

HYDROGEOLOGIC EVALUATION

GASOLINE SPILL INVESTIGATION

TIGER OIL

YAKIMA, WASHINGTON

May 8, 1985 #120-12955

SOIL EXPLORATION



SOIL EXPLORATION

662 CROMWELL AVENUE ST. PAUL, MN 55114 PHONE 612/645-6446

May 8, 1985

a sister corporation to TWIN CITY TESTING AND ENGINEERING LABORATORY INC.

Federated Insurance Company 129 East Broadway Owatonna, Minnesota 55060

Attn: Mr. Brad Nesseth

Subj: Hydrogeologic Evaluation

Gasoline Spill Investigation

Tiger 0il

Yakima, Washington

#120-12955

### Gentlemen:

We have completed our subsurface investigation for the above referenced site as verbally authorized by Mr. Brad Nesseth on November 16, 1984. We are transmitting five copies of our report to you. Additional copies will be forwarded as noted below.

All the samples received from our test borings will be held at this office for a period of three months following the date of this report. The samples will then be discarded unless we are notified to hold them for a longer period of time.

We appreciate the opportunity to have served you in regard to this project. If you have any questions regarding the information in this report, or if we can be of additional service, please contact us.

Very truly yours,

Soil Exploration Company

Mark S. Mason
Project Manager/Environmental Geologist

MSM/pp

Encs.

cc: 1 - Washington Department of Ecology
Attn: Mr. Al Newman

1 - IT Corporation

Attn: Mr. John Clark

1 - Zaremba Claims Services Attn: Mr. Ronald Zaremba

1 - Weeks, Dietzen & Skala Attn: Mr. Roland Skala OFFICERS:
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chairman of the board
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#### HYDROGEOLOGIC EVALUATION

### GASOLINE SPILL INVESTIGATION

TIGER OIL

YAKIMA, WASHINGTON

120-12955

### 1.0 INTRODUCTION

The purpose of our work performed at this site was to define hydrogeologic conditions influencing the movement and migration of petroleum products and to provide information relative to evaluating the horizontal and vertical distribution of petroleum product contamination.

The scope of our services provided on this project consisted of the following.

- Mobilizing to the site on November 30, 1984, to evaluate site conditions, and meet with local representatives and the Washington Department of Ecology.
- 2. Installing 12 monitoring wells for providing water level and water quality information.
- 3. Pumping all monitoring wells at a rate of 7 GPM for a minimum of 10 minutes or until clear discharge water was observed.
- 4. Collecting water samples from the previously mentioned monitoring wells and 9 private residences.
- Analyzing all water samples for the presence of total hydrocarbons expressed as gasoline, benzene, toluene and xylene concentrations.
- 6. Preparing a final report which presents information regarding ground water remediation.

### 2.0 BACKGROUND INFORMATION

## 2.1 Project History

The Tiger Oil Exxon station is located on North First Street, Yakima, Washington (Figure 1). As we understand, the station was constructed in May and June, 1979. Regular, premium, unleaded and diesel petroleum products are stored below ground and distributed.

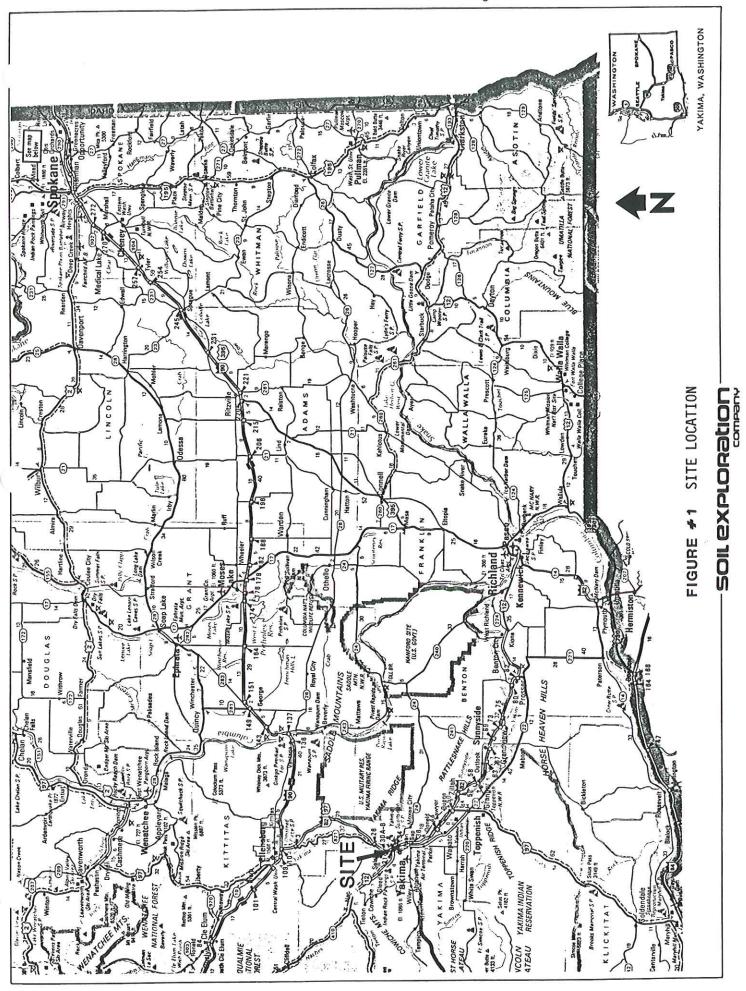
Hydrostatic testing of all dispenser lines was conducted during September, 1982. At that time, all lines produced a positive test (indicating leakage). All lines were subsequently replaced.

