

AGI
TECHNOLOGIES**DRAFT**

October 6, 1995

15,896.001

Mr. Jim Ramey
Penny Saver Grocery and Deli
2140 East Sims Way
Port Townsend, Washington 98368

Dear Mr. Ramey:

Hydrocarbon Contamination Assessment Results
Penny Saver Grocery and Deli
Port Townsend, Washington

INTRODUCTION

This letter summarizes AGI Technologies' (AGI) installation of six groundwater monitoring wells at the Penny Saver Grocery and Deli in Port Townsend, Washington. The site location is shown on Figure 1. The wells were installed to evaluate subsurface soil and groundwater conditions at the site. AGI's specific scope of services are described in our proposal to Pacific Environmental Services Company dated May 30, 1995.

SITE DESCRIPTION

The Penny Saver Grocery and Deli is located at the corner of East Sims Way (Highway 20) and Kearney Street in Port Townsend, Washington. A site plan is presented on Figure 2. The site consists of a convenience store and parking lot. The majority of the site is paved with asphalt.

The site is bordered on the north by a dead end street (Jefferson Street) across which is a bowling alley. To the east is the Port Townsend Inn, and to the south is a triangular intersection across which is commercial property. To the west is Kearney Street and another triangular intersection.

The site is generally flat and is located approximately 10 feet above Mean Sea Level (MSL). Port Townsend Bay is located approximately 500 feet to the south and KahTai Lagoon is located approximately 750 feet to the northwest.

We understand the area between KahTai Lagoon and Port Townsend Bay was filled to accommodate development. Groundwater occurs in the area generally within 5 feet of land surface.

We understand a service station existed on the site in the past. Four gasoline underground storage tanks (USTs) were removed in 1989. Former service station features are shown on Figure 2.

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WELL INSTALLATION AND SOIL SAMPLING

Six soil borings were drilled at the site on August 29 and 30, 1995 to depths of 15 feet below ground surface (bgs). The borings were completed as 4-inch-diameter PVC groundwater monitoring wells (MW1 through MW6). The well locations are shown on Figure 2. Soils encountered during drilling consisted of approximately 10 feet of sand, silty sand, sandy gravel, or silty gravel. Sawdust was encountered in the upper 5 feet in borings MW1, MW2, and MW4. Concrete debris was encountered in the upper 5 feet in borings MW5 and MW6. The upper 10 feet of soils are interpreted as fill. The native soil underlying the fill consists of sand, except in boring MW2, which had sandy gravel below 10 feet. Groundwater was encountered between 5 and 7 feet bgs during drilling.

Soil samples were collected at 2-1/2-foot intervals from the ground surface to 7-1/2 feet bgs. An additional sample was collected at 7-1/2 feet bgs. Each soil sample was classified according to the Unified Soil Classification System as shown on Plate 1 in Attachment 1. Logs of the borings, including well construction summaries, are also presented in Attachment 1.

Soil samples were screened in the field for hydrocarbon contamination using an organic vapor meter equipped with a photoionization detector (OVM-PID). The OVM-PID measures the concentration of volatile organic vapors released from the soil sample after it is placed in a plastic bag, disaggregated, and left standing for approximately 1 minute. Based on OVM-PID field screening, the sample with the highest relative contamination above the water table in each boring was submitted for laboratory analysis. The six soil samples were submitted to OnSite Environmental Inc. in Redmond, Washington for analysis of gasoline-range total petroleum hydrocarbons (TPH) by Washington State Department of Ecology (Ecology) Method WTPH-G, total lead by U.S. Environmental Protection Agency (EPA) Method 7420, and benzene, ethylbenzene, toluene, and total xylenes (BETX) by EPA Method 8020.

WELL SAMPLING AND GROUNDWATER ELEVATION MEASUREMENT

The monitoring wells were developed and groundwater samples collected for analytical chemistry analysis on August 30 and 31, 1995. The water samples were submitted to OnSite for analysis of TPH quantified as gasoline by Ecology Method WTPH-G, dissolved lead by EPA Method 7421, and BETX by EPA Method 8020.

The vertical elevation of the top of each PVC casing from each monitoring well was surveyed to a benchmark with an arbitrarily assigned elevation of 100.00 feet. Groundwater elevation data are presented in Table 1. A groundwater elevation contour map for October 2, 1995 is shown on Figure 3. The map shows an area of groundwater mounding in the center of the site which results in groundwater flow to the east and west. Groundwater flow is generally to the south in the northeast area of the site. A groundwater elevation contour map for August 30, 1995 (not shown) indicated a similar groundwater flow pattern below the site.

Floating hydrocarbon product (free product) with a thickness of 1.21 feet was recorded in MW2 on October 2, 1995. No other wells contained free product on October 2, 1995.

Product

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SOIL AND GROUNDWATER ANALYTICAL CHEMISTRY RESULTS

The analytical laboratory results for soil and groundwater samples are summarized in Tables 2 and 3. Copies of AGI's quality assurance review and the analytical laboratory reports are contained in Attachment 2.

Washington State's toxic cleanup law (Chapter 70.105D RCW) is known as the Model Toxics Control Act (MTCA). MTCA's implementing regulation is known as the Model Toxics Control Act Cleanup Regulation and is described in Washington Administrative Code (WAC) 173-340. Under MTCA, TPH and BETX are considered hazardous substances and their presence in the environment constitutes a release. MTCA provides tabulated (Method A) cleanup levels for TPH and BETX. The Method A cleanup levels for these substances are included in Tables 2 and 3. Analytical laboratory results are typically compared to Method A cleanup levels to indicate whether further action may be required at a site.

Gasoline-range TPH exceeding the Method A cleanup level of 100 parts per million (ppm) is present in the soil samples collected from MW1 through MW4. Benzene exceeding the Method A cleanup level is present in the samples from MW1, MW3, and MW4, and total xylenes exceeding the Method A cleanup level are present in the samples from MW3 and MW4. Gasoline-range TPH and BETX compounds exceeding the Method A cleanup levels are present in the groundwater samples from MW1 through MW5, with the exception of toluene in the sample for MW5. No detectable hydrocarbons were present in the groundwater sample from MW6.

Now 30 ppm due to BETX

SUMMARY AND CONCLUSIONS

The analytical laboratory results indicate a release of gasoline has occurred on or near the property. The concentration of gasoline-range TPH and BETX exceed Method A cleanup levels in soil and groundwater over approximately the western half of the property. These concentrations are at such levels that some form of soil and groundwater remediation will likely be necessary.

