hazardous materials associated with the former automotive service operations from at least 1967 until 1988 to have been discharged onto the ground or into an onsite septic system via floor drains represents a REC in connection with the subject site. The location of the former onsite septic system is unknown. The property is now connected to municipal sewers.
- Based upon the unknown integrity of the former hoist system likely used when the property conducted automotive service and potential underground reservoir(s) and the potential for hydraulic fluid to have impacted the subsurface, a REC has been identified.
- The use of the current UST system and associated pump islands since 1997.

The following off-site RECs were identified:

- The east and south adjoining properties are currently and/or have historically operated as dry cleaning facilities. Dry cleaning operations commonly involve the usage of bleaches, detergents, fungicides, solvents, and turpentine, which, if improperly managed and/or disposed of, can be a source of contamination, which represents a REC.
- According to the EDR report, the southwest adjoining property is listed as a registered UST site. PME submitted a FOIA request to review available information from the MDEQ-RRD for this facility; however, no records existed. Due to distance considerations, unknown contents and location of USTs and no documentation stating the condition of the USTs upon removal, the potential leakage from the USTs represent a REC to the subject site.
- EDR has identified Sakstrups Towing, Inc. (3055 Packard Road) as a closed LUST site located approximately 400-feet east of the subject site. Because this site is located beyond the east adjoining property (see bulleted item above), a FOIA request was not submitted to the MDEQ-RRD for this site. Addressing the REC associated with the east adjoining property (i.e. dry cleaners) would likely identify any migration of potential contamination originating from this site. Due to distance considerations, the unknown extent of soil and/or groundwater contamination and

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the anticipated groundwater flow direction towards the west (towards the subject site), PME has identified this site as an off-site REC.

The summary presented above is general in nature and should not be considered apart from the entire text of the report, which contains the qualifications, considerations and subject site details mentioned herein. Details of findings and conclusions are elaborated upon in this report.

These RECs have been brought to the attention of the client within the requirements of the ASTM Standard Designation E-1527-2000. Because RECs were identified during the performance of the Phase I ESA, a Phase II ESA is warranted in order to determine the nature, extent, magnitude, and materiality of the off-site RECs at the property. The estimated scope would be approximately four soil borings and sampling approximately two existing groundwater-monitoring wells. The estimated cost of the additional investigation, which we believe to be necessary, is \$6,000.00.

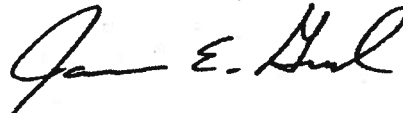
This report has been reviewed for its completeness and accuracy. Please feel free to contact our office at (517) 485-3333 to discuss this report.

REPORT PREPARED BY:
PM Environmental, Inc.

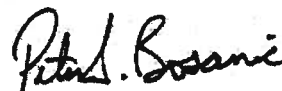


Brian Chmielewski
Project Geologist

REPORT REVIEWED BY:
PM Environmental, Inc.



Janice E. Grulke
Project Consultant



Peter S. Bosanic, P.E.
Principal Engineer

SECTION 1.0 - HISTORICAL REVIEW:

Research of historical records for the subject site was completed to evaluate the current and past uses of the subject site. ~~The research was completed to assess whether operations were conducted that involved the use, storage and/or disposal of hazardous waste, hazardous substances, and/or petroleum products.~~

An understanding of the subject site area was obtained from reasonably ascertainable standard and other historical sources extending back to 1930, data failure occurred prior to that date and between 1931 and 1939, between 1941 and 1954 and between 1955 and 1962. Interviewees provided independent knowledge of subject site and surrounding area usage which in turn provided information confirming historical subject site and general adjoining and surrounding land usage. See Appendix A for specific documentation of standard and other historical sources consulted and availability of these sources. The history of the subject site and adjoining and surrounding areas, which was able to be derived from standard historical sources and other sources to satisfy the ASTM standard requirements for uses of a property (except those excluded by data failure), have been described within the text of this report.

Standard and other historical sources were able to document that the first developed use of the subject site occurred between 1940 and 1955 as a retail gasoline station with automotive service. Historically, two separate subject buildings have existed at the subject property. It appears that the initial subject building was located in approximately the same location as the current subject building. Due to the scale and resolution of the aerial photographs, the locations of the former gasoline dispensers and UST basin are unknown. It appears that the initial subject building was demolished sometime between 1964 and 1967 when the current subject building was constructed. The current subject building was fully remodeled in 1988 and 1995. The use of the subject buildings from 1967 until 1988 consisted of a retail gasoline station with automotive service. Automotive service was not performed at the subject site from 1988 until present.

Records pertaining to the USTs associated with the subject building from initial development until 1969 were not identified by PME. **Based on the limited information available for the original USTs that were installed prior to 1955 until 1969, a possibility that additional orphan USTs remain present at the subject site, which represents a REC.** One 20,000-gallon gasoline UST was installed at the subject property in 1969. One 6,000-gallon gasoline and one 1,000-gallon fuel oil (later converted to kerosene) UST was installed at the subject property in 1976. The USTs were located in approximately the same location as the current UST basin. The three USTs were removed in 1997. Currently the site contains one 20,000-gallon compartmental gasoline UST located west of the subject building.

Prior to initial development, the subject site consisted of undeveloped land that was potentially used as agricultural cropland. No evidence of historic "farm hub" operations has been identified on the subject site through review of aerial photography dating back to 1940.

Section 1.1: Chain of Title

A chain of title was not conducted for the subject property. PME utilized aerial photography, city directories, assessing information, and interviews with individuals knowledgeable of the subject site area as sources to determine the historical usage of the subject site property (see Appendix A). Information from these sources is referenced throughout this report.

Section 1.1.1: Environmental Liens

PME contacted Ms. Jackie Barnett of the MDEQ-Remediation and Redevelopment Division's (RRD's) Compliance Cost Recovery Department for environmental lien information. According to Ms. Barnett, there are no environmental liens encumbering the subject site, or any pending, threatened, or past environmental litigation, environmental administrative procedures, or notices from government entities regarding possible violations of environmental law or possible environmental liability.

Section 1.2: Aerial Photographs and Sanborn Map Coverage

Historical aerial photography is often useful in identifying past usages of a property or surrounding area, building locations, and discernible notable features, which may indicate potential environmental concerns with regard to the subject site or surrounding area.

Reasonably ascertainable aerial photography was obtained from Michigan State University Aerial Archive, East Lansing, Michigan for 1940, 1955, 1963, 1969, 1978, 1985 and 1993 (scales and original sources unknown) (Appendix B). Additional aerial photography was obtained from the Washtenaw County Equalization Department, Ann Arbor, Michigan for 1960 (Scale: 1"=400'), 1966 (Scale Unknown), 1979, 1984 (Scales: 1"=400'), 1990 (Scale: 1"=400') and 2002 (Scale: 1" = 200'). Reference to the subject site or adjoining site usages in a particular aerial year is based on information obtained through site observations as well as standard and other historic sources. It should be noted that the scale and resolution of the aerial photographs provided for only general descriptions of the subject site and adjoining properties and limited description and discernment of site-specific features.

Sanborn Fire Insurance Maps are historical map records of fire prevention hazards for specific urban areas. These maps often provide data that sometimes can be used to determine the presence of USTs, aboveground storage tanks (ASTs), type of building materials, location of flammable material storage, and types of businesses that occupied a particular site. Sanborn Fire Insurance Maps typically are dated from the late 1800's to the 1950's, and include updates for selected areas as recently as 1990. Sanborn Fire Insurance Maps were not available for the subject site area (original source unknown, secondary source: Environmental Data Resources). A certificate of "No Coverage" is included in Appendix B.

1940 Aerial Year (MSU)

Due to the scale and resolution of this aerial photograph, specific features are difficult to discern; however, the subject site and adjoining properties appear to consist of undeveloped land potentially used as agricultural cropland, with the exception of the southwest adjoining property.

The southwest adjoining property appears to be developed with a commercial building, which is consistent with current observations and currently occupied by Buster Food Mart (3050 Packard Road).

1955 Aerial Year (MSU)

Due to the scale and resolution of this aerial photograph, specific features are difficult to discern; however, the subject site appears to have undergone development.

The southwest adjoining property appears similar to the 1940 aerial photograph.

The remaining adjoining properties appear to consist of undeveloped land potentially used as agricultural cropland.

1960 Aerial Year (Washtenaw County)

Due to the resolution of this aerial photograph, specific features are difficult to discern, however it appears that a commercial building is located in the center of the subject property.

The north and west adjoining property appears to consist of vacant, undeveloped land.

The east adjoining property appears to be developed with a commercial building, which is consistent with current observations and currently occupied by Wash and Dry (3031 Packard Road).

The south adjoining property appears to be developed with a commercial strip mall, which is consistent with current observations (refer to Section 1.3 for current and historical occupants).

The southwest adjoining property appears similar to the 1940 and 1955 aerial photographs.

1963 Aerial Year (MSU)

Due to the scale resolution of this aerial photo, specific features are difficult to discern; however, the subject site and adjoining properties appear similar to the 1960 aerial photograph.

1966 Aerial Year (Washtenaw County)

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In this aerial year, the initial subject building is present. The location of the associated fuel dispensers and UST basin could not be determined.

The adjoining properties appear similar to the 1960 and 1963 aerial photographs, with the exception of the west adjoining property.

The west adjoining property appears to be developed with a retail gasoline station, which is consistent with current observations and is currently occupied by Amoco (2995 Packard Road).

1969 Aerial Year (MSU)

Due to the scale and resolution of this aerial photo, specific features are difficult to discern; however, it appears that the subject site has undergone redevelopment and the current subject building observed during the site reconnaissance is present. The adjoining properties appear similar to the 1966 aerial photograph, with the exception of the north adjoining property.

The north adjoining property appears to be developed with a residential dwelling, which is consistent with current observations.

1978 Aerial Year (MSU)

Due to the scale and resolution of this aerial photo, specific features are difficult to discern; however, the subject site and adjoining properties appear similar to the 1969 aerial photograph.

1979, 1984, 1990 (Washtenaw County) 1985 and 1993 Aerial Years (MSU)

In these aerial photographs, the subject site and adjoining properties appear similar to the 1978 aerial photographs.

2002 Aerial Year (Washtenaw County)

In this aerial year, the current subject building, canopy and UST basin are present as observed during the site reconnaissance. The subject building is located in approximately the same location as the historical building observed in previous aerial photographs. The UST basin appears west of the subject building and the dispensers are located west and south of the current dispensers.

The adjoining properties appear similar to the 1978, 1979, 1984, 1985, 1990, and 1993 aerial photographs.

Section 1.3: City Directories

Reasonably ascertainable R.L. Polk's City Directories and Bresser's Cross-Index Directories of Ann

Arbor, Michigan were researched. Bresser's Cross-Index Directories indicated the following limited and selective listing of historical occupancies at the subject site and adjoining properties from 1957 to 2003. Polk's City Directories were not available. PME reviewed the city directories to determine if any of the occupants would represent a potential REC to the subject site. Directories were researched in at least three-year increments. It should not be construed that the earliest date represented is the initial date of occupancy. Other descriptions regarding adjoining property historical usage and development should also be referenced as provided in the text of this report.

Subject Site – 3005 Packard Road

2003 - 1983	Buddy's Mini Mart
1979 - 1978	K&N Sunoco
1975 - 1974	Easy's Auto Service
1969	Packard and Platt Sunoco Service
1964	Under Construction
1960	No Address Listing
1957	Mitchell's Service and Gasoline Station

North Adjoining – 2881 Platt Road

2003 - 1993	Karl Natanson
1989 - 1983	Kirk Cuthbert
1979 - 1978	Andrew F. Anderson
1975 - 1974	Guy Everett
1969	Minnie Cuthbert
1964 - 1957	No Address Listing

East Adjoining – 3031 Packard Road

2003 - 1969	Wash and Dry
1964	Hollis Clayton Laundry
1960 - 1957	No Address Listing

South Adjoining - 3000 Packard Road

2003 - 1988	Little Ceasars Pizza
1984 - 1979	Wrightman Electric
1975 - 1969	Honda of Ann Arbor
1964 - 1957	No Address Listing

South Adjoining - 3010 Packard Road

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2003 Fantasy Attic Costumes
1999 - 1998 Ann Arbor Hardware
1975 - 1969 **Honda of Ann Arbor**
1964 - 1957 No Address Listing

South Adjoining - 3012 Packard Road

2003 - 1993 Health Care for Women
1989 - 1988 Blanchard Associates, Five Star Realty Group
1984 - 1978 Clock Shop, McRaes Clocks
1975 - 1957 Stevens Department Store

South Adjoining - 3014 Packard Road

2003 Ann Arbor City Place
1999 - 1998 No Address Listing
1994 - 1957 Community Pharmacy

South Adjoining - 3016 Packard Road

2003 Groom and Go
1999 - 1998 Clippindales
1994 - 1988 Golden Chains, Inc.
1984 - 1983 Ann Arbor Construction, Golden Chains, Inc. J&W Painting
1979 - 1978 H&R Block, R K Keniston Insurance, State Farm Insurance, Uni-Tak Company
1975 - 1974 No Address Listing
1969 Niemela-Calvin Construction
1964 **Maynard's BJ Mower and Electrical Motor Service**
1960 - 1957 Weldon Insurance and Real Estate Agency