An environmental consultant from Seattle was retained by Tiger Oil to assess the environmental impact of the lost petroleum products. Fourteen monitoring wells were installed as part of their effort. At that time, petroleum product contamination appeared to be confined locally, and two recovery wells and one injection well were drilled to facilitate free product removal. Approximately 40 gallons of gasoline were recovered. Pumpage exceeded 100 GPM and minimal drawdown in the recovery well was achieved.

An additional three monitoring wells were later installed to further delineate the extent of hydrocarbon contamination (May 9, 1983). This extended study concluded that hydrocarbon migration was still limited to an area approximately 250' downgradient from the Tiger Oil station.

Due to unknown monitoring well construction details and previous monitoring well abandonment, only three of the seventeen monitoring wells were included in our study.





### 2.2 Site Information

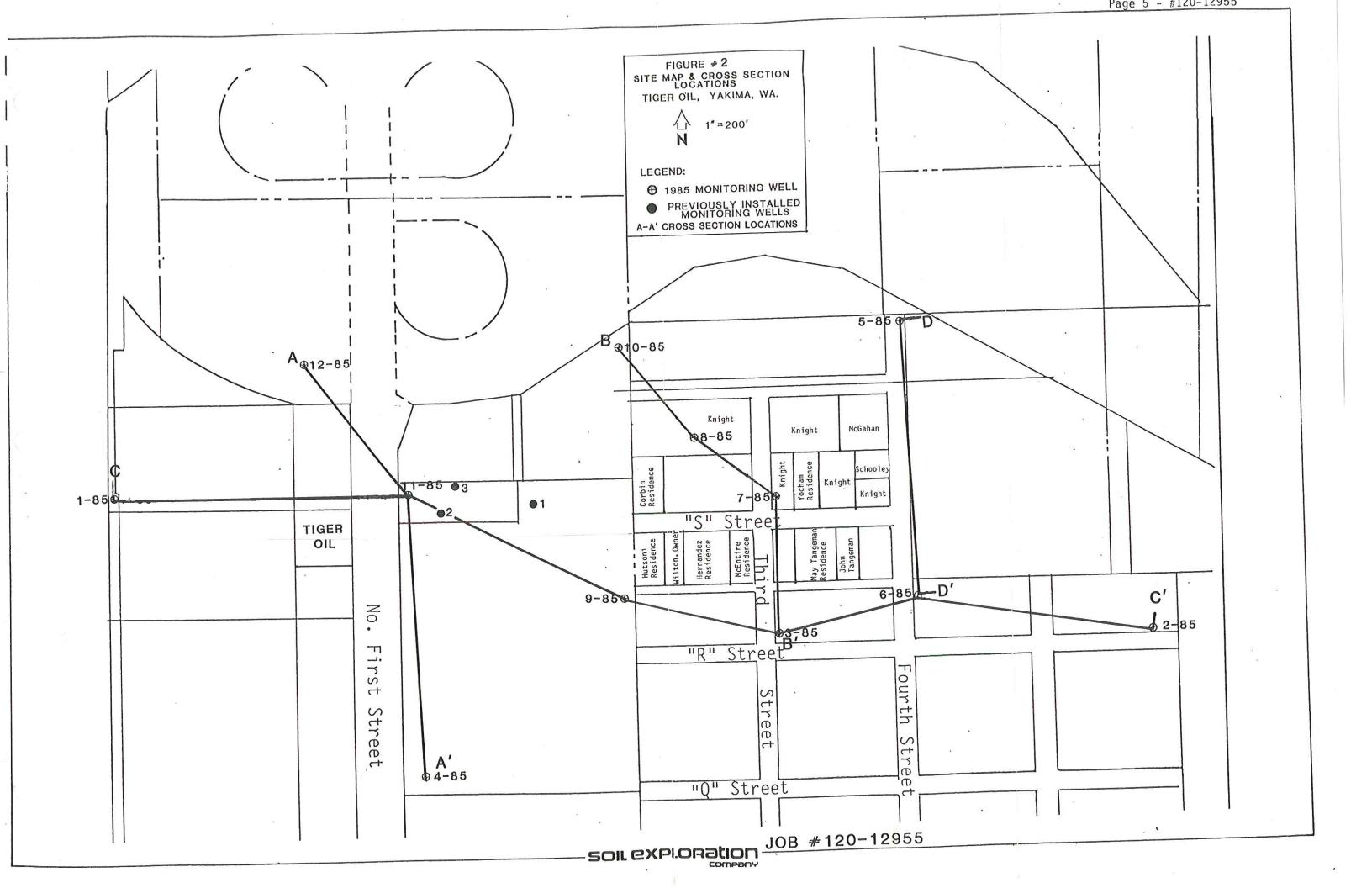
The Tiger Oil Exxon station is located in a business/residential district on North First Street, Yakima, Washington (Figure 2). U.S. Highway 12 is located approximately 850' north of the station. The station is constructed on the alluvial floodplain of the Yakima River. Parent material for the alluvium is derived from the surrounding basaltic bluffs. Local relief on the floodplain is minimal, with a low gradient maintained toward the Yakima River. The Yakima River is approximately 1000' NE of the Tiger Oil station, and is the local ground water discharge point.