Under MTCA, a free product recovery program must be instituted at a site as soon as the free product is discovered on groundwater. Also under MTCA, sites where hazardous substances such as TPH and BETX have been released in the environment must be reported to Ecology's Toxic Cleanup Program within 90 days of discovery. Results of any cleanup action must also be reported to Ecology.

LIMITATIONS

The analyses, conclusions, and recommendations in this letter are based on conditions encountered at the time of our field investigation, information provided by Mr. Jim Ramey, and our experience and professional judgement. AGI cannot be responsible for interpretation by others of data

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contained herein. Our work has been performed in a manner consistent with that level of care and skill normally exercised by members of the profession currently practicing under similar conditions in the area. No other warranty, express or implied, is made.

Sincerely,

AGI Technologies

Lance E. Peterson, P.G.
Senior Hydrogeologist

Gary Laakso
Remediation Services Manager

LEP/GLL/tag

attachment

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Table 1
Groundwater Elevation Data
 Ramey/Assessment
 Port Townsend, Washington

Monitoring Well I.D.	Total Boring Depth (ft.bgs)	Depth of Screened Interval (ft.bgs)	Date Measured	Time (hours)	Top of Casing Elevation (feet)	Depth to Groundwater (ft.below TOC)	Groundwater Elevation (feet)
MW1	15	5-15	08/30/95	1743	99.98	4.20	95.78
			10/03/95	1203		4.17	95.81
MW2	15	5-15	08/30/95	1745	101.19	5.33	95.86
			10/03/95	1210		5.39 ^b	95.80
MW3	15	5-15	08/30/95	1748	99.89	4.21	95.68
			10/03/95	1206		4.17	95.72
MW4	15	5-15	08/30/95	1750	100.28	4.61	95.67
			10/03/95	1206		4.59	95.69
MW5	15	5-15	08/30/95	1752	101.00	5.25	95.75
			10/03/95	1213		5.23	95.77
MW6	15	5-15	08/30/95	1754	99.81	4.01	95.80
			10/03/95	1201		3.96	95.85

Notes:

- a) Top of casing elevations in feet relative to a temporary benchmark with an assigned elevation of 100.00 feet. Benchmark is the top of the southeast holddown nut for the lamp post located near the southwest corner of the site.
- b) Corrected for the presence of 1.21 feet of floating hydrocarbon product.
- ft.bgs - Feet below ground surface.
- ft below TOC - Feet below top of casing.



Table 2
Petroleum Hydrocarbons and Total Lead in Soil
 Ramey/Assessment
 Port Townsend, Washington

Sample Location	Sample ID	Approx. Sample Depth (ft bgs)	Date Sampled	Washington State Test Method	WTPH-G	7420	EPA Test Method	BETX 5030/8020	Total Lead mg/kg	Benzene mg/kg	Ethylbenzene mg/kg	Toluene mg/kg	Xylenes mg/kg
MW1	MW1-5	5	08/29/95	150	150	ND	74	2.5	1.1	415			
MW2	MW2-2.5	2.5	08/29/95	660	660	30	0.11	0.37	2.4	3.5			
MW3	MW3-5	5	08/29/95	1000	1000	ND	72	13	14	72			
MW4	MW4-2.5&5	2.5 & 5	08/29/95	520	520	ND	31	8.0	6.1	16			
MW5	MW5-2.5	2.5	08/30/95	ND	ND	30	ND	ND	ND	0.14			
MW6	MW6-2.5	2.5	08/30/95	ND	ND	34	ND	ND	ND	ND			
Method Reporting Limit				0.1	12.5		0.001	0.001	0.001	0.001			
Cleanup Levels ^a				100	250		0.5	20	40	20			
Notes:				30			0.03	6	7	9			

Samples analyzed by OnSite Environmental Inc. of Redmond, Washington.

Boxed values indicate concentrations above cleanup levels.

a) Method A suggested cleanup level for residential soil promulgated under Washington Administrative Code Chapter 173-340.

State of Washington Model Toxics Control Act Cleanup Regulation.

ft bgs - Feet below ground surface.

mg/kg - Milligrams per kilogram.

ND - Not detected.

TPH - Total petroleum hydrocarbons.



Table 3
Petroleum Hydrocarbons and Dissolved Lead in Groundwater
 Ramey/Assessment
 Port Townsend, Washington

Well ID	Date Sampled	Washington State	EPA Test Method				
		Test Method					
		WTPH-G	7421	BETX-5030/8020			
		Gasoline	Dissolved Lead	Benzene	Ethylbenzene	Toluene	Total Xylenes
		mg/L	µg/L	µg/L			
MW1	08/29/95	13	ND	9,200	480	420	1,920
MW2	08/29/95	22	ND	4,900	800	880	3,510
MW3	08/29/95	44	ND	27,000	1,900	3,300	6,800
MW4	08/29/95	24	ND	16,000	1,200	690	3,600
MW5	08/30/95	19	ND	1,900	96	14	45.9
MW6	08/30/95	ND	ND	ND	ND	1.5	ND
Method Reporting Limit		0.1	3	0.5	0.5	0.5	0.5
Cleanup Levels ^a		1.0	5	5	30	40	20

Notes:

860 µg/l

15 µg/l

720 µg/l

1000 µg/l

1000 µg/l

Samples analyzed by OnSite Environmental Inc. of Redmond, Washington.

Boxed values indicate concentrations above cleanup levels.

a) Method A suggested cleanup level for groundwater promulgated under Washington Administrative Code Chapter 173-340, State of Washington Model Toxics Control Act Cleanup Regulation.