South Adjoining - 3018 Packard Road

2003 - 1988 **U and I Dry Cleaners**
1984 - 1983 Moon Shop Alterations
1979 - 1978 Hide Away Yarn
1975 - 1974 R K Keniston Insurance, State Farm Insurance Company
1969 Asgar Jamal Dentist
1964 Vacant
1960 - 1957 G and H Barber Shop

South Adjoining - 3020 Packard Road

2003 Panda Restaurant
1999 – 1998 Ann Arbor Hardware
1975 - 1969 **Honda of Ann Arbor**
1964 - 1957 No Address Listing

South Adjoining - 3022 Packard Road

2003 Bombay Grocers
1999 – 1998 Ann Arbor City Place
1994 - 1974 A&D Business Machines, Royal Typewriter Company
1969 A&D Business Machines
1964 Vacant
1960 Henry A Dorn
1957 No Address Listing

Southwest Adjoining - 3050 Platt Road

2003 Buster and More, Mr. Cash, Pronto Communications
1999 – 1964 Buster's Food Mart
1960 Gamble Store, **Read's Family Store**
1957 Gamble Store

West Adjoining – 2995 Packard Road

2003 **Packard Road Amoco**
1999 - 1998 No Address Listing
1994 – 1993 Delush Construction
1989 – 1988 Delush Construction, **Bakers Packard**
1984 – 1974 **Bakers Packard, Packard-Platt Service**
1969 **Baker's Shell Service**
1964 - 1954 No Address Listing

Section 1.4: Interviews with Knowledgeable Site Contacts

Mr. Jeff Hanson, the "key site manager," completed a Phase I ESA Questionnaire, which was provided by PME. Mr. Hanson represents Pipeline Oil Sales, Inc., the current owner of the property since 1999. The following affirmative responses were provided:

- The presence of petroleum products at the site (Section 1.0).
- Current/historic use of the subject site or adjoining properties as a gasoline station (Section 1.0).
- Current/historic use of the subject site or adjoining properties as a dry cleaning facility (Section 2.10).

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- Whether or not stained soil is/was present on the property (Section 2.0).
- Current/historic presence of storage tanks located on the property (Section 2.4).
- Current/previous presence of vent pipes and fill pipes (Section 2.4).
- Knowledge of environmental site assessment of the property that indicated the presence of petroleum products on the property (Section 1.6).
- Former presence of contamination on the subject site due to release from previous UST system (Section 1.6).

The following unknown response was provided:

- Current/historic presence of chemicals in containers greater than 5.0 gallons (Section 2.2.1)
- Is there a transformer, capacitor, or any hydraulic equipment for which there are any records indicating the presence of PCBs (Section 2.6.0)?
- Whether or not pole or pad-mounted transformers are located on the subject site (Section 2.6.0).

Additionally, PME interviewed representatives from the Ann Arbor Fire Department, Ann Arbor Assessing Department and the Washtenaw County Health Department. In general, interviewees supported the information reviewed from other historical sources (i.e., aerial photos, city records, etc.).

Section 1.5: Building Department/Assessor Records

The City of Ann Arbor building records are included within the tax assessment records. The following table summarizes relevant building permits on file at the City of Ann Arbor Assessing Department:

Table 1: Building Permits for 3005 Packard Road

Date of Issue	Reason For Issue	Occupant at time of Issue
9/16/66	Building Plan	Unknown
11/16/66	550-gallon and 1,000-gallon UST Installation	Unknown
5/7/74	UST Installation	Easy's Auto Service
11/5/86	Alter Existing Building	Buddys Mini Mart
6/29/87	Repairs	Buddys Mini Mart

Records pertaining to the removal of the 550-gallon and 1,000-gallon UST installed in 1966 were not identified by PME; therefore, the possibility that additional orphan USTs remains present at the subject site, which represents a REC.

PME obtained and reviewed reasonably ascertainable tax assessment information provided by the City of Ann Arbor Assessor's Office. Copies of all available assessment records for the subject site and the current legal description are included as Appendix C.

Section 1.6: Previous Site Investigations

PME reviewed the following reports that were previously completed for the subject site at the Michigan Department of Environmental Quality (MDEQ), Remediation & Redevelopment Division (RRD), Jackson District Office, Jackson, Michigan (Appendix D):

- Initial Abatement Report, September 24, 1994 (Envirologic Technologies, Inc. (Envirologic), Kalamazoo, MI)
- Initial Assessment Report (IAR), November 10, 1994 (Envirologic)
- Free Product Report, November 21, 1994 (Envirologic)
- Phase I Hydrogeologic Report, February 8, 1995 (Envirologic)
- Phase II Hydrogeologic Work Plan, April 6, 1995 (Envirologic)
- Final Assessment Report (FAR), August 28, 1997 (Fluor Daniel GTI, Inc., Farmington Hills, MI)
- Closure Report, November 14, 1997 (Fluor Daniel GTI)
- Audit of Corrective Actions, January 27, 1998 (MDEQ, Lansing, Michigan)
- Letter in Response to Corrective Action Audit, June 29, 1998, (Fluor Daniel GTI)
- Audit of Corrective Actions, July 8, 1998 (MDEQ, Lansing, Michigan)

In 1994, Envirologic conducted a sub-surface investigation to gather data for a UST removal and upgrade project. Three soil borings were installed near the existing USTs. Staining and odors were detected in the soil. A release was reported based on analytical results of soil and groundwater samples. Geology at this site consisted of interbedded clays and sands to approximately 18.0 feet bgs, where sand of an undetermined thickness occurs.

During initial assessment activities, ten additional soil borings were advanced at the subject property. Groundwater was encountered between 6.0 to 8.0 feet below ground surface (bgs). The groundwater flow direction appeared to vary across the subject site. Groundwater contamination was determined to migrate off-site beneath Packard and Platt Roads. The investigation indicated that free phase kerosene (free product) was discovered in SB-6 and SB-7 (Figure 2) located near former kerosene UST. Between November 16 and November 17, 1994, four USTs were removed. A total of 870 cubic yards of soil was excavated and disposed of off-site at a licensed disposal facility. During the installation of the current USTs, a recovery well (RW-1) was installed between SB-6 and SB-7 and recovery of free product began using a bailer. A free product report was filed with the MDEQ indicating one inch of product was observed and approximately 0.125 gallons was recovered.

On February 8, 1995 Envirologic conducted a Phase I Hydrogeologic Study. The investigation included the advancement of five soil borings and four permanent groundwater-monitoring wells. Results of the investigation indicated concentrations of benzene, toluene, ethylbenzene and xylenes (collectively BTEX) were detected above the former Michigan Environmental Resource Act (MERA) Type B Cleanup Criteria. PNAs and MTBE were detected below MERA Type B Cleanup Criteria. Total lead was detected below MERA Default Type A Cleanup Criteria. Groundwater analytical results indicated BTEX and MTBE above the MERA Type A Cleanup Criteria. PNAs and lead were

Detected below laboratory method detection limits (MDLs). The Phase I Hydrogeologic Report recommended additional investigation to define the extent of BTEX and MTBE in groundwater. The MDEQ conducted an audit of the Phase I Hydrogeologic Report on February 15, 1997, and found the report to be adequate.

Envirologic submitted a Phase II Hydrogeologic Study Work Plan on April 7, 1995, proposing the advancement of eleven soil borings and the installation of eight monitoring wells for the purpose of completing the horizontal and vertical delineation of the kerosene release. The work plan also proposed the collection and laboratory analysis of soil and groundwater samples for BTEX, PNAs, and lead. The report cover sheet indicated that a total of 5.25 gallons of free product had been recovered as of April 7, 1995. The MDEQ conducted an audit of the Phase II Hydrogeologic Study Work Plan on April 14, 1997, and found the work plan to be acceptable.

Fluor Daniel GTI, Inc. submitted a FAR dated August 28, 1997, to the MDEQ. The FAR included the results of additional subsurface investigation, which included the advancement of thirteen soil borings, installation of thirteen monitoring wells, and the collection and laboratory analysis of groundwater samples to complete the vertical and horizontal extent of BTEX and MTBE in groundwater. Laboratory results for groundwater samples indicated that BTEX, MTBE and PNA concentrations were below Michigan Tier 1 Generic Groundwater Contact Criteria. Free product was not detected in any of the monitoring wells. A UST Closure Report for a former Shell Service Station located directly across Platt Road, west of the subject site, at 2995 Packard was obtained from the MDEQ and reviewed. The closure report was reviewed to determine if BTEX and MTBE in groundwater migrated from the subject property to the former Shell Service Station property. The closure report indicated that soil samples collected from boring adjacent to Platt Road were not impacted with BTEX and MTBE. The final assessment investigation activities resulted in completion of the vertical and horizontal delineation of BTEX and MTBE in groundwater.

A Tier 1 Unrestricted Residential Closure Report was submitted to the MDEQ dated November 14, 1997, by Fluor Daniel GTI, Inc. No additional site investigation was performed as part of the closure report. According to the report, the extent of soil and groundwater contamination has been defined to applicable Tier 1 Residential Risk Based Screening Levels (RBSLs) which included soil and groundwater Direct Contact Criteria (DC and GC respectively). Volatilization of hydrocarbons into indoor air was not determined to be a relevant pathway based on the depth to groundwater being 6.0 to 8.0 feet bgs.

An Audit of Corrective Actions dated January 27, 1998 was performed by the MDEQ. According to the letter, the MDEQ *did not* concur with the conclusion that corrective actions have been completed. Specifically, the closure report did not address off-site contamination or restrict the possible usage of impacted groundwater. MW-12 is located on or approximate to the site property line and contained 1,400 parts per billion of dissolved benzene along with other gasoline constituents. The levels found in this monitoring well and its location indicated that contamination has migrated off-site. Information found in the file for the former Shell station, located west of the Buddy's site, directly across Platt

Road, does not indicate that this contamination has crossed the roadway; however, utilities are located beneath the roadways along the property's south and west frontages. The utilities may be intercepting dissolved phase contamination. Additionally, soils at this site consist of interbedded clays and sands to approximately 18.0 feet bgs, where sand of an undetermined thickness occurs. This sand layer could be utilized as a source of drinking water. There may be communication between the interbedded layers and the sand layer (18.0 feet and greater). The levels of contaminants found at this site are above Drinking Water and Soil Groundwater Protection Criteria but are below Soil Direct Contact and groundwater Direct Contact criteria.

Fluor Daniel GTI, Inc. prepared an amended Tier II Restricted Commercial III Closure report in response to the MDEQ's audit of corrective actions. A restrictive covenant has been placed on the property limiting land use. A Notice to Local Unit of Government of Corrective Action and Land Restriction form notifying the City of Ann Arbor of the property restrictions was sent on June 23, 1998.

An Audit of Corrective Actions dated July 9, 1998 was performed by the MDEQ. According to the letter, the MDEQ agrees with the conclusion that corrective actions at the site have been completed in accordance with Part 213. Corrective Action at the site has resulted in the Restricted use of the site based on a Tier 2 evaluation, utilizing institutional controls.

Based upon review of these reports, PME agrees that corrective actions have been completed at the site regarding the previous release.

Section 1.7: Other Sources/Historical Plat Maps

County atlases and plat maps are historical map records of property ownership, which may sometimes indicate the location of building structures or occupancy. These maps are published by county and further broken down into townships. Within the township maps, individual ownership of land, as well as possible land usage, is documented. County atlases and plat maps are generally available from the mid to late 1800s through present day. More recent maps typically specify ownership, while early county atlases and plat maps generally specify land ownership and sometimes, building structures.

Historical county plat maps were available for the following years: 1930, 1964, 1967, 1970, 1973, 1975, 1977, 1979, 1981-1982, 1982-1983, 1985, 1987, 1989, 1991, 1994, 1997 and 1999 (Appendix B). The following ownership information is provided by the plat maps:

1964 - 1999 City of Ann Arbor
1930 Darlington Subdivision

SECTION 2.0 - SITE INSPECTION:

A site inspection was completed to observe site conditions, evaluate the data and observations and to

assess the environmental risk associated with the subject property. The site was inspected in a meander and search pattern. Site photographs taken at the time of the on-site reconnaissance of the subject site and adjoining properties are included as Appendix E.

Section 2.1.0: Name of Inspector(s), Date and Time of Inspection

Mr. Brian Chmielewski, Project Geologist for PME, conducted the site inspection on November 18, 2003 at 11:00 a.m. Qualification statements for the environmental professionals involved in this ESA are included as Appendix F.

Section 2.1.1: Weather

At the time of reconnaissance, weather conditions were approximately 45° F and mostly cloudy.

Section 2.1.2: Physical Setting

The subject site consists of a 0.5-acre parcel of land located north of Packard Road and east of Platt Road. The current subject site building is located on the central portion of the property, with two gasoline dispensers located to the west of the subject building and one gasoline dispenser located to the south of the subject building (Photographs #1 - 4). The UST basin is located to the west of the subject building. Maintained grass is located on the west and south portion of the property along the Packard and Platt Road right-of-ways.

The initial subject building was located in approximately the same location as the current subject building (see Section 1.0 for historical usages and dates) (Figure 2). The location of the former gasoline dispensers and UST basin is unknown from initial development until 1969.