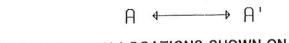
### 3.0 PROJECT RESULTS

### 3.1 Soil Conditions

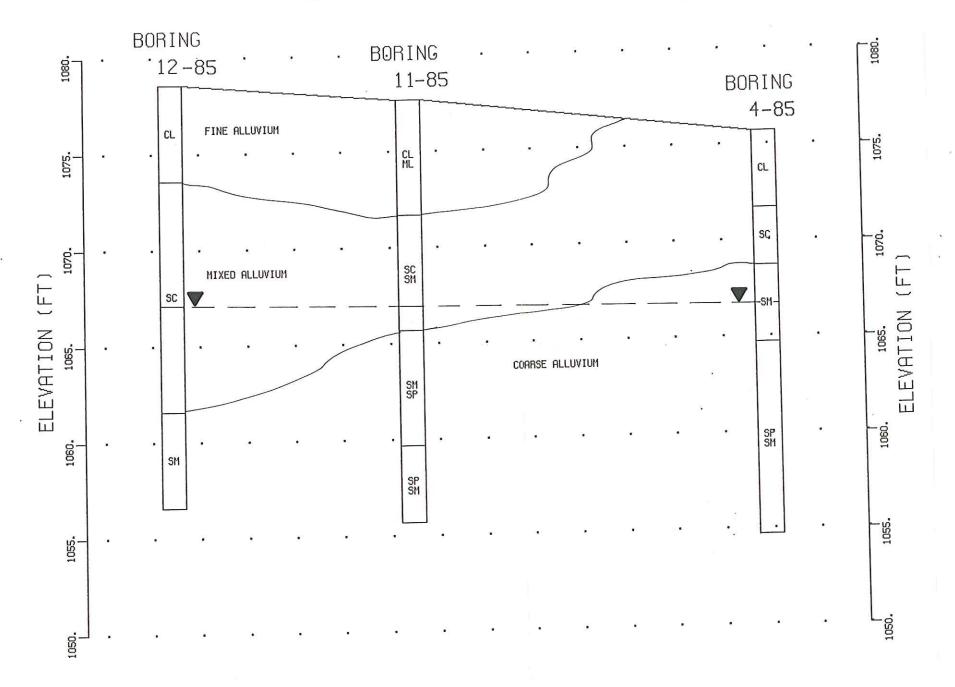
Twelve additional soil borings were drilled at this site between November 17, 1984, and February 20, 1985 (Figure 2). All soil borings were finished as monitoring wells. A W-22 Bucyrus Erie cable tool drilling rig was used to advance all borings. Using this method, only composite samples were recovered.

The results of the soil borings are presented on the attached logs in Appendix 1. A review of these logs indicates that the upper 21' of soil are primarily alluvial deposits consisting of lean clay to silty clay, with a little gravel from 0'-6'. In all borings the clays were underlain by coarse alluvium consisting of silty sand with a little gravel. Cobbles and boulders were encountered at all depths.









NOTE: EXCEPT AT BORING LOCATIONS THE GROUND SURFACE, WATER LEVEL, AND BOUNDARIES BETHEEN SOIL LAYERS ARE INFERRED.

# FIGURE #3

# SOIL PROFILE

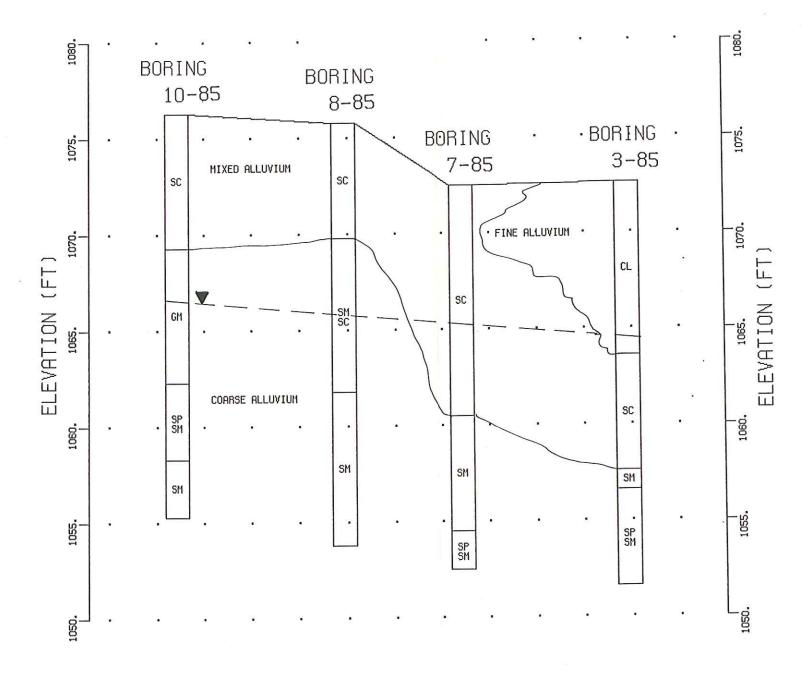
GASOLINE SPILL INVESTIGATION
YAKIMA, WASHINGTON
W.O. 120-12955

SOIL EXPLORATION COMPANY

SCALE: VERT: 1 IN = 5. FT HORZ: 1 IN = 200. FT

B ← B'

CROSS SECTION LOCATIONS SHOWN ON FIGURE #2



NOTE: EXCEPT AT BORING LOCATIONS THE GROUND SURFACE, WATER LEVEL, AND BOUNDARIES BETWEEN SOIL LAYERS ARE INFERRED.