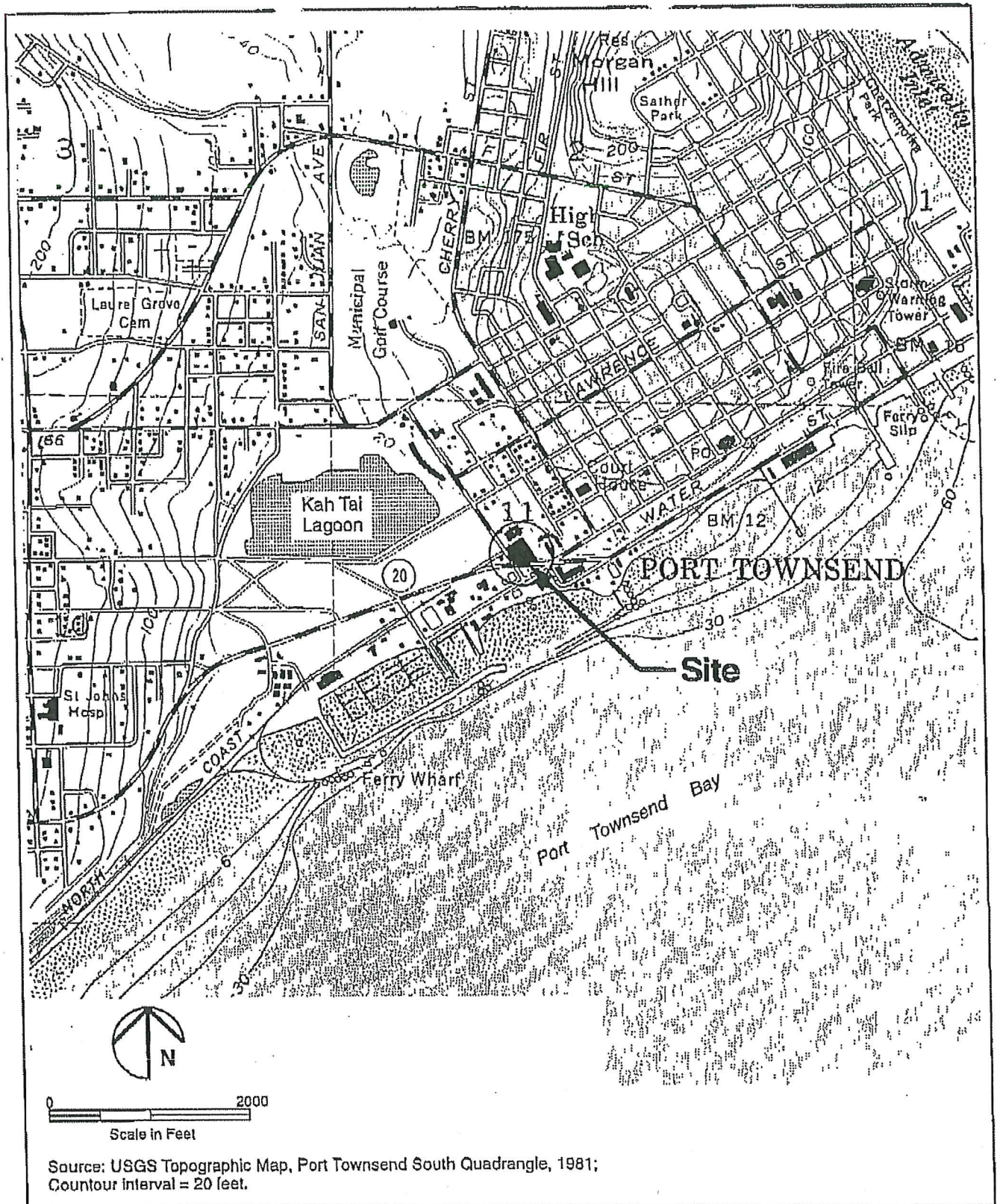
mg/L - Milligrams per liter.

µg/L - Micrograms per liter.

ND - Not detected.

TPH - Total petroleum hydrocarbons.

REVIEWS



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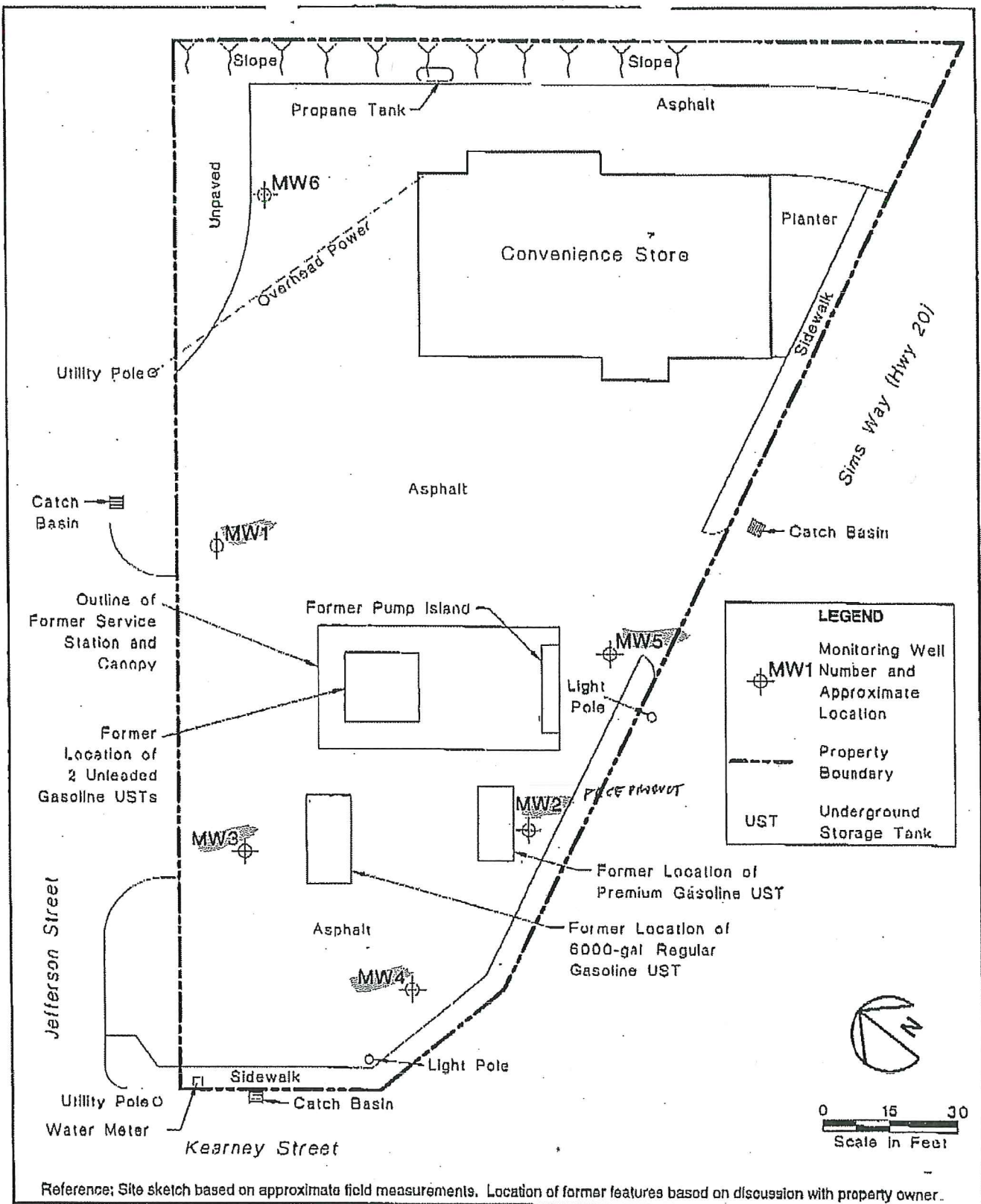
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Vicinity Map
Ramey/Assessment
Port Townsend, Washington