The subject site is further described as located in Township three South (T.3S), Range six West (R.6W), Section 2, Ann Arbor, Washtenaw County, Michigan.

According to previous subsurface investigations completed at the subject site, geology at this site consisted of interbedded clays and sands to approximately 18.0 feet bgs, where sand of an undetermined depth occurs. Groundwater was encountered between 6.0 to 8.0 feet bgs. The groundwater flow direction varied across the subject site.

Section 2.1.3: Current Property Use

The subject site is currently utilized as a retail gasoline station and convenience store.

Section 2.1.4: Intended Property Use

The intended property use is consistent with the current use.

Section 2.1.5: Utilities

The subject site building is currently connected to natural gas and municipal water and sanitary sewer. Michigan Consolidated Gas Company (MichCon) currently provides natural gas to the subject site. However, due to company policy, MichCon will not release the date of connection of the building to natural gas. According to the City of Ann Arbor Building Department, a permit to install a 550-gallon and 1,000-gallon UST was issued in 1966. The former contents of these USTs are unknown. The likely heating source from the initial building construction is unknown and likely consisted of fuel oil and an associated UST. **The use of fuel oil and an associated UST at the subject site represents a REC in connection with the subject site.**

Section 2.1.5a: Municipal Water/Water Wells

According to the Ann Arbor Township Water and Sewer Department, municipal water service was provided to the subject site in 1966, which is not consistent with the first development use of the property. Therefore, it is likely that the subject property used on private potable water well from sometime prior to 1954 until municipal water was provided to the subject property in 1966. Record of a private water well was not identified. A water well was not observed during the site reconnaissance and was likely abandoned and no longer exists; however, documentation of how this well was abandoned was not provided to PME and could act as a contaminate transport mechanism to the underlying aquifer if not abandoned properly.

Section 2.1.5b: Municipal Sanitary Sewer/Septic System

According to the Ann Arbor Water & Sewer Department, municipal sanitary sewers were provided to the subject site in 1966, which is not consistent with the first development use of the property as a retail gasoline station with automotive service from sometime prior to 1957. It is likely that an onsite sewage disposal system was used on the subject property. **The potential for hazardous materials associated with the former automotive service operations to be released onto the subject site via an onsite septic system represents a REC in connection with the subject site.**

No floor drains were observed within the current subject building during the site reconnaissance, with the exception of the restrooms.

Section 2.1.5c: Storm Sewer

No storm water catch basins were observed in the subject site parking lot.

Section 2.2.0: Site Building(s)

Based upon review of aerial photographs, the initial subject site building was constructed between 1940 and 1955. It appears that the initial subject building was demolished sometime between 1964 and 1967 when the current subject building observed during the site reconnaissance was constructed. It appears that the original and current subject buildings were constructed in approximately the same location. The current subject site building contains a total of 1,860-square feet of floor space. Interior finish materials of the subject building consist of concrete and ceramic tile floor coverings, drywall walls, and acoustical ceiling tiles throughout the building. Floor drains were not identified during the site reconnaissance, with the exception of the restrooms.

Section 2.2.1: Current Interior Waste Streams

The interior waste stream consists of typical office and food waste.

Individual containers of motor oil, gasoline additives, etc. for retail sale are stored on shelves in the convenience store, which does not represent a REC.

Section 2.2.2: Historical Interior Waste Streams

According to city directories, automotive service was performed at the subject site from sometime prior to 1957 until 1988. **The historical usage of the subject site as an automotive service facility and retail gasoline station represents a REC based upon the unknown waste management practices of the former occupants and the potential mismanagement of hazardous substances and petroleum products associated with automotive service and repair, including motor oil, brake fluid, antifreeze, etc.**

Section 2.3.0: Building Exterior

Asphalt pavement immediately surrounds the subject site building, and concrete pavement is present beneath the canopy and over the UST basin. Two fuel dispensers are located to the west of the subject site building. An additional fuel dispenser is located to the south of the subject building. One trash dumpster is located north of the subject building. Groomed grass is located along the Packard and Platt Road right-of-ways.

Section 2.3.1: Exterior Site Operations

Fueling operations occur to the west and south of the subject site building. Customer and employee parking occur in the parking lots surrounding, and to the north of the subject site building.

The location of historical fueling operations is unknown from initial development until 1969.

PME observed approximately eight drum rings in the asphalt parking lot located to the north of the

subject building (Photograph #5). Evidence of leaks or spills from the former drums was not observed at the time of the site reconnaissance.

Section 2.3.2: Hazardous Waste Disposal

No hazardous wastes are currently generated or stored at the subject site

Historically, the subject property has been used as an automotive service facility from sometime prior to 1957 until 1988 and as a retail gasoline station since 1988 until present. It is possible that hazardous wastes such as solvents were improperly disposed of on-site.

Section 2.3.2.a: Agricultural Waste

Based upon review of aerial photography, the subject site was potentially used for agricultural cropland prior to 1940 until sometime prior to 1955. The mere historical agricultural cropland usage is viewed as a "deminimis condition" by PME as defined in the ASTM Standard E-1527-00. Most agricultural chemicals sprayed on crops are very diluted with water. Often areas on agricultural land that present the potential for environmental concerns are chemical and pesticide storage and mixing area where concentrated spills can occur, vehicle maintenance areas, land disposal areas, fuel supply areas, and dry wells. No such areas (i.e., "farm hubs") have been identified to be historically present on the subject site property, as determined through review of reasonable ascertainable standard and other historical sources.

Section 2.3.3: Solid Waste Stream and Disposal

Food and office solid waste is placed in the trash dumpster located in the northern parking lot (Photograph #6). No evidence of current or historic dumping has been identified during the completion of this Phase I ESA.

Section 2.4: USTs/ASTs

Table 1 below provides a summary of the historic and current USTs present at the subject site, which was obtained from the review of MDEQ-WHMD, Lansing, Michigan records (Appendix J):

Table 1: UST Information

Tank ID Number	Size (Gallons)	Contents	Est. Date Installed	Date Removed	Source of Information
1	6,000	Gasoline	1976	1997	EDR Report, MDEQ Registration Records, Previous Environmental Site Investigations
2	20,000	Gasoline	1969	1997	EDR Report, MDEQ Registration Records, Previous Environmental Site Investigations
4	1,000	Kerosene	1976	1997	EDR Report, MDEQ Registration Records, Previous Environmental Site Investigations
5	20,000	Gasoline	1997	In-Use	EDR Report, MDEQ Registration Records, Previous Environmental Site Investigations, Site Reconnaissance

Records pertaining to the USTs likely associated with the subject building from initial development until 1969 were not identified by PME. **Based on the limited information available for the original USTs that were installed prior to 1955 until 1969, a possibility that additional orphan USTs remain present at the subject site, which represents a REC.**

The current UST system consists of one 20,000-gallon compartmental (12,500-gallon and 7,500-gallon) gasoline UST. The UST is located to the west of the current subject site building (see Figure 2). The UST system meets current 1998 Federal upgrade requirements, including current pollution liability insurance (a copy of this policy is included within Appendix I). The Simplicity automatic leak detection system was observed mounted on a wall in the office. Record of a MDEQ inspection conducted on February 12, 2002, is also provided in Appendix I that stated, "Interstitial or monthly monitoring shall be conducted in accordance with 280.44 (C). Section 280.44 (C)". A letter from the MDEQ dated March 18, 2002 indicated that the previous violation had been corrected. Table summarizes the current UST system and the components designed to prevent and detect a release

Table 2: Current UST System Specifications

Tank ID Number	5
Substance Stored	Gasoline
Est. Year Installed	1997
Size (gallons)	Compartmental: 12,500-gallon and 7,500-gallon (20,000-gallon total)
Tank Construction	Composite (Steel with Fiberglass)(Glasteel II)

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Corrosion Protection Equipped? Internal or External?	Not Applicable Due To UST Construction
Tank Release detection?	Automatic Tank Gauging, Manual Tank Gauging, Tank Tightness Testing, Inventory Control, Interstitial Monitoring of Double Walled Tank
Piping Construction	Double Walled, Fiberglass Reinforced Plastic
Piping Corrosion Protection	Not Applicable Due to Piping Construction
Piping Release Detection?	Automatic Line Leak Detectors, Line Tightness Testing and Interstitial Monitoring of Double Walled Piping
Overfill Protection Equipment?	Overfill Devices Have Been Installed
Spill Protection Equipment?	Spill Protection Equipment Have Been Installed
Do inventory records show discrepancies or shortages?	No
Tightness Tested? Date of Last Test?	Yes: 11/20/03
Registration Status	The most recent registration of the current UST present on the subject site provided to PME by Pipeline Oil Sales and on file at the MDEQ-Waste & Hazardous Materials Division (WHMD) is dated January 1999. PME recommends the registration be updated with the MDEQ- (WHMD), Lansing, Michigan upon the sale of the property.
Tanks Meet 1998 Requirements?	Record of a MDEQ inspection, conducted on February 12, 2002, is also provided in Appendix I that stated, "Interstitial or monthly monitoring shall be conducted in accordance with 280.44 (C). Section 280.44 (C)". A letter from the MDEQ dated March 18, 2002 indicated that the previous violation had been corrected.
Number of Monitoring Wells Currently On-Site	Approximately two on-site monitoring wells were observed during the site reconnaissance.

Section 2.5: Pits, Ponds, Lagoons and Waste Disposal Areas

No pits, ponds, lagoons or waste disposal areas were identified.

Section 2.6.0: Potential PCB Containing Materials

PME did not assess the light ballasts or capacitors since it was outside the scope of work and was not requested by the client.

Automotive service was performed at the subject site from initial development until 1988 and it is likely that underground hoists were present in the subject building. Flooring likely covered any evidence of former hoist when extensive remodeling occurred in 1988 and 1995. Underground hoists can operate with an underground reservoir of hydraulic fluid, which historically often contained polychlorinated biphenyls (PCBs) (i.e., a hazardous substance). **Based upon the unknown integrity of the hoist system and underground reservoir(s) potentially present, and the potential for hydraulic fluid to have impacted the subsurface, a REC has been identified.**

PME observed two pole-mounted transformers located along the northern property boundary (photograph # 7). The transformers, which are owned by MichCon, appeared to be in good condition with no evidence of leaks or staining and contained labels indicating the transformers are non-PCB containing.

Section 2.6.1: Electromagnetic Fields

Identification of electromagnetic fields is not included in within the scope of work for this Phase I ESA. However, PME did not observe any high-tension wires or substations in the vicinity of the subject site.

Section 2.7: Vegetation

No stained or stressed vegetation was observed during the site reconnaissance.

Section 2.8: Oil and Gas Wells

PME reviewed the MDEQ-Geologic Survey Division (GSD) web site (www.deq.state.mi.us/mir) to determine if an oil and/or gas well existed previously on the subject site or surrounding area. According to the MDEQ-GSD web site, no records of an oil and/or gas well existing on or adjacent to the subject site area were identified.

Section 2.9.0: Topography

The United States Geological Survey Division (U.S.G.S.) 7.5-Minute Topographic Map of the Ypsilanti West Quadrangle, 1967 (revised in 1983) for the subject site was reviewed in accordance with the ASTM standards (Figure 1). The map was reviewed to determine if conditions exist whereby hazardous substances or petroleum products migrate to or from the subject site to surface water, groundwater or soil.

Based on the topographic map, the subject site is located at an elevation of approximately 820 feet above mean sea level. The immediate subject site area appears to gently slope downward to the west towards an unidentified intermittent stream, which is located approximately one quarter of a mile away at an elevation of 800 feet.

Section 2.9.1: Drainage Patterns

Storm water that does not infiltrate the subsurface would drain to the storm water sewers located along Packard and Platt Roads. No storm water catch basins were identified on the subject site property during the site reconnaissance.

Section 2.9.2: General Soil Profile

According to the United States Department of Agriculture's Soil Survey of Washtenaw County, Michigan (published June 1991) the subject site area is characterized as the Nappanee Series (Appendix H). The Nappanee series consists of somewhat poorly drained, nearly level, and gently sloping soils formed in loamy and clayey textured glacial till. These soils occur on till plains, moraines, and lake plains. In a representative profile the surface layer is dark grayish-brown silty clay loam eight inches thick. The sub soil is firm, mottled brown, and twelve inches thick. The upper part is silty clay, and the lower part is clay. The underlying material is grayish-brown silty clay.

Section 2.9.3: Geology

The "Hydrogeologic Atlas of Michigan", produced by Western Michigan University and the United States Environmental Protection Agency, 1981; "Quaternary Geology of Southern Michigan", Department of Geological Sciences, University of Michigan, Ann Arbor, Michigan (1982); "Bedrock Geology of Southern Michigan", Michigan Department of Natural Resources (MDNR), Geological Survey Division (1987) were reviewed.

According to the aforementioned sources, the Michigan Formation of the Meramecian Series and Mississippian System, which is part of the Paleozoic Era, underlies this area of Washtenaw County. Bedrock is covered by end moraines of coarse-textured glacial till, which is characterized as gray, grayish brown or reddish brown, non-sorted glacial debris consisting of sandy loam or sandy clay with varying amounts of cobbles or boulders. Thickness of this geology varies between 100 to 200 feet.