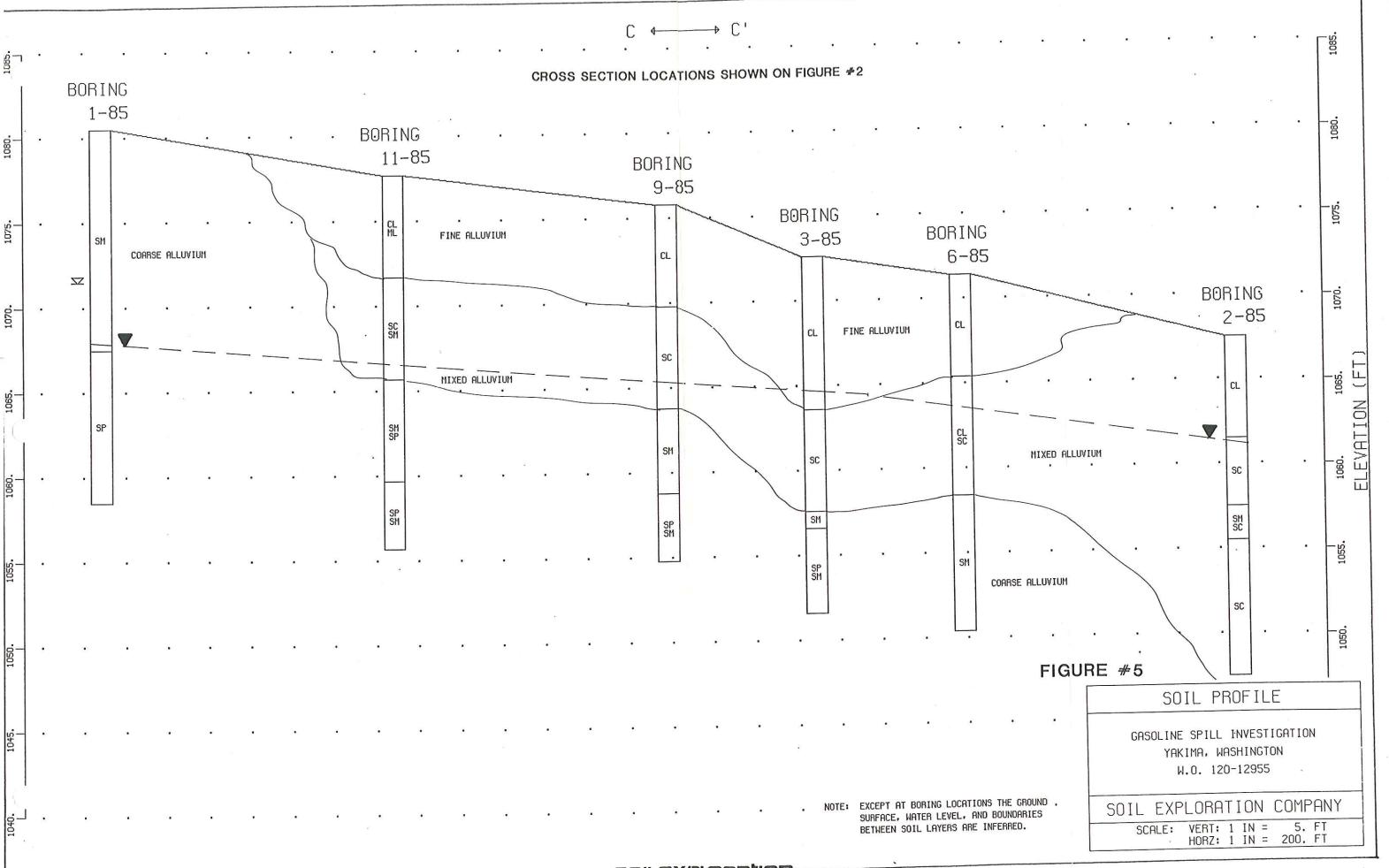
# FIGURE #4

SOIL PROFILE

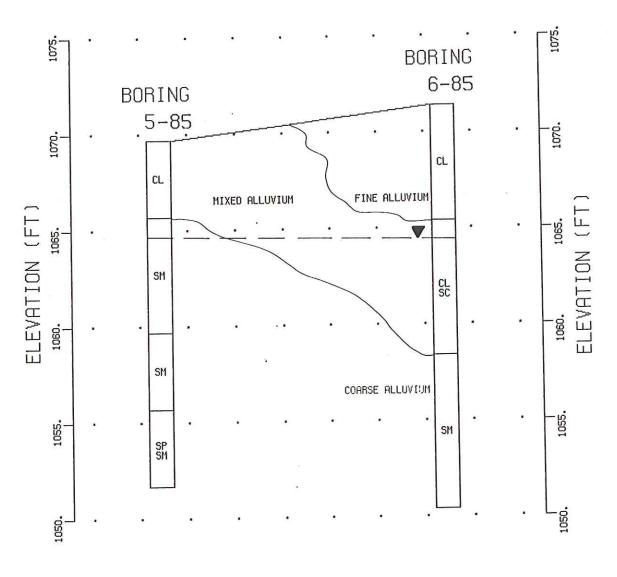
GASOLINE SPILL INVESTIGATION
YAKIMA, WASHINGTON
W.O. 120-12955

SOIL EXPLORATION COMPANY

SCALE: VERT: 1 IN = 5. FT HORZ: 1 IN = 200. FT



SOIL EXPLORATION COMPANY



NOTE: EXCEPT AT BORING LOCATIONS THE GROUND SURFACE, WATER LEVEL, AND BOUNDARIES BETWEEN SOIL LAYERS ARE INFERRED.

# FIGURE #6

# SOIL PROFILE

GASOLINE SPILL INVESTIGATION
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W.O. 120-12955

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SCALE: VERT: 1 IN = 5. FT HORZ: 1 IN = 200. FT Figures 3, 4, 5 and 6 present cross-sectional illustrations of soil conditions inferred from our boring logs.