FIGURE

1



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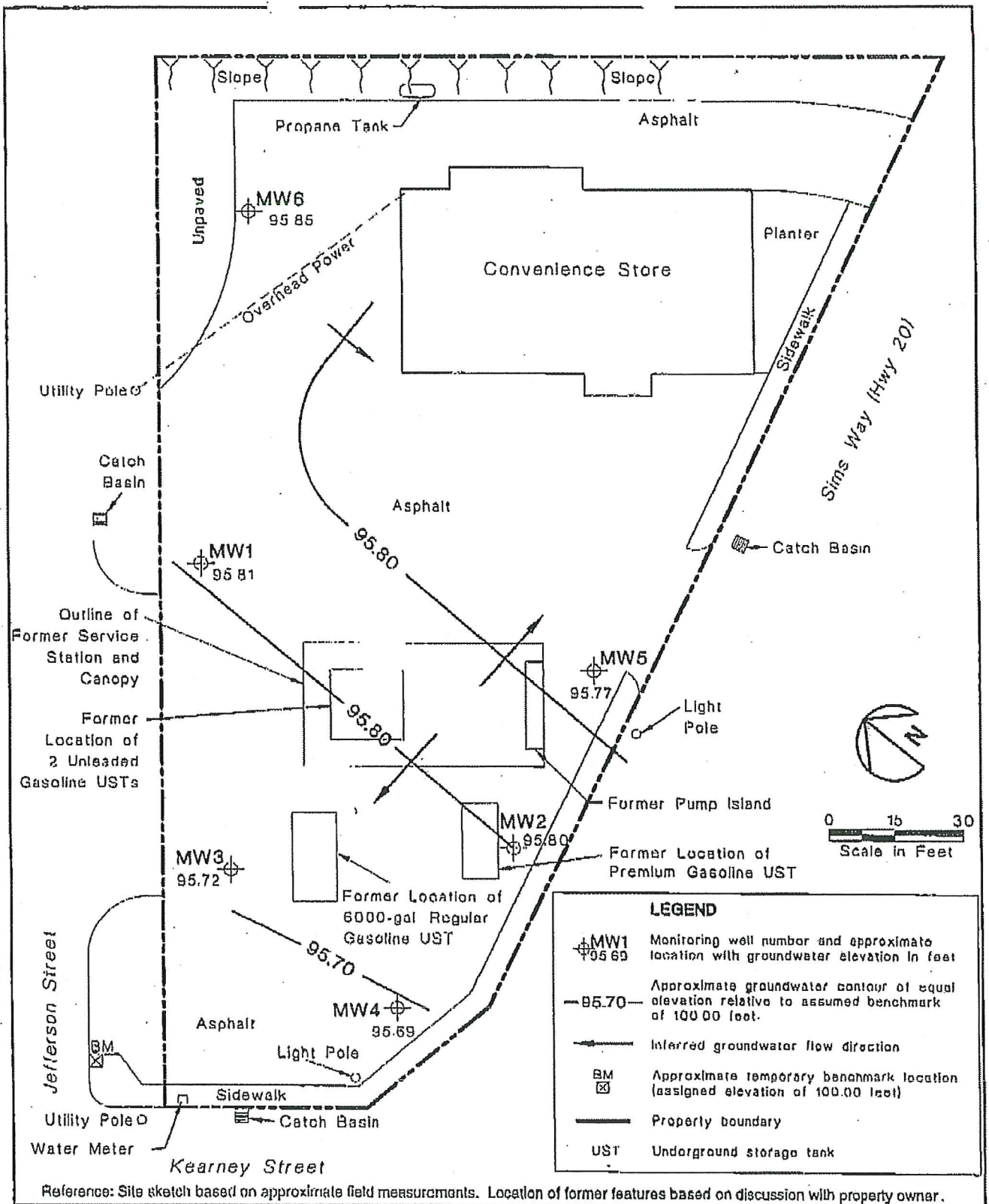
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FIGURE

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Groundwater Elevation Contour Map for October 2, 1995

FIGURE

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Ramey/Assessment
Port Townsend, Washington

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Attachments

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ATTACHMENT 1

Boring Logs and Well Construction Summaries

UNIFIED SOIL CLASSIFICATION SYSTEM				
MAJOR DIVISIONS			TYPICAL NAMES	
COARSE GRAINED SOILS More than half is larger than No. 200 Sieve	GRAVELS More than half coarse fraction is larger than No. 4 sieve size	Clean gravels with little or no fines	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		Gravels with over 12% fines	GM	Silty Gravels, poorly graded gravel-sand-silt mixtures
			GC	Clayey gravels, poorly graded gravel-sand-clay mixtures
	SANDS More than half coarse fraction is smaller than No. 4 sieve size	Clean sands with little or no fines	SW	Well graded sands, gravelly sands
			SP	Poorly graded sands, gravelly sands
		Sands with over 12% fines	SM	Silty sand, poorly graded sand-silt mixtures
			SC	Clayey sands, poorly graded sand-clay mixtures
FINE GRAINED SOILS More than half is smaller than No. 200 Sieve	SILTS AND CLAYS Liquid limit less than 50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		OL	Organic clays and organic silty clays of low plasticity	
	SILTS AND CLAYS Liquid limit greater than 50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		CH	Inorganic clays of high plasticity, fat clays	
		OH	Organic clays of medium to high plasticity, organic silts	
	HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

SAMPLE ☐ "Undisturbed" ☒ Bulk/Grab ☐ Not Recovered ☒ Recovered, Not Retained	CONTACT BETWEEN UNITS Well Defined Change Gradational Change Obscure Change End of Exploration	OVM-PID Description Soil samples were field screened for organic vapors using an organic vapor meter equipped with a photoionization detector (OVM-PID). Soil Samples were placed in a plastic resealable bag and disaggregated. After approximately 1 minute, the OVM-PID probe was inserted through the bag into the headspace above the soil and the maximum reading of headspace vapors was recorded in parts per million.
BLOWS PER FOOT Hammer is 300 pounds with 30-inch drop, obtained using a Split Barrel Sampler (2.4-Inch Sample)		
MOISTURE DESCRIPTION Dry - Considerably less than optimum for compaction Moist - Near optimum moisture content Wet - Over optimum moisture content Saturated - Below water table, in capillary zone, or in perched groundwater		