Based on previous site investigations, geology at the subject site consists of interbedded clays and sands to approximately 18.0 feet bgs, where sand of an undetermined thickness occurs.

Section 2.9.4: Local Groundwater Flow

A review of topographic features/gradient may be suggestive of the hydrogeologic gradient in the immediate subject site area, since in a general way, the water table typically conforms to surface topography. Based on topographical features, the anticipated groundwater flow direction would be to the west (Section 2.9.0). Based on previous subsurface investigations at the subject site, the groundwater flow direction appeared to vary across the subject site, likely due to the presence of current and former UST basins and fill material.

The north adjoining property currently consists of a residential dwelling (Photograph #8) (2881 Platt Road) (Photograph #14). According to aerial photographs and city directories, the residential dwelling was constructed between 1964 and 1969. Prior to construction, the north adjoining property was undeveloped land potentially used as agricultural cropland.

East Adjoining Property

The east adjoining property currently consists of a commercial dry cleaner occupied by Wash and Dry (3031 Packard Road) (Photographs # 9 - #10). According to aerial photographs and city directories, the commercial building was constructed between 1960 and 1964 and has operated as dry cleaner since 1964. **Dry cleaning operations commonly involve the usage of bleaches, detergents, fungicides, solvents, and turpentine, which, if improperly managed and/or disposed of, can be a source of contamination, which represents a REC.** Prior to construction, the east adjoining property was undeveloped land potentially used as agricultural cropland.

South Adjoining Properties

The south adjoining property is currently consists of a commercial strip mall with various tenants (Photograph #11 - #12). According to aerial photographs and city directories, the commercial building was constructed between 1955 and 1957 and has operated as a automobile dealer with possible vehicle service (Honda of Ann Arbor) from sometime prior to 1969 until at least 1975, mower and electrical motor service (Maynard's BD Mower and Electrical Motor Service) in 1964 and a dry cleaner (U and I Dry Cleaners) from sometime prior to 1988 until present. Automotive service garages often involve the usage of petroleum products and other hazardous substances including antifreeze, motor oil, brake fluid, transmission fluid, etc. Dry cleaning operations commonly involve the usage of bleaches, detergents, fungicides, solvents, and turpentine, which, if improperly managed and/or disposed of, can be a source of contamination, which represents a REC. **The potential mismanagement and/or improper disposal practice of the substances described above represent a REC.** Prior to construction, the south adjoining property was undeveloped land potentially used as agricultural cropland.

Southwest Adjoining Property

The southwest adjoining property currently consists of a commercial grocery store occupied by Buster Food Mart (3050 Packard Road) (Photograph #13). According to aerial photographs and city directories, the commercial building was constructed between 1955 and 1957. EDR has identified the southwest adjoining property as a UST site. PME submitted a FOIA request to review available information from the MDEQ-RRD for this facility; however, no records existed. According to the EDR report, two 500-gallon USTs were installed at the property in 1930. The contents and location of the former UST is unknown. According to the report the UST were removed from the ground;

however, a date was not available. **Due to distance considerations, unknown contents and location of USTs and no documentation stating the condition of the USTs upon removal, potential leakage from the USTs represent a REC to the subject site.** Prior to construction, the southwest adjoining property was undeveloped land potentially used as agricultural cropland.

West Adjoining Property

The west adjoining property is currently occupied by a commercial gasoline station (Amoco) (photograph #14). According to aerial photographs and city directories, the commercial building was constructed between 1966 and 1969 and has operated as a gasoline station with/without automotive service from sometime prior to 1969 until present. The property is listed as a closed LUST site (Section 4.7). Prior to construction, the west adjoining property was undeveloped land potentially used as agricultural cropland.

Through site observations, regulatory records review, and review of reasonably ascertainable standard and other historical sources for the subject site area, PME has not identified any of these adjoining properties to represent a potential off-site REC to the subject site, with the exception of the east, south and southwest.

SECTION 3.0 - ASBESTOS CONTAINING MATERIALS (ACM) INSPECTION

PME did not complete an asbestos inspection since the current building was fully remodeled in 1988 and 1995.

Asbestos products are heat resistant, flexible, and durable, and are commonly found in building construction and insulating materials (e.g., floor tile, fire preventative structures, pipe wrap, etc.). Collectively, asbestos containing products are often referred to as Asbestos containing materials or ACM) ASTM Standard Designation E-1527-2000 defines ACM as containing more than one percent asbestos. Friable ACM is defined as any material containing more than 1% asbestos, as determined by using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable refers to materials that contain asbestos bound by cement, plastic, adhesive, etc., which if handled through routine maintenance, will not become friable.

Under the United States Environmental Protection Agency (USEPA) NESHAP regulation, ACMs are any material found to contain asbestos in concentrations greater than one percent, as determined by polarized light microscopy (PLM). RACMs are: a) Friable asbestos material, b) Category I non-friable ACM that has become friable, c) Category I non-friable ACM that will be or has been subject to grinding, cutting, abrading, or d) Category II non-friable ACM that has a high probability of becoming crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by NESHAP. Category I non-friable ACMs are asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than one percent asbestos. Category II non-friable materials, excluding Category I

*Phase I ESA of the Retail Gasoline Station and Convenience Store
Located at 3005 Packard, Ann Arbor, Michigan 48108
PME Project No. 21-557; January 7, 2004*

- Several site investigations were completed from 1994 to 1998 associated with a confirmed release in 1994, and Fluor Daniel submitted a closure report to the MDEQ on August 27, 1997. An Audit of Corrective Actions was completed by the MDEQ in July 1998, which indicated that the MDEQ concurs that corrective actions have been completed and the site has a Tier II Restricted Use Commercial III Closure. Based upon review of these reports, PME agrees that adequate corrective actions have been completed regarding the 1994 UST release.

Non CERCLA Related Concerns

PME did not complete an asbestos inspection since the current building was fully remodeled in 1988 and 1995.

No sensitive ecological areas, including potential wetlands, were observed on the subject site property.

PME observed two pole-mounted transformers located along the northern property boundary. The transformers, which are owned by MichCon, appeared to be in good condition with no evidence of leaks or staining and contained labels indicating the transformers are non-PCB containing.

Environmental Non Compliance

Environmental non-compliance was not identified associated with the subject site.

UST System Compliance

The current UST system consists of one 20,000-gallon compartmental (12,500-gallon and 7,500-gallon) gasoline UST that was installed in 1992. The UST is located to the west of the current subject site building. The UST system meets current 1998 Federal upgrade requirements, including current pollution liability insurance.

PME assumes the prospective buyer of the subject site intends on using the existing USTs. In PME's opinion it would be difficult to get a "Baseline Environmental Assessment (BEA)" affirmed by the MDEQ due to length of time the current UST system has been operating.

Current RECs

In the professional opinion of PME, an appropriate level of inquiry has been made into the previous ownership and uses of the property consistent with good commercial and customary practice in an effort to minimize liability, and no evidence or indication of RECs has been revealed, with the exception of the following on-site RECs:

- The possible former use of heating oil and an associated UST to heat the historical building at the subject site represents a REC in connection with the subject site. It is possible that an orphaned UST exists.

*Phase I ESA of the Retail Gasoline Station and Convenience Store
Located at 3005 Packard, Ann Arbor, Michigan 48108
PME Project No. 21-557; January 7, 2004*

- Based on the limited information available for the original USTs that were installed prior to 1955 and used until 1969, a possibility that additional orphan USTs remain present at the subject site, which represents a REC. Additionally, records pertaining to the removal of the 550-gallon and 1,000-gallon USTs installed in 1966 identified by the Ann Arbor Building Department were not identified by PME; therefore, the possibility that additional orphan USTs remain present at the subject site, which represents a REC.
- The potential for hazardous materials associated with the former automotive service operations from at least 1967 until 1988 to have been discharged onto the ground or into an onsite septic system via floor drains represents a REC in connection with the subject site. The location of the former onsite septic system is unknown. The property is now connected to municipal sewers.
- Based upon the unknown integrity of the former hoist system likely used when the property conducted automotive service and potential underground reservoir(s) and the potential for hydraulic fluid to have impacted the subsurface, a REC has been identified.
- The use of the current UST system and associated pump islands since 1997.

The following off-site REC were identified:

- The east and south adjoining properties are currently and/or have historically operated as dry cleaning facilities. Dry cleaning operations commonly involve the usage of bleaches, detergents, fungicides, solvents, and turpentine, which, if improperly managed and/or disposed of, can be a source of contamination, which represents a REC.
- According to the EDR report, the southwest adjoining property is listed as a registered UST site. PME submitted a FOIA request to review available information from the MDEQ-RRD for this facility; however, no records existed. Due to distance considerations, unknown contents and location of USTs and no documentation stating the condition of the USTs upon removal, the potential leakage from the USTs represent a REC to the subject site.
- EDR has identified Sakstrups Towing, Inc. (3055 Packard Road) as a closed LUST site located approximately 400-feet east of the subject site. Because this site is located beyond the east adjoining property (see bulleted item above), a FOIA request was not submitted to the MDEQ-RRD for this site. Addressing the REC associated with the east adjoining property (i.e. dry cleaners) would likely identify any migration of potential contamination originating from this site. Due to distance considerations, the unknown extent of soil and/or groundwater contamination and the anticipated groundwater flow direction towards the west (towards the subject site), PME has identified this site as an off-site REC.

Section 10.2: Recommendations

These RECs have been brought to the attention of the client within the requirements of the ASTM Standard Designation E-1527-2000. Because RECs were identified during the performance of the Phase I ESA, a Phase II ESA is warranted in order to determine the nature, extent, magnitude, and materiality of the off-site RECs at the property. The estimated scope would be approximately four soil borings and sampling approximately two existing groundwater-monitoring wells. The estimated cost of the additional investigation, which we believe to be necessary, is \$6,000.00.



JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
JACKSON DISTRICT OFFICE



STEVEN E. CHESTER
DIRECTOR

June 13, 2006

**SUBMITTAL OF A
BASELINE ENVIRONMENTAL ASSESSMENT**

Submitter:

Packard Mini Mart, L.L.C.
3005 Packard Road
Ann Arbor, Michigan

BEA ID#:

B200600738JK

Property Address/Location:

3005 Packard Road
Ann Arbor, Michigan

The Department of Environmental Quality (DEQ) has received on June 7, 2006, a Baseline Environmental Assessment (BEA) dated May 31, 2006 and prepared by PM Environmental, Inc., for the above submitter. This BEA disclosure was submitted pursuant to Section 20126(1)(c) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.20126.

The submitter has not requested a written determination by the DEQ on the adequacy of the BEA, as allowed in Section 20129a of Part 201 of the NREPA. The BEA may be reviewed in the future to determine its adequacy. If the BEA is determined to be inadequate, the submitter may be liable under Part 201 for the contamination at the facility.

The DEQ is not at this time making any findings about whether the submitter is otherwise liable or covered by any other exemption from liability under Part 201. This BEA does not alter liability with regard to a subsequent release or threat of release or any exacerbation of existing conditions. This BEA is only for the person and property identified in the petition. The use of the property and any response activity undertaken must be in accordance with the requirements of all applicable or relevant and appropriate state and federal laws and regulations. Liability protection is conditioned on the timely and satisfactory completion of any response activities described in the submittal. Pursuant to R 299.5919(2), if the submitter sells or transfers the property, the submitter is required to disclose the BEA to a subsequent owner or operator in order to be entitled to an exemption from liability.

The BEA is based on the proposed use of hazardous substances as identified in the BEA. The DEQ will maintain an administrative record of each BEA. If at any time you provide the DEQ with post-BEA information related to your BEA, the DEQ will retain such information with the administrative record. Such post-BEA information will not be considered part of the BEA and acceptance of such information by the DEQ should in no way be construed to mean the DEQ will review or advise the submitter regarding the adequacy of such information for any purpose.

The submitter, as the owner and/or operator of a facility, has the following Due Care responsibilities under Section 20107a of Part 201 and Part 10 of the Part 201 Rules, unless covered by the exemptions in Section 20107a(4) or (5):

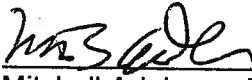
- Undertake measures as are necessary to prevent exacerbation of the existing contamination.
- Exercise due care by undertaking response activity necessary to mitigate unacceptable exposure to hazardous substances, mitigate fire and explosion hazards due to hazardous substances, and allow for the intended use of the facility in a manner that protects the public health and safety.
- Take reasonable precautions against the reasonably foreseeable acts or omissions of a third party and the consequences that foreseeably could result from those acts or omissions.
- Notify the DEQ if there are discarded or abandoned containers that contain hazardous substances on the property using Form EQP4476.
- Notify the DEQ and adjacent property owners if contaminants are migrating off the property (refer to Form EQP4482).
- Notify the local fire department if there is a fire or explosion hazard.
- Notify utility and easement holders if contaminants could cause unacceptable exposures and/or fire and explosion hazards.

Rule 1003(5) requires a person who is subject to the provisions of Section 20107a to maintain documentation of compliance with these requirements and to provide such documentation to the DEQ upon request. If the property use changes in the future, additional due care measures may be necessary. The property owner and operator must re-evaluate and document their continued compliance with Section 20107a.