# 3.2 Monitoring Wells

Two inch diameter flush thread schedule 40 PVC monitoring wells were installed in all borings. All monitoring wells are equipped with 15' of screen. The final screening interval was decided in the field after depth to ground water data was available. All wells with the exception of 2-85 and 5-85 are installed such that 10' of screen extends below the water table and 5' extends above the static water table on the day that they were installed. Monitoring wells 2-85 and 5-85 are screened such that approximately 11' of screen extends into the water table. This decision was based on depth to ground water data of approximately 6' and a minimum criteria of one foot of filter sand above the screen before the grout seal. All monitoring wells were filter packed with coarse sand.

## 3.3 Ground Water

Stabilized ground water elevations and surface elevation data are presented on Tables 1 and 2. A review of these tables indicates that depth to ground water varies from 5.43' below the surface at monitoring well 5-85 to 12.96' below the surface at monitoring well 1. Figure 7 presents a ground water contour map generated from the water level data recorded on February 20, 1985.

Table 2
Ground Water and Surface Elevation Data (2-21-85)

Location	<u>Date</u>	Ground Elevation	Reference Elevation*	Depth to Water From Top of 2 <sup>th</sup> PVC Riser	Ground Water Elevation
1-85	2-21-85	1080.5	1080.34	12.78	1067.56
2-85	2-21-85	1067.5	1066.98	5.79	1061.19
3-85	2-21-85	1072.6	1072.18	7.69	1064.49
4-85	2-21-85	1075.7	1075.74	9.00	1066.74
5-85	2-21-85	1069.7	1069.38	5.10	1064.28
6-85	2-21-85	1071.4	1071.13	7.17	1063.96
7-85	2-21-85	1072.5	1072.15	7.14	1065.01
8-85	2-21-85	1075.8	1075.66	9.53	1066.13
9-85	2-21-85	1075.8	1075.48	9.54	1065.94
10-85	2-21-85	1076.3	1076.03	9.38	1066.65
11-85	2-21-85	1077.7	1077.21	10.48	1066.73
12-85	2-21-85	1078.6	1078.24	11.25	1066.99
1	2-21-85	1078.1	1080.34	13.72	1066.62
2	2-21-85	1078.0	1080.45	13.88	1066.57
3	2-21-85	1076.9	1079.49	12.70	1066.79

<sup>\*</sup> Reference Elevation = Top of 2" PVC riser.

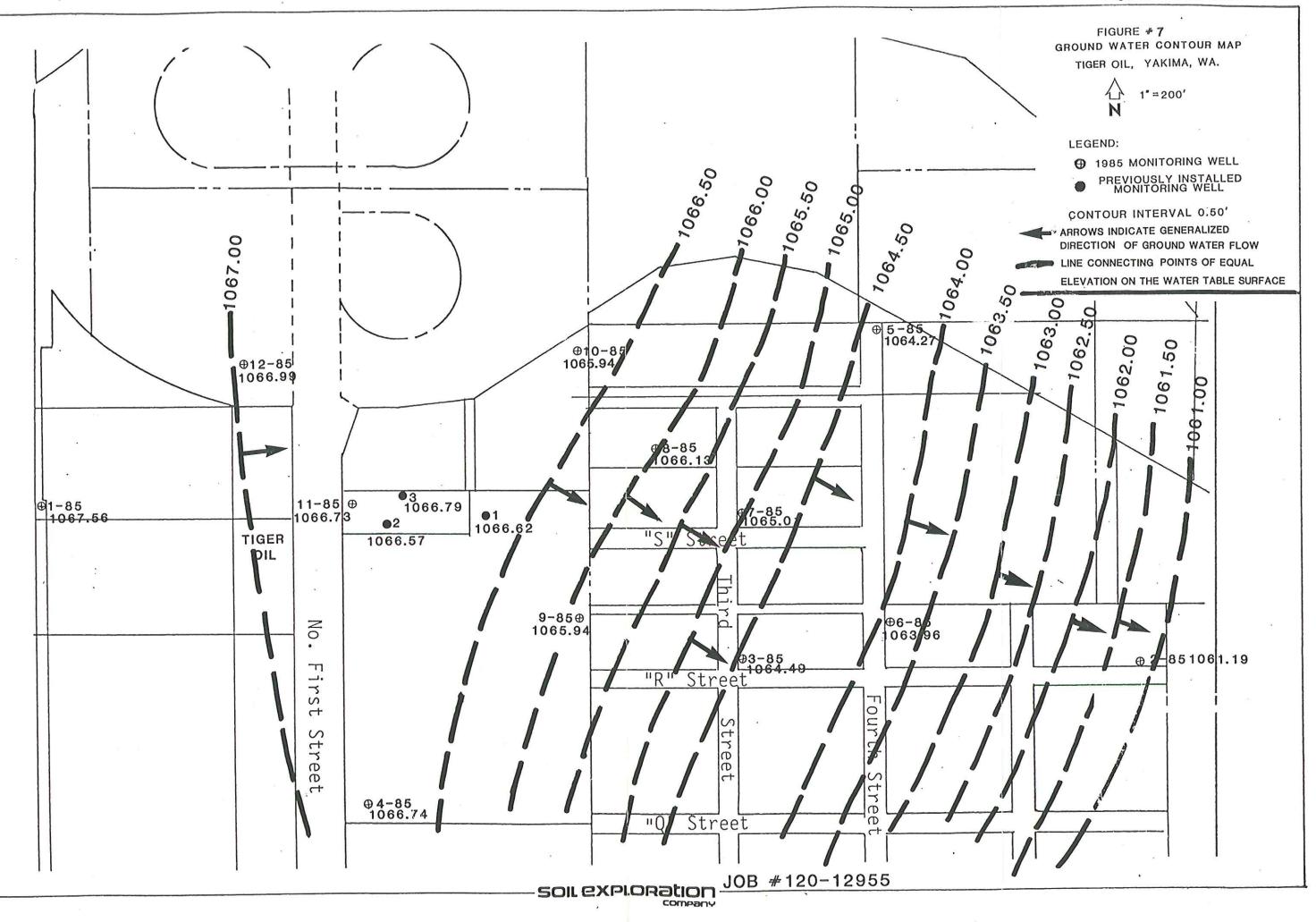
All reference and ground surface elevations were surveyed by a local professional land surveyor and referenced to Yakima county datum (same as USC and GS sea level datum).