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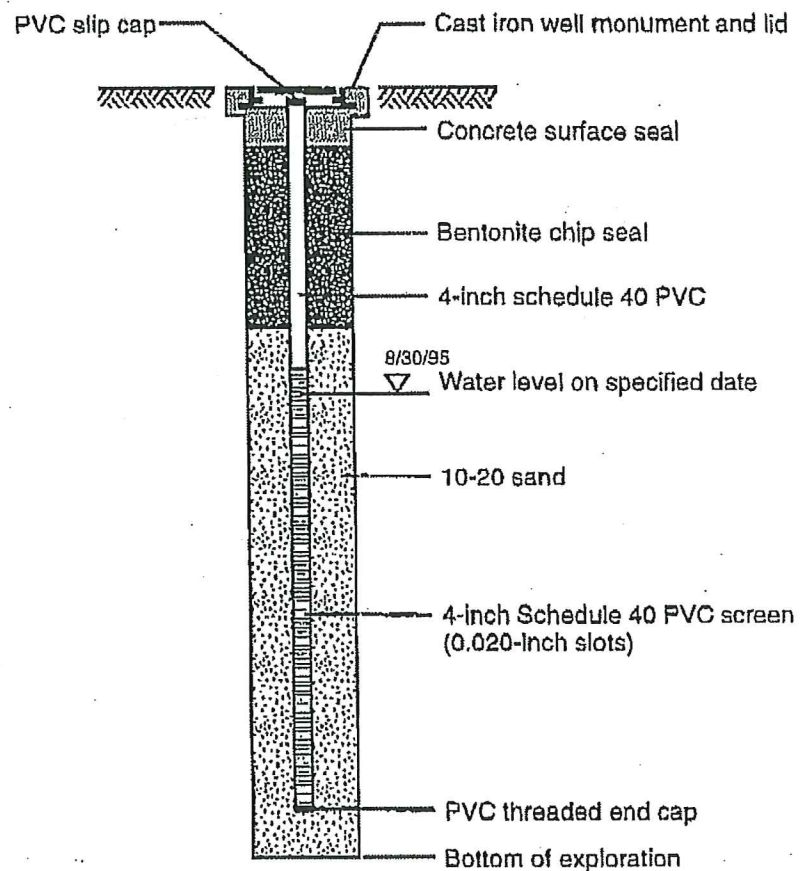
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Soil Classification/Legend

Ramey/Assessment
Port Townsend, Washington

**AGI**
TECHNOLOGIES**Monitoring Well Construction**Ramey/Assessment
Port Townsend, Washington

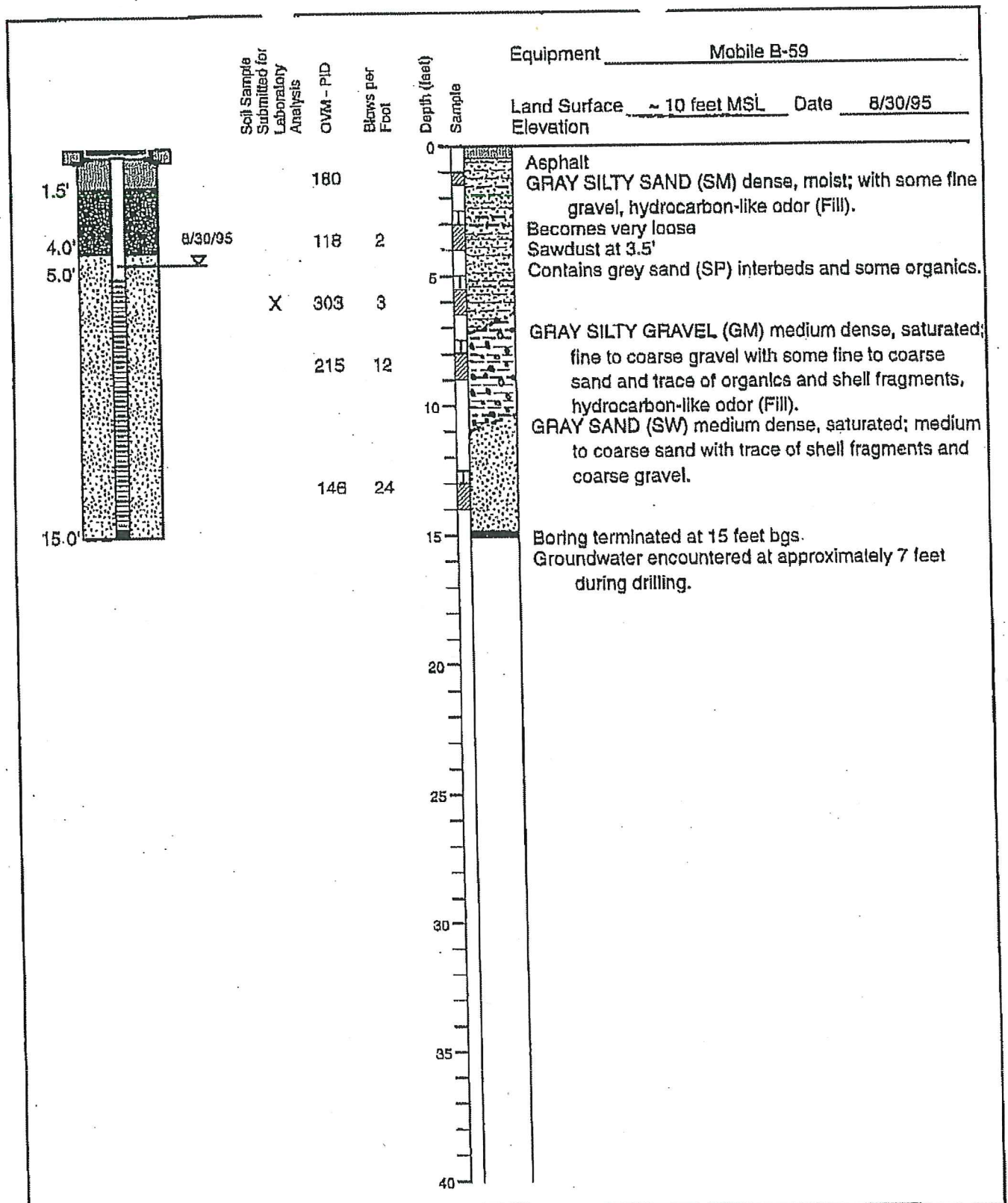
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Log of Monitoring Well MW1