The submitter may also have responsibility under applicable state and federal laws, including, but not limited to Part 201, Environmental Remediation; Part 111, Hazardous Waste Management; Part 211, Underground Storage Tank Regulations; Part 213, Leaking Underground Storage Tanks; Part 615, Supervisor of Wells of the NREPA; and the Michigan Fire Prevention Code, 1941 PA 207, as amended.

The BEA constitutes a response activity, consequently, this submittal is subject to Section 20137(4) and (5) of the NREPA.

Authorized signature:



Mitchell Adelman, District Supervisor
Remediation and Redevelopment Division
Jackson District
517-780-7852



Date

Attachment



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDATION AND REDEVELOPMENT DIVISION

FOR DEQ USE ONLY
BEA Disclosure # <u>B200600738JK</u>

**DISCLOSURE OF A BASELINE ENVIRONMENTAL ASSESSMENT
(FORM EQP4446 (REV. 4/03))**

(Under the authority of Part 201, 1994 Act 451, as amended, and the Rules promulgated thereunder)

DO NOT use this form for requesting a Baseline Environmental Assessment ("BEA") adequacy determination, OR if the property is not a facility, OR if the BEA was complete before the effective date of the BEA rules. Please answer the following questions as completely as possible.

Name and address of submitter*
(individual or legal entity):

Packard Mini Mart, LLC
3005 Packard Road
Ann Arbor, Michigan

Status relative to the property:

	Former	Current	Prospective
Owner*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Operator*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Address/location of property where
BEA was conducted:

3005 Packard Road
Ann Arbor, Michigan

County: Washtenaw

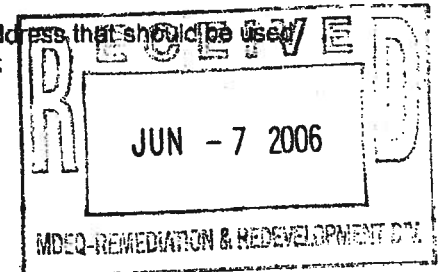
Provide the property tax identification number(s) or, if applicable, the ward and item number(s) for the property identified in the BEA. Required pursuant to Rule 907.

09-12-02-325-011

Contact person: Mr. Chehir Ayachi

Telephone #: 5174149541

If the address of the person seeking liability protection above is different from the address that should be used to correspond with the contact person, please provide the contact person's address:



Check the appropriate response to each of the following questions.

1. Is it known that the source of contamination at the property is primarily from any of the following?
- | | | |
|---|-------------------------------------|-------------------------------------|
| | YES | NO |
| • A leaking underground storage tank (UST) regulated under Part 213, 1994 PA 451, as amended. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| • A licensed landfill or solid waste management facility. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| • A licensed hazardous waste treatment, storage, or disposal facility. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| • Oil and gas development related activities. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

The source of the release that resulted in this property becoming a "facility" will determine which DEQ division will maintain a file regarding this BEA.

2. Based on the Part 201 Rules, this BEA is a:

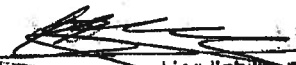
Category N	<input type="checkbox"/>
Category D	<input type="checkbox"/>
Category S	<input checked="" type="checkbox"/>

3. Is the property at which the BEA was conducted a "facility" as defined by Section 20101? If the answer to this question is NO, do not submit the BEA to the DEQ.

YES	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>

- 4. Was the BEA conducted* prior to or within 45 days after the date of purchase*, occupancy, or foreclosure of the property, whichever is earliest, and completed* not more than 15 days after the date required by Section 20126(1)(c) or Rule 299.5903(8)? If the answer to either portion of this question is no, you are ineligible for an exemption from liability based on the BEA. YES NO
- 5. Is the BEA being disclosed to the DEQ no later than 8 months after the earliest of the date of purchase, occupancy, or foreclosure? All disclosures pursuant to Rule 919(3) must be submitted to the DEQ no later than 8 months after the earliest of the date of purchase, occupancy, or foreclosure. YES NO
- 6. Are any USTs or abandoned or discarded containers identified in the BEA? If yes, this information must be provided on Form EQP4476. YES NO
- 7. Does this BEA rely on an isolation zone or an engineering control that requires an affidavit pursuant to Rule 299.5909(3) or 299.5909(4)? If yes, a completed affidavit, Form EQP4479, must be attached or the BEA will not be considered complete. YES NO

With my signature below, I certify that the enclosed BEA and all related materials are complete and accurate to the best of my knowledge and belief. I understand that intentionally submitting false information to the DEQ is a felony and may result in fines up to \$25,000 for each violation.

Signature of Submitter:  Date 5/31/06
 (Person legally authorized to bind the person seeking liability protection)

Name (Typed or Printed) Mr. Chehir Avachi

Title Member

PM ENVIRONMENTAL, INC., PROJECT NUMBER 01-244B
CATEGORY-S BASELINE ENVIRONMENTAL ASSESSMENT

**CATEGORY-S BASELINE ENVIRONMENTAL
ASSESSMENT CONDUCTED PURSUANT TO
SECTION 20126(1)(c) OF 1994 PA 451, PART 201, AS
AMENDED, AND THE RULES PROMULGATED
THEREUNDER**

Location:

*Retail Gasoline Station and Convenience Store
3005 Packard Road
Ann Arbor, Washtenaw County, Michigan*

Prepared For:

*Mr. Chehir Ayachi
Packard Mini Mart, LLC
C/O Mr. Ike Kuczer
Sky Bank
32255 Northwestern Highway
Farmington Hills, Michigan 48334*

VOLUME 1 OF 2

**CATEGORY-S BASELINE ENVIRONMENTAL
ASSESSMENT CONDUCTED PURSUANT TO
SECTION 20126(1)(C) OF 1994 PA 451, PART 201, AS
AMENDED, AND THE RULES PROMULGATED
THEREUNDER, FOR THE RETAIL GASOLINE
STATION AND CONVIENCE STORE (PARCEL ID
NUMBER 09-12-02-325-011) LOCATED AT 3005
PACKARD ROAD IN ANN ARBOR, WASHTENAW
COUNTY, MICHIGAN**

May 31, 2006

Prepared by:

PM Environmental, Inc.

22655 S. Chrysler Drive
Hazel Park, MI 48030
Office: 248.336.9988
Fax: 248.336.9989

3340 Ranger Road
Lansing, MI 48906
Office: 517.321.3331
Fax: 517.323.7228

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Grand Rapids, MI 49546
Office: 616.285.8857
Fax: 616.285.8026

*Category-S Baseline Environmental Assessment for the Retail Gasoline
Station and Convenience Store (Parcel ID Number 09-12-02-325-011)
Located at 3005 Packard Road in Ann Arbor, Washtenaw County, Michigan
PM Environmental, Inc. Project No. 01-244B; May 31, 2006*

**Category-S Baseline Environmental Assessment
Conducted Pursuant to Section 20126(1)(C)
Of 1994 Pa 451, Part 201, as Amended, and the
Rules Promulgated Thereunder**

1.0 IDENTIFICATION OF AUTHOR AND BEA COMPLETION

This Category-S Baseline Environmental Assessment (BEA) was conducted on May 30, 2006, by Mr. Brian Chmielewski, Project Geologist, and reviewed by Mr. Douglas McVey, Technical Operations Manager and Mr. Peter S. Bosanic, P.E., Principal and Vice President, PM Environmental, Inc. (PME), 3340 Ranger Road, Lansing, Michigan. Professional resumes for the environmental professionals involved are included in Appendix A. This Category-S BEA was completed on May 31, 2006 prior to the purchase of the property.

2.0 INTRODUCTION

PM Environmental, Inc., has been retained by Packard Mini Mart, LLC (Ann Arbor, Michigan), to provide environmental consulting services related to the development of a Category-S BEA for the retail gasoline station and convenience store (Parcel ID # 09-12-02-325-011) located at 3005 Packard Road in Ann Arbor, Washtenaw County, Michigan. Packard Mini Mart, LLC, plans on purchasing the subject site in the month of June 2006.

The subject site consists of 0.5-acres of land located north of Packard Road and east of Platt Road (Figure 1). The current subject site building is located on the central portion of the property, with two (2) gasoline dispensers located to the west of the subject building and one (1) gasoline dispenser located to the south of the current subject building. The current UST basin is located west of the subject building and consists of one (1) 20,000-gallon compartmental (12,500-gallon and 7,500-gallon) gasoline underground storage tank (UST) constructed of fiberglass. Maintained grass is located on the west and south portion of the property along the Packard and Platt Road right-of-ways (ROWS).

The subject site is a closed leaking underground storage tank (LUST) site. Specifically, a Tier II Restricted Commercial III Closure prepared by Flour Daniel GTI in 1998 exists for the subject site. The report was audited by the Michigan Department of Environmental Quality (MDEQ) and approved for closure. There is a deed restriction that eliminates the use of shallow groundwater for any purpose on the subject site and a notice was provided notifying the Local Unit of Government (LUG) that contamination exists below Packard and Platt Roads that adjoin the subject site. Concentrations of methyl tert butyl ether (MTBE) were documented to be present in groundwater on the subject site above Part 213 Tier 1 Residential Risk-Based Screening Levels (RBSLs). The

*Category-S Baseline Environmental Assessment for the Retail Gasoline
Station and Convenience Store (Parcel ID Number 09-12-02-325-011)
Located at 3005 Packard Road in Ann Arbor, Washtenaw County, Michigan
PM Environmental, Inc. Project No. 01-244B; May 31, 2006*

horizontal extent of contamination has not been defined to the west, south and east to Part 213 Tier 1 Residential Soil Drinking Water Protection (DWP) and Groundwater Drinking Water (DW) Risk-Based Screening Levels (RBSLs). The MDEQ currently requires full delineation.

PME previously completed a Phase I Environmental Site Assessment (ESA) dated January 15, 2004 (Appendix B) which identified the following on site historical and current Recognized Environmental Conditions (RECs):

- Several site investigations were completed from 1994 to 1998 associated with a confirmed release in 1994, and Fluor Daniel submitted a closure report to the MDEQ on August 27, 1997. An Audit of Corrective Actions was completed by the MDEQ in July 1998, which indicated that the MDEQ concurs that corrective actions have been completed and the site has a Tier II Restricted Use Commercial III Closure. Based upon review of these reports, PME agrees that adequate corrective actions have been completed regarding the 1994 UST release.
- The possible former use of heating oil and an associated UST to heat the historical building at the subject site represents a REC in connection with the subject site. It is possible that an orphaned UST exists.
- Based on the limited information available for the original USTs that were installed prior to 1955 and used until 1969, a possibility that additional orphan USTs remain present at the subject site, which represents a REC. Additionally, records pertaining to the removal of the 550-gallon and 1,000-gallon USTs installed in 1966 identified by the Ann Arbor Building Department were not identified by PME; therefore, the possibility that additional orphan USTs remain present at the subject site, which represents a REC.
- The potential for hazardous materials associated with the former automotive service operations from at least 1967 until 1988 to have been discharged onto the ground or into an onsite septic system via floor drains represents a REC in connection with the subject site. The location of the former onsite septic system is unknown. The property is now connected to municipal sewers.
- Based upon the unknown integrity of the former hoist system likely used when the property conducted automotive service and potential underground reservoir(s) and the potential for hydraulic fluid to have impacted the subsurface, a REC has been identified.
- The use of the current UST system and associated pump islands since 1997.

The following off site REC were identified:

Category-S Baseline Environmental Assessment for the Retail Gasoline Station and Convenience Store (Parcel ID Number 09-12-02-325-011) Located at 3005 Packard Road in Ann Arbor, Washtenaw County, Michigan PM Environmental, Inc. Project No. 01-244B; May 31, 2006

- The east and south adjoining properties are currently and/or have historically operated as dry cleaning facilities. Dry cleaning operations commonly involve the usage of bleaches, detergents, fungicides, solvents, and turpentine, which, if improperly managed and/or disposed of, can be a source of contamination, which represents a REC.
- According to the EDR report, the southwest adjoining property is listed as a registered UST site. PME submitted a Freedom of Information Act (FOIA) request to review available information from the MDEQ-RRD for this facility; however, no records existed. Due to distance considerations, unknown contents and location of USTs and no documentation stating the condition of the USTs upon removal, the potential leakage from the USTs represent a REC to the subject site.
- EDR has identified Sakstrups Towing, Inc. (3055 Packard Road) as a closed LUST site located approximately 400-feet east of the subject site. Because this site is located beyond the east adjoining property (see bulleted item above), a FOIA request was not submitted to the MDEQ-RRD for this site. Addressing the REC associated with the east adjoining property (i.e. dry cleaners) would likely identify any migration of potential contamination originating from this site. Due to distance considerations, the unknown extent of soil and/or groundwater contamination and the anticipated groundwater flow direction towards the west (towards the subject site), PME has identified this site as an off-site REC.

PME completed an initial Phase II ESA dated April 4, 2004, (Appendix C) to address the above mentioned RECs and to confirm site conditions and to assess areas not investigated as part of the LUST investigation. The scope of the Phase II ESA included a geophysical survey using an electromagnetic (EM)-31, the advancement of five (5) soil boring/temporary monitoring wells and sampling six (6) existing permanent groundwater monitoring wells. Soil and/or groundwater samples were collected to investigate potential contamination from current and historical uses of the property as a gasoline station and potential migration of contamination from off-site sources. Soil and groundwater samples were submitted for laboratory analysis of gasoline range volatile organic compounds (VOCs) or full VOCs, polynuclear aromatic hydrocarbons (PNAs), polychlorinated biphenyls (PCBs), cadmium, chromium, and lead, or a combination thereof. Concentrations of contaminants that were identified were similar to those identified in the 1997 Closure Report.