Table 1
Ground Water and Surface Elevation Data (2-20-85)

Location	Date	Ground Elevation	Reference Elevation*	Depth to Water From Top of 2" PVC Riser	Ground Water Elevation
1-85	2-20-85	1080.5	1080.34	cor cor	
2-85	2-20-85	1067.5	1066.98	5.74	1061.24
3-85	2-20-85	1072.6	1072.18	7.60	1064.58
4-85	2-20-85	1075.7	1075.74	9.00	1066.74
5-85	2-20-85	1069.7	1069.38	5.11	1064.27
6-85	2-20-85	1071.4	1071.13	7.17	1063.96
7-85	2-20-85	1072.5	1072.15	7.11	1065.04
8-85	2-20-85	1075.8	1075.66	9.51	1066.15
9-85	2-20-85	1075.8	1075.48	9.54	1065.94
10-85	2-20-85	1076.3	1076.03	9.38	1066.65
11-85	2-20-85	1077.7	1077.21	10.48	1066.73
12-85	2-20-85	1078.6	1078.24	11.25	1066.99
	2-20-85	1078.1	1080.34	<b></b>	~~
2	2-20-85	1078.0	1080.45	<b>(10) (0)</b>	
1 2 3	2-20-85	1076.9	1079.49		<b>63</b> 64 .

<sup>\*</sup> Reference Elevation = Top of 2" riser.

All reference and ground surface elevations were surveyed by a local professional land surveyor and referenced to Yakima county datum (same as USC and GS sea level datum).



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E twin city testing

Laboratory No 2A-3512

TABLE 4
Volatile Analysis
(Sampled February 21, 1985)

Parameter	MW-1 (ug/L)	MW-1 MW-2 MW-3 MW-4 (ug/L) (ug/L) (ug/L)	MW-3 (ug/L)	MW-4 (ug/L)	MW-5 (ug/L)	MM-6 (ug/L)	MW-7 (ug/L)	MM-8 (ug/L)	MW-9 (ug/L)	MW-10 (ug/L)	MW-11 (ug/L)	/W-12 (ug/L)	Lower Detectable Limit (ug/L)
Total Hydrocarbons ND as Gasoline	S ND	N	ON	ND	ND	ON	N	Q	ON	N	23390 ND	QN	<b>-</b>
Benzene	ND	ND	ND	QN	ND	QN	QN	QN	ND	ND	1460	ND	<b>~</b>
Toluene	ND	ND	ND	QN	ND	ND	ND	QN	ND	ND	5300	N	_
Xylene	QN	QN	QN	N	N	QN	N	QN	QN	N	6260	N	<b>-</b>

For purposes of these samples ug/L = ppb

ND = Not Detected

Examination of Table 3 indicates that residual hydrocarbon contamination of the soils appears to be confined to the areas near borings 11-85 and 8-85 (Figure 8).

# 3.5 Chemical Analysis Results

Water samples collected on February 19, February 21, and March 25, 1985 were forwarded to our sister company, Twin City Testing and Engineering Laboratory, Inc., for analysis to quantify concentrations of benzene, toluene, xylene and total hydrocarbons expressed as gasoline. Table 4 presents the results for the chemical analysis. Sampling information forms for all samples collected on February 19 and 21, 1985 are located in Appendix II. Chain of custody forms for all samples are attached in Appendix III.

Review of the data presented in Table 4 indicates that monitoring well 11 and the Yocham residence private water supply well contain hydrocarbon contamination. Hydrocarbon contamination of the Yocham well appears to have increased when sampled on March 25, 1985. This may be due to increased ground water infiltration caused by spring thawing. Chemical analysis methodology procedures are included in Appendix IV.

Water level measurements combined with vertical and horizontal controls indicate that potential for ground water flow is generally eastward through the study area (Figure 7). We have calculated the hydraulic gradient to be 0.0023. The local ground water discharge point is the Yakima River, which is approximately 2,500 feet downgradient from the site. We have been informed by Washington Department of Ecology personnel that the hydraulic gradient generally increases during the summer due to irrigation.

#### 3.4 Petroleum Product Observations

As our borings were advanced, all recovered soil samples were examined for the presence of fuel oil using visual appearance and odor as criteria. Table 3 summarizes the vertical zone of petroleum product contamination as inferred from the boring data.

Table 3
Petroleum Product Observations

Boring #	Interval of Contamination	Comments
1-85		Not detected
2-85	60 00	Not detected
3-85		Not detected
4-85	-	Not detected
5-85		Not detected
6-85		Not detected
7-85		Not detected
8-85	Sample designated as 14-22	Slight gasoline odor
9-85	ma dan	Not detected
10-85		Not detected
11-85	6-12*	Strong gasoline odor
	12-18'	Slight gasoline odor
12-85		Not detected

TABLE 4 (cont)

Volatile Analysis (Sampled February 19, 1985)

Parameter	Wilton (ug/L)	Wilton Hernand. (ug/L) (ug/L)	Corbin (ug/L)	Corbin Tangeman Yocham McGohan (ug/L) (ug/L) (ug/L)	Yocham (ug/L)	McGohan (ug/L)	Hutson Suddeth (ug/L)	Suddeth (ug/L)	Knight (ug/L)	Lower Detectable Limit (ug/L)
Total Hydrocarbons as Gasoline	ON	ND	ND	ND	14	ON	QN	QN	QN	<b>(</b> -
Benzene	ND	ND	QN	N	QN	ND	N	QN	ND	1
Toluene	QN	ND	ND	N	ND	QN	N	ND	ND	1
Xylene	ND	ND	QN	N	Ŋ	ND	ND	ND	ND	<del></del>

For purposes of this sample ug/L = ppb

ND = Not Detected

NOTE: Well locations are shown on Figure 2.