 Ramey/Assessment
 Port Townsend, Washington

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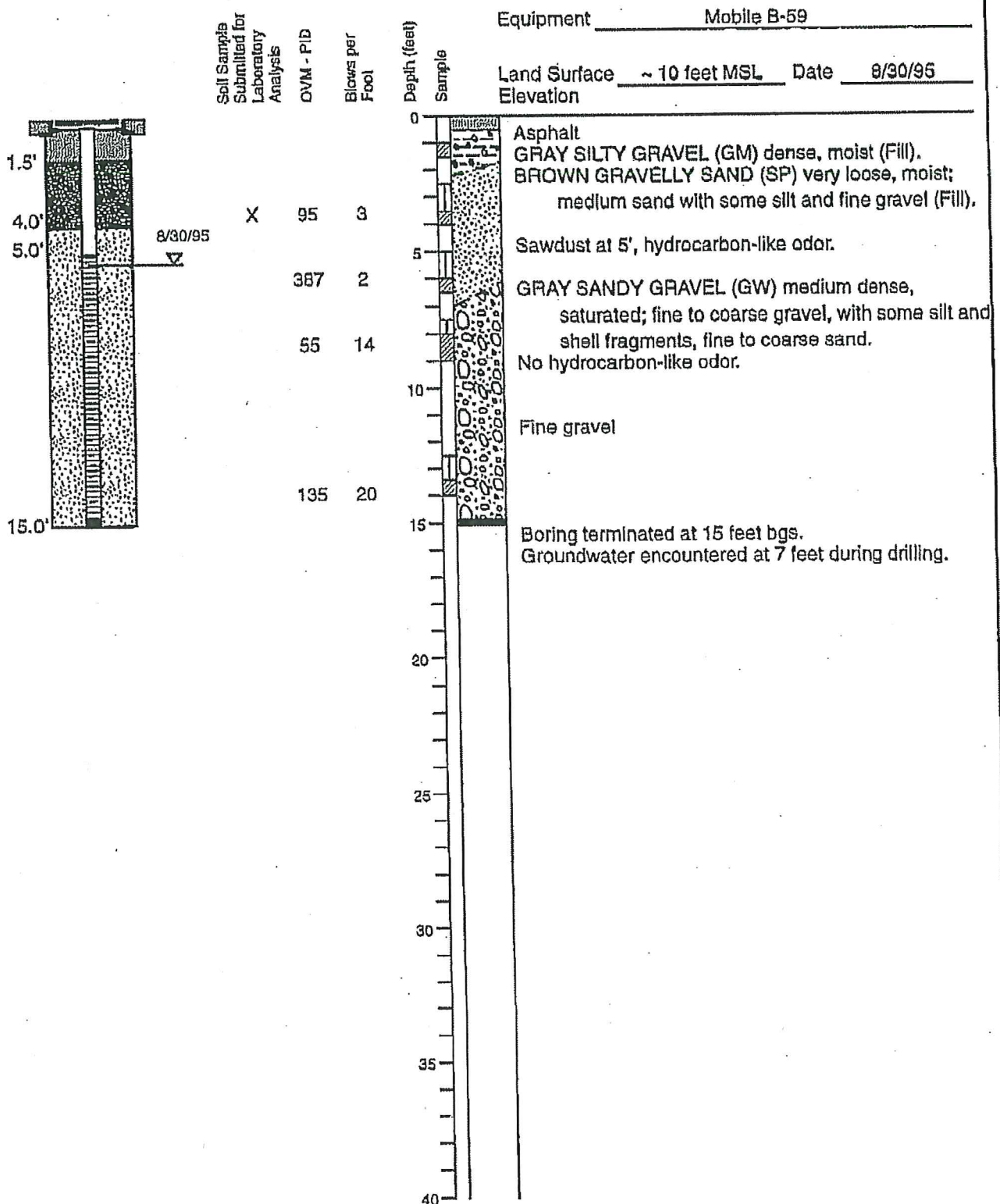
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Log of Monitoring Well MW2 Ramey/Assessment Port Townsend, Washington

PLATE

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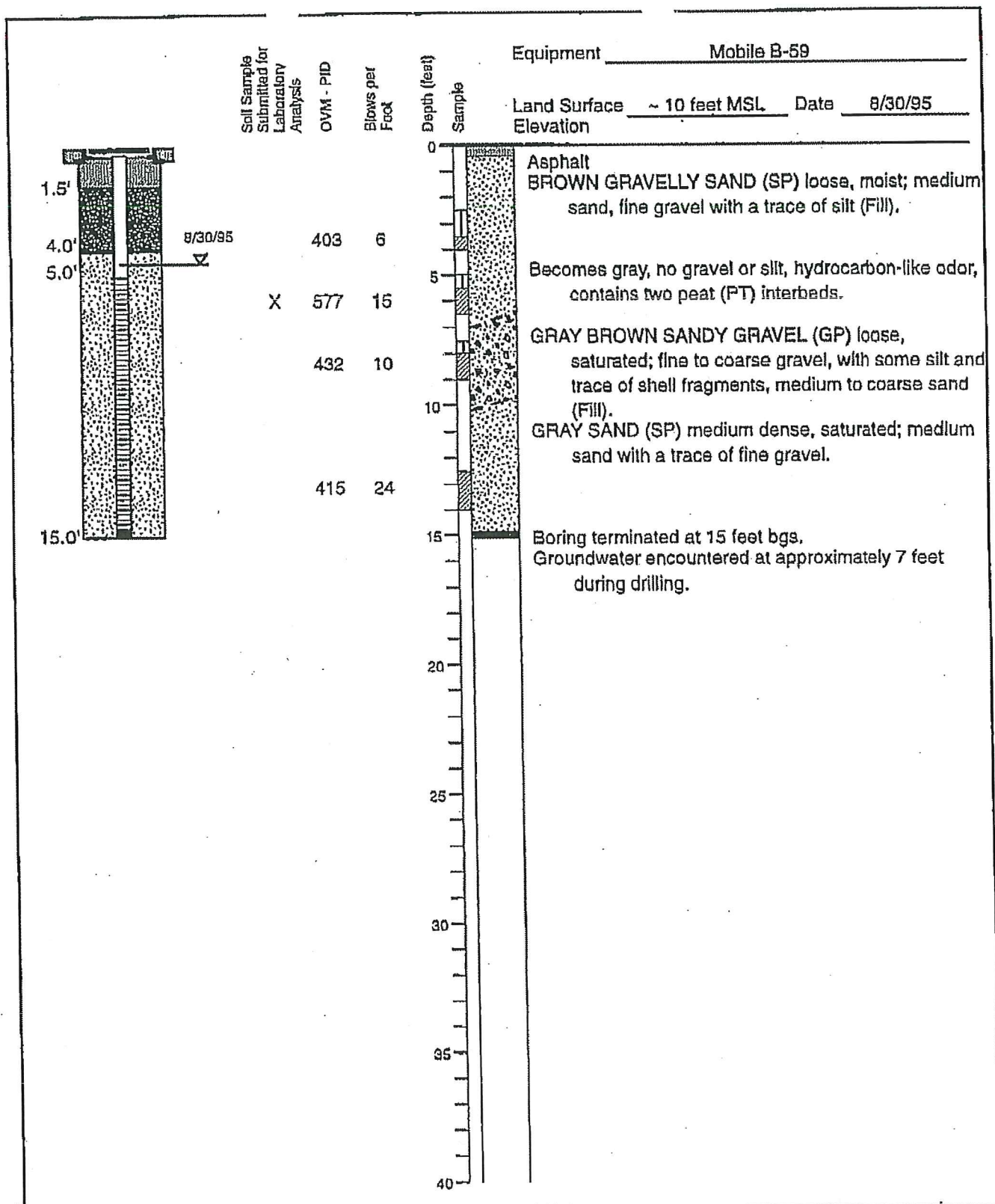
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Log of Monitoring Well MW3