The geophysical survey was completed around the perimeter of the subject building. Anomalies indicating the presence of orphaned USTs were not identified during the EM-31 geophysical survey. EM-31 limitations that may preclude data acquisition and interpretation include reduced signal penetration from overburden attenuation properties, rough or uneven ground surfaces, complicated overburden, standing water, ambient microwave noise, and dense, reinforced concrete pavements or foundations. The potential exists that additional USTs could be present and not identified if the

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Located at 3005 Packard Road in Ann Arbor, Washtenaw County, Michigan
PM Environmental, Inc. Project No. 01-244B; May 31, 2006*

location of the UST was directly below an interior or exterior load bearing wall, or in areas PME was unable to survey. If any additional USTs are discovered during any development activities, the USTs should be removed in accordance with Part 211 of P.A. 451.

PME completed a Phase I ESA Update dated October 18, 2005, (Appendix D) and the following additional on site RECs were identified based upon additional review of previous investigations:

- Review of previous LUST closure activities indicates previous soil and groundwater samples collected on the subject property were not analyzed for the current MDEQ required gasoline parameters. Specifically, samples collected between 1994 and 1997 were only analyzed for benzene, toluene, ethyl benzene, xylenes (collectively referred to as BTEX), MTBE, PNAs and lead. These were the appropriate parameters at the time of closure. Current additional parameters required by the MDEQ since December 2004 include n-propylbenzene, isopropyl benzene, 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene for unleaded gasoline and 1,2-dibromoethane and 1,2-dichloroethane for leaded gasoline.
- No verification sampling was completed in the areas of the former gasoline and kerosene pump islands to the west and south of the subject building. The possibility exists for additional contamination to be present in these areas above the applicable RBSLs.
- Review of analytical results from previous site investigations indicates soil contaminant concentrations are not delineated to the east and south of PSB-5 and MW-3, and to the west of PSB-3, PSB-5, SB-10, SB-5, and MW-8, to the current Part 213 Tier I DWP RBSLs, which are the current Part 213 LUST closure requirements.
- Review of analytical results from PME's March 2004 sampling event indicates soil contaminant concentrations of xylenes were identified at PSB-5 above the current Part 213 Tier I Commercial III Soil Volatilization to Indoor Air Inhalation RBSLs and Soil Direct Contact RBSLs, and above the Part 213 Soil Saturation Concentration (C_{sat}) Screening levels. No free product was observed in the temporary monitoring well set at the boring location. However, the possibility exists for free product to exist in the area of PSB-5. Additionally, current MDEQ Part 213 Leaking Underground Storage Tank (LUST) closure requirements include remediation of all areas containing contaminant concentrations above C_{sat}.
- Review of analytical results from previous site investigations indicates groundwater contamination is not delineated to the east of MW-11, MW-3, and MW-6, to the south of MW-6, MW-14, and MW-13, and to the west of MW-13, MW-2, MW-1, MW-8, MW-12, and TMW-3, to the current Part 213 Tier I Groundwater Drinking Water RBSLs, which are the current Part 213 LUST closure requirements.

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Station and Convenience Store (Parcel ID Number 09-12-02-325-011)
Located at 3005 Packard Road in Ann Arbor, Washtenaw County, Michigan
PM Environmental, Inc. Project No. 01-244B; May 31, 2006*

PME completed additional site investigation in May 2006 which consisted of advancing two (2) additional soil borings, installing one (1) temporary monitoring well and sampling ten (10) existing monitoring wells. Concentrations of various VOCs were identified in soil and groundwater exceeding the MDEQ Part 213 Tier 1 Residential and Commercial III DWP, SVII, and DW RBSLs.

Because concentrations of target analytes were detected above MDEQ Part 213 Tier 1 Residential and Commercial III RBSLs, the subject site is classified as a "facility," as defined by Part 201 of P.A. 451 of the Michigan Natural Resources Environmental Protection Act (NREPA).

The subject site is currently owned by Pipeline Oil Sales, Inc. Packard Mini Mart, LLC plans on purchasing the subject site in June 2006 and intends to use the subject site as a gasoline filling station and convenience store. The future use of the site as a gasoline filling station will involve the use and storage of hazardous substances similar to those contaminants identified beneath the property. Therefore, a Category "S" BEA is the appropriate BEA. Packard Mini Mart, LLC intends to use the existing contaminant concentrations (or lack thereof) present in soil and groundwater beneath the subject site as the means to distinguish a potential new release from existing contamination. Semi-annual groundwater samples will be collected from up to six (6) existing monitoring wells and compared to the existing analytical data as a basis to distinguish existing contamination from any new release in accordance with Michigan Administrative Code R 299 5901-5919. UST and product line tightness tests were conducted for the UST system that was installed in 1997, which meets the EPA's 1998 Federal upgrade requirements, at the subject on May 26, 2006 (Appendix I). Results of the tightness testing indicated that the UST and product lines passed the 0.2-gallon per hour tightness tests and are within system specifications. (Section 5.2). The UST system was installed in 1997 and there is no indication that a release has occurred from this system; therefore, the UST system will be used as an engineering control as an alternative approach for the BEA (Section 6.0).

3.0 PROPERTY DESCRIPTION & INTENDED HAZARDOUS SUBSTANCE USE

3.1 Property Description

As stated in Section 2.0, the subject site consists of 0.5-acres of land located north of Packard Road and east of Platt Road. The current subject site building is located on the central portion of the property, with two (2) gasoline dispensers located to the west of the subject building and one (1) gasoline dispenser located to the south of the current subject building. The current UST basin is located west of the subject building and consists of one (1) 20,000-gallon compartmental (12,500-gallon and 7,500-gallon) gasoline UST constructed of fiberglass. Maintained grass is located on the west and south portion of the property along the Packard and Platt Road ROWs.

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A copy of the legal description supplied from the City of Ann Arbor Assessing Department is included in Appendix E.

3.2 Intended Hazardous Substance Use

Packard Mini Mart, LLC proposes to use the property as a gasoline filling station and convenience store. Gasoline will be stored in the one (1) 20,000-gallon compartmental fiberglass UST located west of the subject site building (Figure 2). According to the MDEQ UST registration records, the UST is plumbed, via double-walled, fiberglass-reinforced, plastic piping, to a total of three (3) dispensers, which are located to the west and south of the subject building (see Figure 2). The UST system (including the associating product piping) is equipped with leak detection sensors that are connected to an automatic tank gauging (ATG) system that will shut down the UST system in the event of a leak or system component failure. The product dispensers are also equipped with emergency system shutoff switches and shear valves to prevent a release of product in the event that a dispenser nozzle is torn away.

Material safety data sheets (MSDSs) for hazardous materials that are intended to be stored and dispensed at the subject site are presented in Appendix H. Refer to Table 1 for the intended hazardous substance use. The petroleum products are similar to those present as site contaminants; therefore, a Category-S BEA is appropriate.

4.0 KNOWN CONTAMINATION

4.1 Soil and Groundwater Sampling and QA/QC Procedures

4.1.1 Previous Environmental Investigations

Phase I ESA dated January 15, 2004 completed by PME (refer to Section 2)

Phase II ESA dated April 4, 2004 completed by PME;

The scope of the Phase II ESA (Appendix C) included a geophysical survey using an electromagnetic (EM)-31, the advancement of five (5) soil boring/temporary monitoring wells and sampling six existing permanent groundwater monitoring wells. Soil and groundwater samples were submitted for laboratory analysis of gasoline range VOCs or full VOCs, PNAs, PCBs, cadmium, chromium, and lead, or a combination thereof. The geophysical survey was completed around the perimeter of the subject building.

Anomalies indicating the presence of orphaned USTs were not identified during the EM-31

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geophysical survey. EM-31 limitations that may preclude data acquisition and interpretation include reduced signal penetration from overburden attenuation properties, rough or uneven ground surfaces, complicated overburden, standing water, ambient microwave noise, and dense, reinforced concrete pavements or foundations. The potential exists that additional USTs could be present and not identified if the location of the UST was directly below an interior or exterior load bearing wall, or in areas PME was unable to survey. If any additional USTs are discovered during any development activities, the USTs should be removed in accordance with Part 211 of P.A. 451.

The purpose of the Phase II ESA was to address RECs identified in the January 2004 Phase I ESA completed by PME and to confirm site conditions and to assess areas not investigated as part of the LUST investigation. Concentrations of target analytes in soil exceeded the Part 213 Tier 1 Residential and Commercial DWP, Groundwater Contact Protection (GCP), Soil Volatilization to Indoor Air Inhalation (SVII), and/or Soil Direct Contact (SDC) RBSLs and Soil Saturation Concentration (Csat) screening level. Concentrations of target analytes in soil exceeded the Part 213 Tier 1 Residential and Commercial DWP in the soil near PSB-2 (west of the former kerosene UST and northeast of the southern gasoline dispenser) and PSB-3 (along the western property line west of the UST basin and western gasoline dispensers). Concentrations of target analytes in groundwater exceeded the Part 213 Tier 1 Residential and Commercial DW RBSLs collected from TMW-2 (west of the former kerosene UST and northeast of the southern gasoline dispenser), TMW-3 (along the western property line west of the UST basin and western gasoline dispensers), TMW-5 (south of the southern gasoline dispenser), MW-1 (along the western property line north of the current UST basin), MW-4 (west of the subject building and east of the western gasoline dispensers), MW-4d (adjacent to MW-4) and MW-2 (southwest of the western gasoline dispensers). The horizontal extent of soil and/or groundwater impact associated with the release of petroleum hydrocarbons from the site has not been defined to the west, south and east to Part 213 Tier 1 Residential DWP and DW RBSLs. Concentrations of contaminants that were identified were similar to those identified in the 1997 Closure Report.

Based upon the presence of contaminants at concentrations above the applicable Part 213 Tier 1 Residential and Commercial III RBSLs, the subject site is identified as a "facility," as defined by Part 201 of PA 451 of the Michigan Natural Resources Environmental Protection Act (NREPA). The owner/operator of the property is subject to the "due care" obligations of Section 20107a. (1) of Part 201 of PA 451.

Phase I ESA Update dated October 18, 2005 completed by PME (refer to Section 2);

4.1.2 Current Environmental Investigation

PME completed the field portion of a Phase II ESA on May 5, 2006, that consisted of drilling two (2) soil borings, installing one (1) temporary monitoring well and sampling ten (10) existing monitoring wells to obtain an understanding of current site conditions. Two (2) soil and 11 groundwater samples were submitted for laboratory analysis of gasoline range VOCs, PNAs and lead. Refer to Table 2 for a list of target analytes and their respective USEPA Methods for chemical analysis. Refer to Figure 2 for a figure depicting the soil boring/monitoring well locations with analytical results.

Specifically, the Phase II ESA activities were conducted in the following areas of the property:

Location	Depth (feet)	Analysis	Objectives	Soil Sample Selection	Screened Interval
PSB-6	20.0	Gasoline Range VOCs, PNAs & Lead	Assess soil conditions associated with the former pump islands	3.0–4.0 feet bgs	NA
PSB/TMW-7	20.0	Gasoline Range VOCs, PNAs & Lead	Assess soil and groundwater conditions associated with the current 20,000-gallon UST.	11.0–12.0 feet bgs	10.0-15.0 feet bgs

4.1.2.1 QA/QC Procedures for the Current Investigation

The soil borings were advanced to the desired depth using a Model 6610DT Geoprobe[®] drill rig. Soil sampling was performed for soil classification, verification of subsurface geologic conditions, and for investigating the potential and/or extent of soil and groundwater contamination at the subject site. Soil samples were generally collected on a continuous basis using a 5-foot long macro-core sampler.

During drilling operations, the drilling equipment was cleaned to minimize the possibility of cross contamination. These procedures included cleaning equipment with a phosphate free solution (i.e., Alkanox[®]) and rinsing with distilled water after each sample collection. Drilling and sampling equipment was also cleaned in this manner prior to initiating field activities.

Soil collected from two-foot sample intervals was screened using a PID to determine if VOCs were

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present. Soil from specific depths was placed in plastic bags and allowed to volatilize. The headspace within each bag was then monitored with the PID. The PID is able to detect trace levels of organic compounds in the air space within the plastic bag. The PID utilizes a 10.2 electron volts (eV) lamp. Therefore, the PID can only detect organic vapors with an ionization potential less than or equal to 10.2 eV.

Soil and groundwater samples that were collected were submitted to Merit Laboratories, Inc., East Lansing, Michigan for chemical analysis. Refer to Table 3 through Table 6 for a summary of the soil and groundwater analytical results and a comparison to the Part 213 Residential, Commercial and Industrial RBSLs. Figure 2 depicts the soil and groundwater analytical results on a scaled site diagram.