TCT 2A-3512

SEC 120-12955

(Sampled March 25, 1985) Volatile Analysis TABLE 4 (cont)

Lower Detectable Limit (ug/L)	_	_	~	_
#3004 Yocham (ug/L)	3120	28	089	980
#3003 Knight (ug/L)	ND	QN	QN	QN
Parameter	Total Hydrocarbons as Gasoline	Benzene	Toluene	Xylene

For purposes of these samples ug/L = ppbND = Not Detected



SEC 120-12955

TCT 2A-3632

## 4.0 DISCUSSION

Based on the data presented, we feel that low concentrations of dissolved hydrocarbons are present in the surficial aquifer. Water quality data, combined with soil contamination observations, indicate that a vertical zone of residual soil contamination may exist.

During periods of high infiltration (i.e., spring thaw, irrigation season), percolating ground water removes adsorbed hydrocarbons from the soils. Generally, this type of infiltration is usually associated with increased ground water elevations. Dissolved hydrocarbons will in turn be transported and diffused downgradient, which will eventually result in an enlarging plume.

As infiltration decreases, ground water elevations may drop. As the water table drops, some dissolved hydrocarbons will again adsorb to soil particles and be rendered immobile.

This cycling of the water table will produce maximum dissolved hydrocarbon contamination during the mobile phase, and minimal dissolved hydrocarbon contamination during the immobile phase, or low water phase, when water flows through the lower soils that have reduced or no residual hydrocarbon contamination.

This hypothesis is supported by contaminated soils being observed at monitoring well 8-85 (using odor as a criterion) and no dissolved hydrocarbon contamination being detected in the water sample collected at MW-8 on February 21, 1985.



We should point out that shallow private water supply wells may act as gradient control wells, which may concentrate hydrocarbons locally and produce potable water of unacceptable quality.

### 5.0 RECOMMENDATIONS

# 5.1 General

Based on our findings, we feel that a "pocket" of free gasoline does not exist. In view of this, ground water depression for product recovery is not recommended. Due to the high hydraulic conductivity, past efforts to significantly depress the water table failed. Considering this, gradient control should not be used as a feasible alternative to cleaning up hydrocarbon contamination.

As we understand, alternative water supplies (deep wells, city water supply) have been provided for area residents that have wells which have been affected by hydrocarbon contamination. Due to the remedial nature of this action, we recommend that a monitoring program be implemented to document ground water flow and quality over a period of one year before re-evaluating site conditions and possible implementation of other remedial measures.

#### 5.2 Monitoring Program

Table 5 outlines the schedule for monitoring and sampling through April, 1986. Should unusually high hydrocarbon concentrations occur in any of our monitoring wells during this monitoring period, we will evaluate this anomaly accordingly.



We propose to submit factual reports to the Washington Department of Ecology on a quarterly basis. Summary reports will include water level and quality data generated during the quarterly sampling/monitoring interval. Field observations and our interpretation of the data will be included in these reports.

Table 5
Monitoring and Sampling Schedule

Date			Task			
	Water Levels all Moni- toring Wells	Sample all 1985 MW	Sample Knights <u>Residence</u>		Otrly Report	Annual Report
May 1985	X	X	X	X		
June 1985	X		X		X	
July 1985	X	-	X	22		
Aug 1985	X	X	X	Х	2	
Sept 1985	X				X	
Oct 1985	X					
Nov 1985	X	X	X	×		
Dec 1985	X				X	
Jan 1986	X					
Feb 1986	X	X	X	X		
March 1986	X					
April 1986	×					X

<sup>\*</sup> Private wells to be sampled will be decided on a quarterly basis.

### 6.0 METHODS

# 6.1 Soil Sampling and Classification

As our borings were advanced, composite soil samples were collected when a change in soil conditions or hydrocarbon contamination was noted. All soil samples were visually and manually classified by our geologist in accordance

with ASTM: D 2487-83. Representative samples were returned to our laboratory for further examination and verification of field classification. Charts illustrating the soil classification procedures and descriptive terminology and symbols used on the soil boring logs are attached in Appendix V.

All borings were put down using a 6" cable tool. Only disturbed composite samples were recovered. Because of this method, our determination of the depth and extent of the various layers of soil and the consistency of cohesive soils are only approximate.

# 6.2 Monitoring Well Installation

Information regarding monitoring well construction and installation is provided on the attached monitoring well construction sheets (Appendix VI).

### 6.3 Water Sampling

Ground water samples were collected after a minimum of 3 well volumes of ground water were extracted from the monitoring well. Water samples were collected using dedicated "clean" bottom loading Teflon bailers with virgin rope. All samples were preserved with blue ice and transported to Twin City Testing and Engineering Laboratory, Inc. for analysis before a 14-day holding time elapsed.

Water samples collected from private wells were collected after a non-filtered, non-aereated cold water faucet had been running at a rate of approximately 1 GPM for a 30-minute period. All samples were preserved with blue ice.