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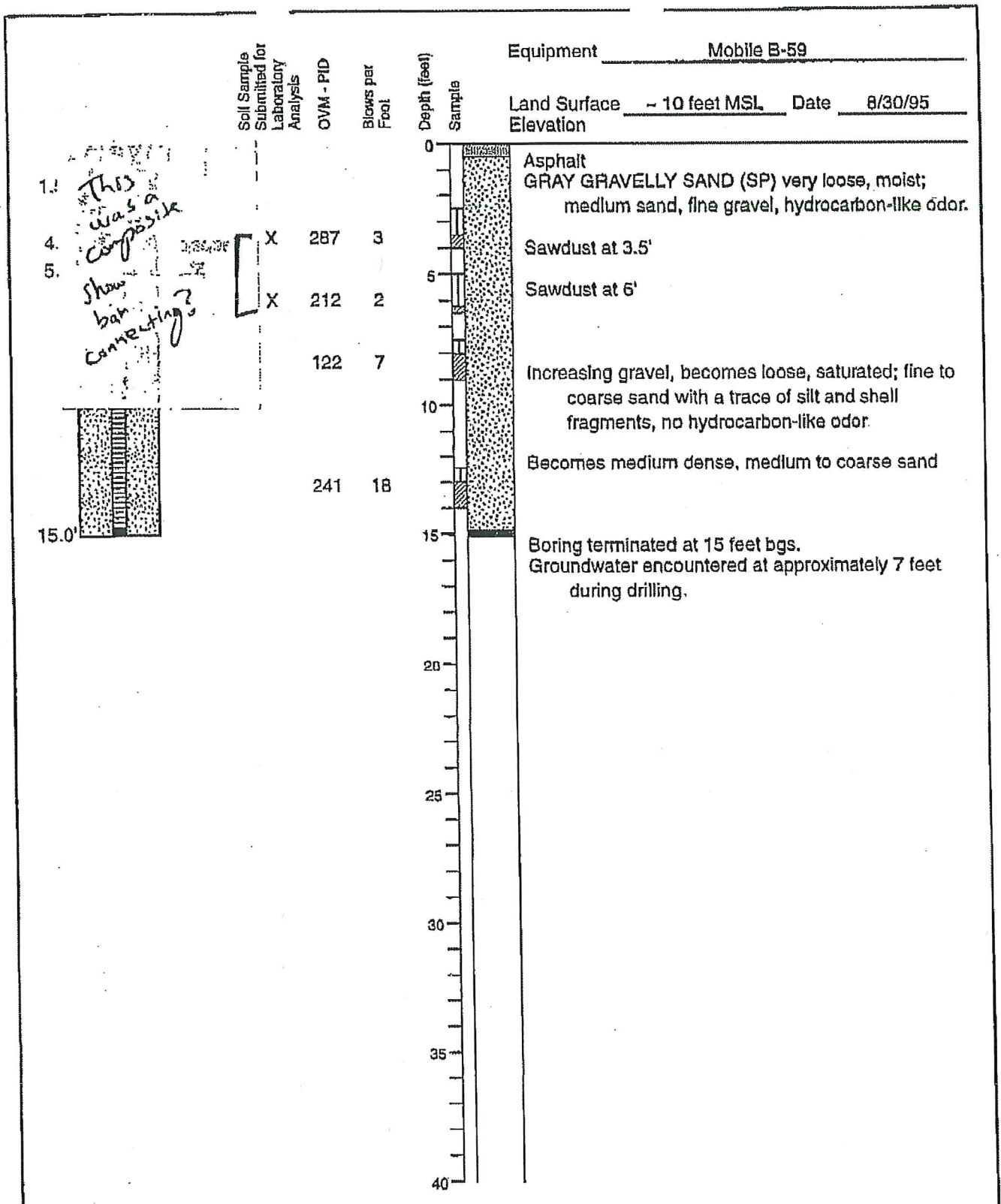
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Log of Monitoring Well MW4