Soil samples for VOC analysis were preserved with methanol in accordance with EPA method 5035 modified and then placed in appropriately labeled containers with Teflon[®] lined lids and/or sanitized glass jars, placed in a cooler and transported under chain of custody procedures for laboratory analysis within applicable holding times. Groundwater samples were collected using low-flow techniques in accordance with the April 1996, *Low Flow (Minimal Drawdown) Ground-Water (sic) Sampling Procedures* guidance document (EPA/540/S-95/504), published by the United States Environmental Protection Agency (USEPA). Groundwater samples were placed in appropriate sample containers placed in a cooler and transported under chain of custody procedures for laboratory analysis within applicable holding times.

The temporary monitoring well was constructed of two-inch diameter, schedule 40 PVC casing with a 5-foot long, 0.010-inch slotted screen. Well depth, well materials, and screened interval are documented on the well construction diagram presented in Appendix F.

Upon completion of the investigation, soil borings were abandoned by placing the soil cuttings back into the borehole, filling the void with bentonite chips, hydrating the chips, resurfacing and returning the area to its pre-drilling condition.

QA/QC samples were collected in general accordance with MDEQ *Operational Memorandum Number 2*, effective February 1, 2005. The QA/QC samples included one (1) soil and one (1) groundwater duplicate, one (1) groundwater matrix spike, one (1) groundwater matrix spike duplicate, one (1) soil matrix spike, one (1) soil matrix spike duplicate, and one (1) soil/groundwater field blank, all of which were submitted for laboratory analysis of gasoline range VOCs, PNAs and lead (i.e., all target analytes included in the soil and groundwater analysis). One (1) water and one (1) methanol trip blank was also submitted for laboratory analysis of gasoline range VOCs. Please refer to Tables 3 through Table 6 for the results of the soil and groundwater duplicate samples. Soil and groundwater field blank, trip blank analysis, matrix spike and matrix spike duplicate are

included in the laboratory reports (Appendix G).

The collection of groundwater equipment blanks in association with the wells sampled using a peristaltic pump was not necessary because the groundwater samples were collected using new, inert, polyethylene and silicone tubing, which was changed between sampling locations. Groundwater samples collected using the peristaltic pump were dispensed into the sampling containers exclusively through the polyethylene and silicone tubing dedicated to each well. Soil samples were collected directly from new, inert, acetate macrocore liners that were changed between each 5-foot sampling interval.

4.2 Geology & Hydrogeology

The description of the subsurface conditions provided below was derived from on-site observations of soil samples and cuttings collected from the soil borings that were installed by PME. Based on observations of the soil samples and cuttings, the soil stratigraphy generally consists of 20.0 feet (maximum depth explored) of interbedded clays and sands. Geology observed by PME is consistent with previous site investigations.

In general, groundwater was encountered between 8.0 and 13.5 feet bgs. The thickness of the water-bearing unit was at least 2.0 feet. Groundwater appears to be continuous as evidenced by groundwater present in all soil borings advanced by PME and based upon previous subsurface investigations performed at the subject site. According to previous subsurface investigations completed at the subject site, groundwater flow direction appeared to vary across the subject site, likely due to the presence of current and former UST basins and fill material.

The quantity of groundwater present likely meets the definition of potable groundwater as defined in the Michigan Department of Environmental Quality (MDEQ)- Remediation & Redevelopment Division (RRD) Operational Memorandum No. 11, *Criteria to Eliminate the Potable Groundwater Pathway*, dated August 25, 1997. The following criteria were met to justify the potable groundwater exposure pathway:

- A continuous confining clay layer did not exist to a depth of 20.0 feet bgs (maximum depth explored) that would prevent communication with a lower aquifer.
- Groundwater appears to be continuous as evidenced by groundwater present in soil borings advanced by PME and based upon previous sub-surface investigations performed at the subject site.

The subject site is not located within an approved local wellhead protection area, based on

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information provided through the MDEQ-Drinking Water and Radiological Protection Division's website.

There is a deed restriction that eliminates the use of shallow groundwater for any purpose on the subject site and a notice was provided notifying the Local Unit of Government (LUG) that contamination exists below Packard and Platt Roads that adjoin the subject site.

4.3 Chemical Analysis

Current soil and groundwater analytical data from PME's site investigations is summarized in Tables 3 through Table 6. The known contaminant levels for each target analyte are compared to the MDEQ Part 213 Tier 1 Residential and applicable Commercial III RBSLs in the above referenced tables.

4.3.1 Historical Analytical Results (January 2004)

Concentrations of target analytes in soil exceeded the Part 213 Tier 1 Residential and Commercial III DWP, GCP, SVII, and/or SDC RBSLs and Csat screening levels. Concentrations of target analytes in soil exceeded the Part 213 Tier 1 Residential and Commercial III DWP in the soil near PSB-2 (west of the former kerosene UST and northeast of the southern gasoline dispenser) and PSB-3 (along the western property line west of the UST basin and western gasoline dispensers). Concentrations of target analytes in groundwater exceeded the Part 213 Tier 1 Residential and Commercial III DW RBSLs collected from TMW-2 (west of the former kerosene UST and northeast of the southern gasoline dispenser), TMW-3 (along the western property line west of the UST basin and western gasoline dispensers), TMW-5 (south of the southern gasoline dispenser), MW-1 (along the western property line north of the current UST basin), MW-4 (west of the subject building and east of the western gasoline dispensers), MW-4d (adjacent to MW-4) and MW-2 (southwest of the western gasoline dispensers). The horizontal extent of soil and/or groundwater impact associated with the release of petroleum hydrocarbons from the site has not been defined to the west, south and east to Part 213 Tier 1 Residential DWP and DW RBSLs. Concentrations of contaminants that were identified were similar to those identified in the 1997 Closure Report.

Because concentrations of target analytes were detected above MDEQ Part 213 Tier 1 RBSLs, the subject site is classified as a "facility," as defined by Part 201 of P.A. 451 of the Michigan NREPA.

4.3.2 Current Analytical Results

As stated in Section 4.1.2, a total of two (2) soil and 11 groundwater samples were collected from the soil borings and existing monitoring wells during PME's investigation in May 2006 and were submitted for laboratory analysis of gasoline range VOCs, PNAs and lead. These samples were collected to evaluate the existing potential contaminant conditions within the subject site's property boundaries, including areas where petroleum products are intended to be used, stored, and/or dispensed. Soil and groundwater QA/QC samples were also collected in general accordance with MDEQ *Operational Memorandum Number 2*, effective February 1, 2005.

PME has summarized the analytical data in Tables 3 through Table 6. The known contaminant levels for each target analyte are compared to all Part 213 Residential/Commercial/Industrial RBSLs in the above referenced tables.

Soil Analytical Results:

Results of the soil analysis identified concentrations of various VOCs and lead in excess of the laboratory MDLs. Concentrations of PNAs were not identified in excess of laboratory MDLs. A summary of the soil analytical results is presented in Figure 2.

Concentration of benzene (24,100 $\mu\text{g}/\text{Kg}$), toluene (20,500 $\mu\text{g}/\text{Kg}$), ethylbenzene (16,300 $\mu\text{g}/\text{Kg}$), xylenes (48,900 $\mu\text{g}/\text{Kg}$), and 1,2,4-TMB (4,800 $\mu\text{g}/\text{Kg}$) were identified above the MDEQ Part 213 Tier 1 Residential and Commercial III DWP and/or SVII RBSLs in the soil sample collected from SB-7 between 11.0 and 12.0 feet bgs.

The remaining concentrations of gasoline range VOCs in soil above the laboratory MDLs did not exceed the most restrictive MDEQ Part 213 Tier 1 Residential DWP RBSLs.

Groundwater Analytical Results

Results of the groundwater analysis identified concentrations of gasoline range VOCs and lead in excess of laboratory MDLs. Concentrations of PNAs were not identified in groundwater above laboratory MDLs. A summary of the groundwater analytical results is presented in Figure 2.

Concentrations of benzene (30 $\mu\text{g}/\text{L}$ - 490 $\mu\text{g}/\text{L}$), ethylbenzene (330 $\mu\text{g}/\text{L}$) and/or MTBE (70 $\mu\text{g}/\text{L}$ - 2,700 $\mu\text{g}/\text{L}$) were identified above the MDEQ Part 213 Tier 1 Residential and Commercial III DW RBSLs in the groundwater samples collected from MW-1, MW-C, MW-2, MW-4s, MW-4d, MW-5 through MW-7 and TMW-7.

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The remaining concentrations of VOCs detected above the laboratory MDLs did not exceed the most restrictive MDEQ Part 213 Tier 1 Residential DW RBSLs..

Several groundwater samples collected across the subject site identified concentrations of lead (i.e., between 5 $\mu\text{g/L}$ and 36 $\mu\text{g/L}$) exceeding the MDEQ Part 213 Tier 1 Residential DW RBSL. However, because lead concentrations were not identified above the MDEQ Part 213 Tier 1 Statewide default background levels and/or the most restrictive Residential DWP RBSLs in the soil samples collected across the subject site, the concentrations of total lead in groundwater may be the result of sediment entrainment as a result of not filtering the samples using low-flow sampling methods. It is PME's opinion that the elevated lead concentrations are a result of the presence of suspended solids in the groundwater samples, resulting in "false positive" results, and not indicative of actual site conditions.

Because concentrations of target analytes were detected above MDEQ Part 213 Tier 1 RBSLs, the subject site is classified as a "facility," as defined by Part 201 of P.A. 451 of the Michigan NREPA.

4.3.2.1 QA/QC Analytical Results

As stated in Section 4.1.2.1, QA/QC samples were collected in general accordance with MDEQ *Operational Memorandum Number 2*, effective February 1, 2005. The QA/QC samples included one (1) soil and one (1) groundwater duplicate, one (1) groundwater matrix spike, one (1) groundwater matrix spike duplicate, one (1) soil matrix spike, one (1) soil matrix spike duplicate, and one (1) soil/groundwater field blank, all of which were submitted for laboratory analysis of gasoline range VOCs, PNAs and lead (i.e. all target analytes included in the soil and groundwater analysis). One (1) water and one (1) methanol trip blanks were also submitted for laboratory analysis of gasoline range VOCs.

Review of the analytical results for the field blank, equipment blank, and trip blank QA/QC samples indicates no target analyte concentrations in excess of laboratory MDLs, indicating that no cross contamination occurred. The analytical results of the soil duplicate sample Dup-1 (PSB-7) was similar to the results for PSB-7 indicating analysis reproducibility. The analytical results of the groundwater duplicate sample DUP-1-GW was similar to the results for TMW-7 indicating analysis reproducibility. Review of the analytical results for PSB-6MS, PSB-6MSD, MW-AMS, MW-AMSD, (see Appendix G) indicates that the MS and MSD results were consistent and within acceptable ranges, indicating accuracy of the data.

4.3.3 Summary of Soil and Groundwater Analytical Results (May 2006)

In summary, concentrations of various gasoline range VOCs were detected in soil and groundwater samples collected during PME's May 2006 site investigation exceeding the MDEQ Part 213 Tier 1 Residential and Commercial III DWP, DW and/or SVII RBSLs. However, the type and concentrations of contaminants are similar to those identified in the 1997 MDEQ audited Tier 2 Closure Report and do not appear to be related to a new release.

Because concentrations of gasoline range VOCs were identified above the laboratory MDLs, semi-annual groundwater samples will be collected from up to six (6) existing monitoring wells and compared to the existing analytical data as a basis to distinguish existing contamination from any new release in accordance with Michigan Administrative Code R 299 5901-5919. Therefore, new releases should be distinguished from existing contamination if the concentrations of any of the intended-use hazardous substances (Appendix H) are detected above previously identified concentrations.

5.0 LIKELIHOOD OF OTHER CONTAMINATION

Analytical results indicate that the soil and groundwater beneath the subject site has been impacted by various gasoline range VOCs, which is consistent with a release of unleaded gasoline. Based upon the documented historical use of the subject site as a gasoline filling station and the status of the subject site as a closed LUST site, it is not likely that the contamination identified at the subject site can be attributed to migration from an off site source; however, it is possible that contaminants other than gasoline range VOCs, PNAs, and/or lead may exist at other areas.

5.1 Surrounding Areas with Potential to Impact Subject Site

PME performed limited visual observations of the surrounding properties (Figure 2) in an attempt to identify areas of potential environmental risk to the subject property resulting from the former off site usage/activities. Observations of surrounding properties were limited to accessible public areas and areas that could be readily observed from the subject property. The properties adjoining the property are used for mixed commercial purposes. Based on review of the Phase I ESA, and soil/groundwater analytical results of PME previous investigations, the adjoining properties do not appear to have impacted the subject site.

5.2 Demonstration That Hazardous Substances That Will Be Used At The Site Have Not Been Released

Based on the long-time use of the subject site as a gasoline filling station, the potential exists for a wide variety of hazardous substances (i.e., gasoline range VOCs, PNAs and lead) to be present on the subject site. Since the intended use is as a gasoline filling station and convenience store, similar chemicals are anticipated to be used, stored, retained, dispensed, and/or removed at the subject site. These chemicals, if inadvertently released, will be stored, retained, and removed in accordance with state and local codes, laws, rules and regulations.

UST and product line tightness tests were conducted at the subject site on May 26, 2006 for the UST system that was installed in 1997, which meets the EPA's 1998 Federal upgrade requirements (Appendix I). Results of the tightness testing indicates that the UST and product lines passed the 0.2-gallon per hour tightness tests and are within system specifications. Periodic testing and maintenance of the UST system present at the subject site will occur in accordance with regulations set fourth by the MDEQ, and as needed, to ensure that the leak detection and inventory systems are functioning properly. The UST system will be used as an engineering control that will prevent a new release. Line and tank tightness testing information is included within Appendix I.

Because concentrations of gasoline range VOCs were identified above the laboratory MDLs, semi-annual groundwater samples will be collected from up to six (6) existing monitoring wells and compared to the existing analytical data as a basis to distinguish existing contamination from any new release in accordance with Michigan Administrative Code R 299 5901-5919. Therefore, new releases should be distinguished from existing contamination if the concentrations of any of the intended-use hazardous substances (Appendix H) are detected above previously identified concentrations.

In the event that a new release was to occur, Packard Mini Mart, LLC, will advance soil borings and temporary monitoring wells in the vicinity of the release and permanent monitoring wells will be sampled. Soil and groundwater samples will be collected and submitted for chemical analysis of target analytes indicative of the materials released and based on the MSDSs (Appendix H). This sampling will be done to evaluate the lateral and vertical extent of the release. Analytical results will be compared to applicable RBSLs at the time of the new release. Any new impact above the existing concentrations will be the liability of Packard Mini Mart, LLC.

6.0 ALTERNATIVE APPROACHES

In addition to the semi-annual sampling, gasoline will be stored in one (1) fiberglass-reinforced

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plastic UST located west of the subject site building. The UST, which was installed in 1997, is plumbed with fiberglass-reinforced, plastic piping, to a total of three (3) dispensers, which are located west and south of the subject building. The UST system (including the associating product piping) are equipped with leak detection sensors that are connected to an ATG system that will shut down the UST system in the event of a leak or system component failure. The product dispensers are also equipped with emergency system shutoff switches and shear valves to prevent a release of product in the event that a dispenser nozzle is torn away.

UST and product line tightness tests were conducted for the UST system, which meet the EPA's 1998 Federal upgrade requirements, at the subject site on May 26, 2006. The result of the tightness testing indicates that the UST and product lines passed the 0.2-gallon per hour tightness tests and are within system specifications. Periodic testing and maintenance of the UST system present at the subject site will occur in accordance with regulations set fourth by the MDEQ, and as needed, to ensure that the leak detection and inventory systems are functioning properly.

7.0 CONCLUSIONS

The subject site is a closed LUST site. Specifically, a Tier II Restricted Commercial III Closure prepared by Flour Daniel GTI in 1998 exists for the subject site. The report was audited by the Michigan Department of Environmental Quality (MDEQ) and approved for closure. There is a deed restriction that eliminates the use of shallow groundwater for any purpose on the subject site and a notice was provided notifying the Local Unit of Government (LUG) that contamination exists below Packard and Platt Roads that adjoin the subject site. Concentrations of methyl tert butyl ether (MTBE) were documented to be present in groundwater on the subject site above Part 213 Tier 1 Residential Risk-Based Screening Levels (RBSLs). The horizontal extent of contamination has not been defined to the west, south and east to Part 213 Tier 1 Residential Soil Drinking Water Protection (DWP) and Groundwater Drinking Water (DW) Risk-Based Screening Levels (RBSLs). The MDEQ currently requires full delineation.

Laboratory results indicated the presence of various gasoline range VOCs in soil and groundwater samples collected from the subject site exceeding MDEQ Part 213 Tier 1 Residential and Commercial III RBSLs.

The types and concentrations of contaminants are similar to those identified in the previous 1997 Closure Report; *however, because concentrations of target analytes were detected above MDEQ Part 213 Tier 1 RBSLs, the subject site is classified as a "facility," as defined by Part 201 of P.A. 451 of the Michigan NREPA.*

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Based upon the documented historical use of the subject site as a gasoline filling station and the status of the subject site as an closed LUST site, it is not likely that the contamination identified at the subject site can be attributed to migration from an off site source; however, it is possible that contaminants other than gasoline range VOCs, PNAs, and/or lead may exist at other areas.

The intended use of the property will be as a gasoline filling station and convenience store; therefore, a Category-S BEA is appropriate to meet the needs of the proposed future property use.

Because concentrations of gasoline range VOCs were identified above the laboratory MDLs, semi-annual groundwater samples will be collected from up to six (6) existing monitoring wells and compared to the existing data as a basis to distinguish existing contamination from any new release in accordance with Michigan Administrative Code R 299 5901-5919. Therefore, new releases should be distinguished from existing contamination if the concentrations of any of the intended-use hazardous substances (Appendix H) are detected above previously identified concentrations.

In the event that a new release was to occur, Packard Mini Mart, LLC, will advance soil borings and temporary monitoring wells in the vicinity of the release and permanent monitoring wells will be sampled. Soil and groundwater samples will be collected and submitted for chemical analysis of target analytes indicative of the materials released and based on the MSDSs (Appendix H). This sampling will be done to evaluate the lateral and vertical extent of the release. Analytical results will be compared to applicable RBSLs at the time of the new release. Any new impact above the applicable criteria will be the liability of Packard Mini Mart, LLC.

In addition to the semi-annual sampling and the dispensers, gasoline will be stored in one (1) fiberglass-reinforced plastic UST located west of the subject site building. The UST, which was installed in 1997, is plumbed with fiberglass-reinforced, plastic piping, to a total of three (3) dispensers, which are located west and south of the subject building. The UST system (including the associating product piping) is equipped with leak detection sensors that are connected to an ATG system that will shut down the UST system in the event of a leak or system component failure. The product dispensers are also equipped with emergency system shutoff switches and shear valves to prevent a release of product in the event that a dispenser nozzle is torn away.

8.0 REFERENCES

- MDEQ *Operational Memorandum No. 1 "Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels,"* Revised December 10, 2004;
- MDEQ *Operational Memorandum No. 11 "Criteria to Eliminate the Potable Drinking Water Pathway,"* November 4, 1997;

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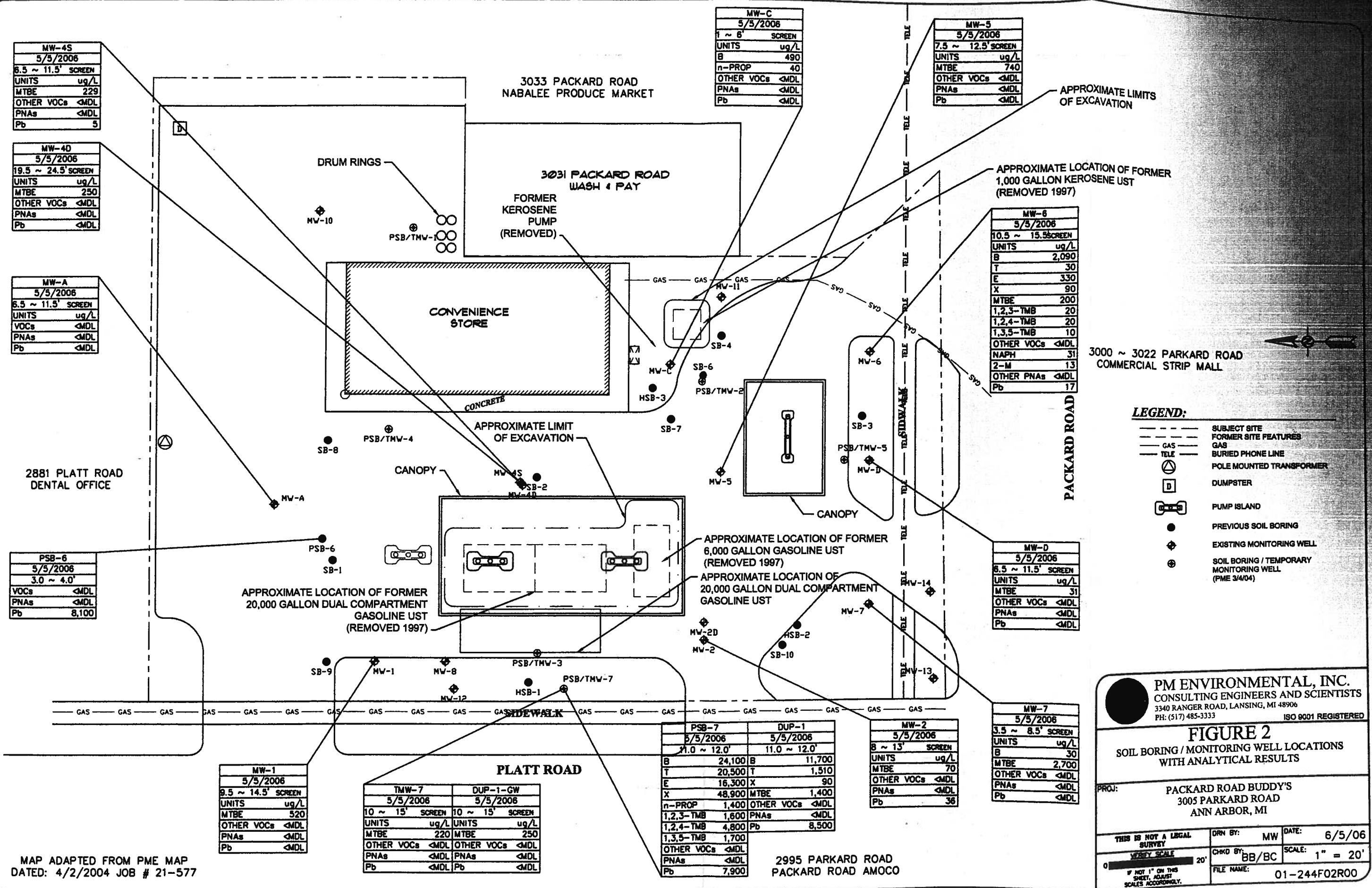
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MW-4S	
5/5/2006	
6.5 ~ 11.5' SCREEN	
UNITS	ug/L
MTBE	229
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	5

MW-4D	
5/5/2006	
19.5 ~ 24.5' SCREEN	
UNITS	ug/L
MTBE	250
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

MW-A	
5/5/2006	
6.5 ~ 11.5' SCREEN	
UNITS	ug/L
VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

PSB-6	
5/5/2006	
3.0 ~ 4.0'	
VOCs	<MDL
PNAAs	<MDL
Pb	8,100

MW-1	
5/5/2006	
9.5 ~ 14.5' SCREEN	
UNITS	ug/L
MTBE	520
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

TMW-7	
5/5/2006	
10 ~ 15' SCREEN	
UNITS	ug/L
MTBE	220
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

DUP-1-GW	
5/5/2006	
10 ~ 15' SCREEN	
UNITS	ug/L
MTBE	250
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

PSB-7	
5/5/2006	
11.0 ~ 12.0'	
B	24,100
T	20,500
E	16,300
X	48,900
n-PROP	1,400
1,2,3-TMB	1,600
1,2,4-TMB	4,800
1,3,5-TMB	1,700
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	7,900

DUP-1	
5/5/2006	
11.0 ~ 12.0'	
B	11,700
T	1,510
X	90
MTBE	1,400
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	8,500

MW-2	
5/5/2006	
8 ~ 13' SCREEN	
UNITS	ug/L
MTBE	70
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	36

MW-7	
5/5/2006	
3.5 ~ 8.5' SCREEN	
UNITS	ug/L
B	30
MTBE	2,700
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

MW-C	
5/5/2006	
1 ~ 6' SCREEN	
UNITS	ug/L
B	490
n-PROP	40
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

MW-5	
5/5/2006	
7.5 ~ 12.5' SCREEN	
UNITS	ug/L
MTBE	740
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

MW-6	
5/5/2006	
10.5 ~ 15.5' SCREEN	
UNITS	ug/L
B	2,090
T	30
E	330
X	90
MTBE	200
1,2,3-TMB	20
1,2,4-TMB	20
1,3,5-TMB	10
OTHER VOCs	<MDL
NAPH	31
2-M	13
OTHER PNAAs	<MDL
Pb	17

MW-D	
5/5/2006	
8.5 ~ 11.5' SCREEN	
UNITS	ug/L
MTBE	31
OTHER VOCs	<MDL
PNAAs	<MDL
Pb	<MDL

- LEGEND:**
- SUBJECT SITE
 - - - FORMER SITE FEATURES
 - GAS
 - TELE
 - BURIED PHONE LINE
 - ⊕ POLE MOUNTED TRANSFORMER
 - Ⓛ DUMPSTER
 - Ⓛ PUMP ISLAND
 - PREVIOUS SOIL BORING
 - ⊕ EXISTING MONITORING WELL
 - ⊕ SOIL BORING / TEMPORARY MONITORING WELL (PME 3/4/04)

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FIGURE 2
 SOIL BORING / MONITORING WELL LOCATIONS
 WITH ANALYTICAL RESULTS

PROJ: **PACKARD ROAD BUDDY'S**
 3005 PARKARD ROAD
 ANN ARBOR, MI

THIS IS NOT A LEGAL SURVEY
 VERIFY SCALE
 IF NOT 1" ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DRN BY: MW DATE: 6/5/06
 CHKD BY: BB/BC SCALE: 1" = 20'
 FILE NAME: 01-244F02R00

MAP ADAPTED FROM PME MAP
 DATED: 4/2/2004 JOB # 21-577