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 Port Townsend, Washington

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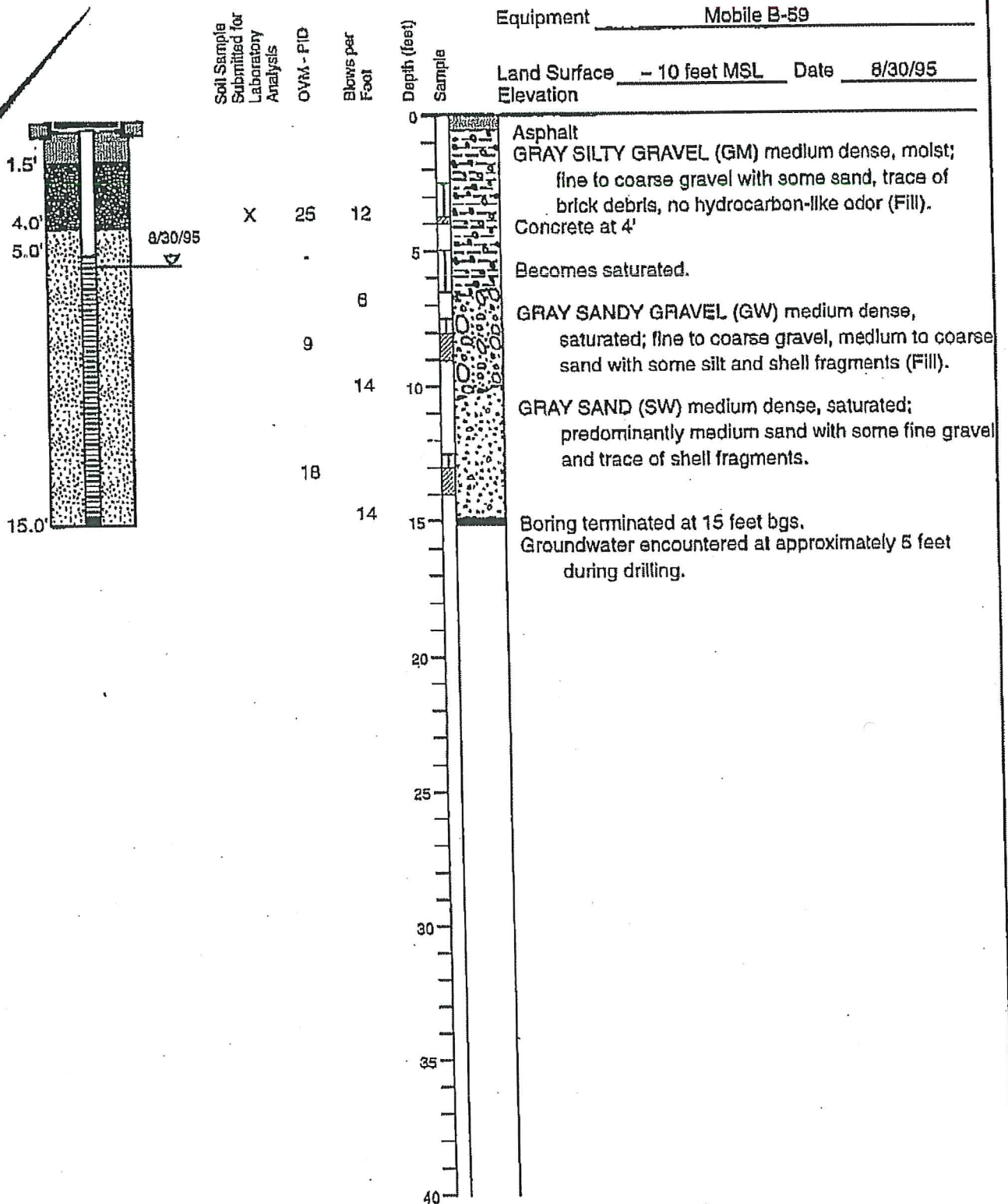
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Log of Monitoring Well MW5

 Ramsey/Assessment
 Port Townsend, Washington

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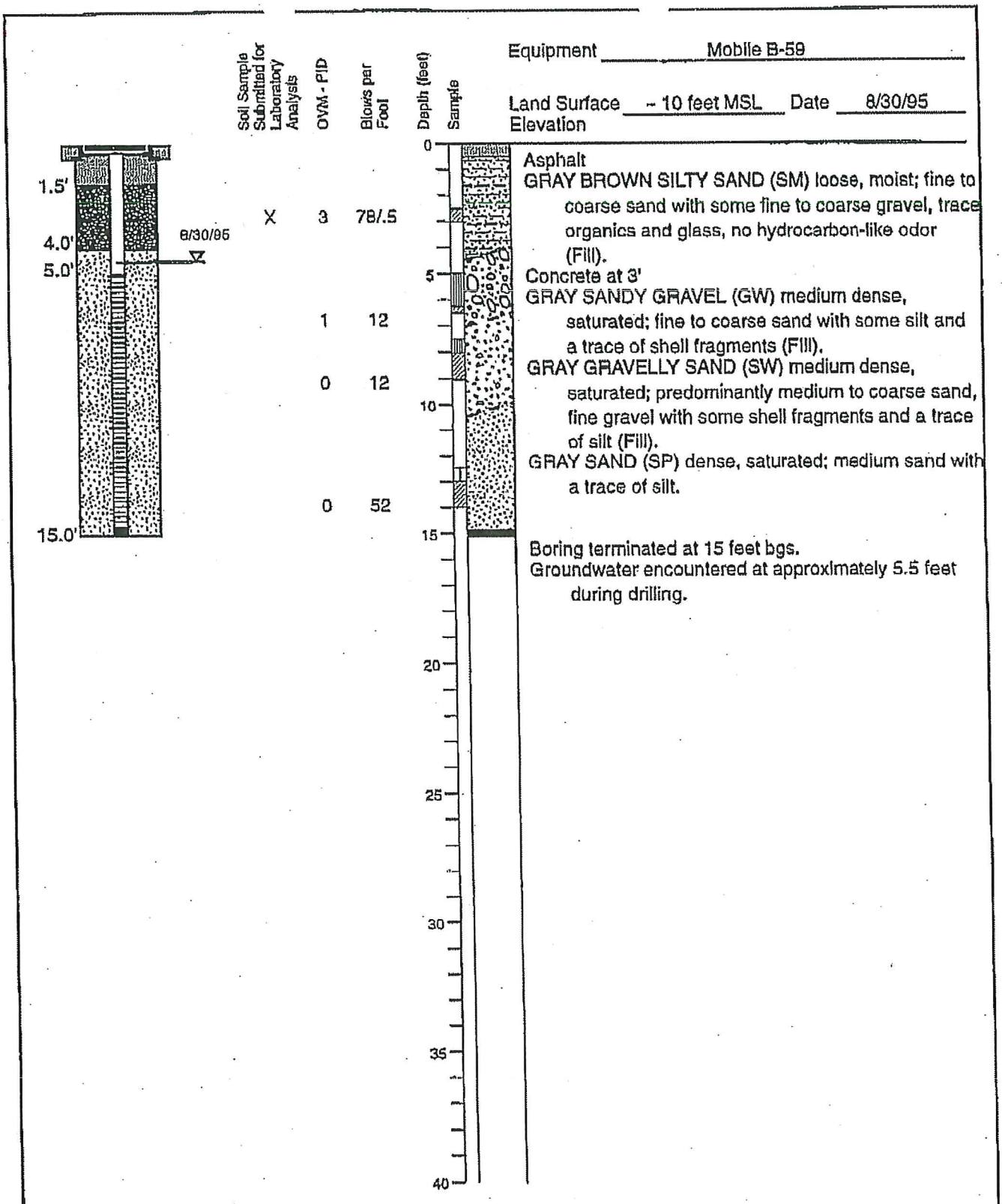
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Log of Monitoring Well MW6

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ATTACHMENT 2

**Analytical Laboratory Data and
AGI Quality Assurance Report**