### 7.0 REMARKS

The recommendations contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was written by:

Mark S. Mason

Project Manager/Environmental Geologist

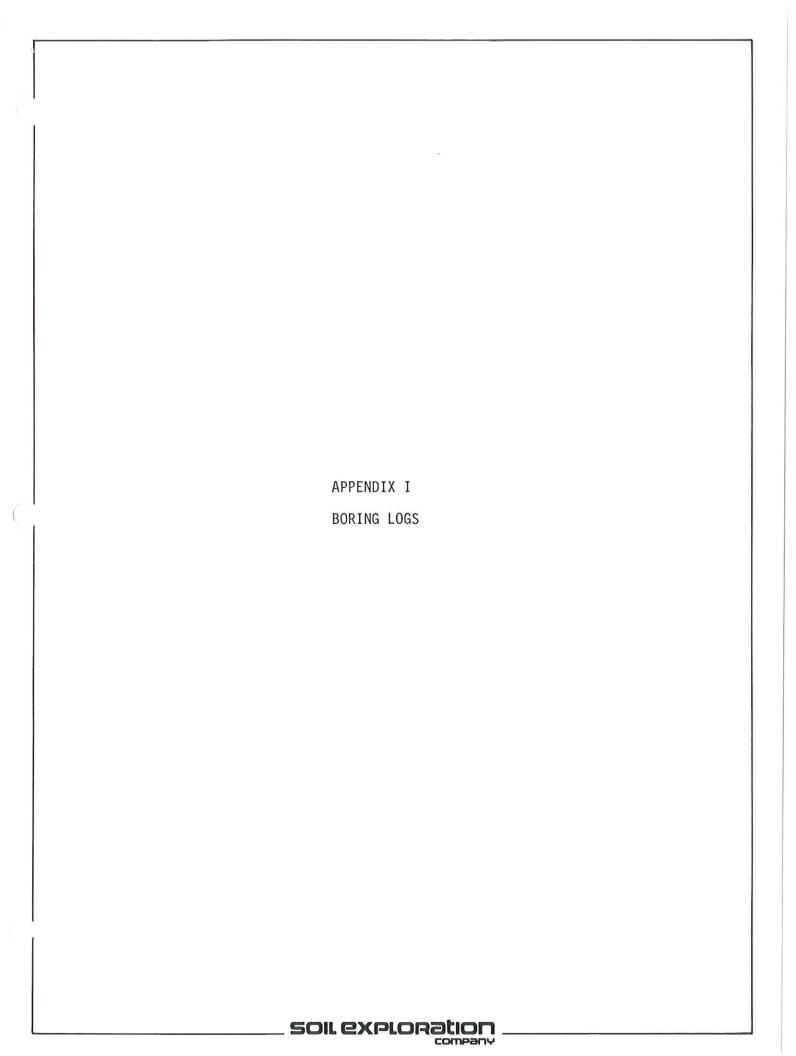
Date: May 8, 1985

This report was reviewed by:

Jerry R. Rick, Manager Environmental Department

Date: May 8, 1985

JOB NO. 120-12955  PROJECT TIGER OIL #3 - YAKIMA, WASHINGTON  TH SURFACE ELEVATION 1072.6'  LEAN CLAY, dark brown (CL)  LEAN CLAY, dark brown (CL)  THE ALLUVIUM - 1 CT	S
THEET DESCRIPTION OF MATERIAL SURFACE ELEVATION 1072.6   GEOLOGIC ORIGIN N WI NO TYPE  LEAN CLAY, dark brown (CL) FINE ALLUVIUM   1 CT	S
SURFACE ELEVATION 1072.61 GEOLOGIC ORIGIN N WL NO TYPE  LEAN CLAY, dark brown (CL)  FINE ALLUVIUM  1 CT	S
LEAN CLAY, dark brown (CL)  LEAN CLAY, dark brown (CL)	
	ı
CLAYEY SAND W/GRAVEL, brown (SC)  MIXED ALLUVIUM  2 CT	
SILTY SAND W/A LITTLE GRAVEL, brownish COARSE  16 SAND W/SILT AND GRAVEL, medium to coarse grained, brownish gray, waterbearing (SP-SM)  4 CT	
End of Boring  Note: Monitoring well installed in boring. See attached  "Installation of Monitoring Well" sheet.  WATER LEVEL MEASUREMENTS  START 1-9-85 COMPLETE 1	-10-85
	8:30
DATE TIME DEPTH DEPTH DEPTH BALLED DEPTHS LEVEL	
1-9 12:30 16' 16' 16' 10 8' CT (Cable Tool) 0-2	
1-10 1:00 SEE NOTE to	
10 CREW CHIEF Mason	
RE-V-18(84-B)-3 M2CROMMELL AVENUE SOIL EXPLORATION ST PAUL, MN 55114	



		LOG OI	TEST BORI	NG		1-85
		VE	RTICAL SCALE 1"	= 3'	BORING	NO
JOB NO	120-12955	YAKIMA, WASHING	TON		SAMPLE	
PROJEC		PTION OF MATERIAL	GEOLOGIC			COMMENTS
ТН		1080.5	ORIGIN	N	WL NO TYPE	
TH . ZÉT	SILTY SAND W/A GRAGRAVEL, cobbles abgray, moist to wet	VEL TO A LITTLE	COARSE	z	WL NO TYPE	
13	SAND W/A LITTLE GRAVEL BELOW 19' grained, brownis	h gray, waterbe	rse		2 CT	
2	Note: Monitori boring. "Install	nd of Boring ng well installe See attached ation of Moniton	100			
1	Well" sh	eet.			11 17	-84 COMPLETE 11-18-84
_	· ]	TER LEVEL MEASUREMEN	TS			4 00
1			BAILED DEPTHS	WATER LEVEL	METHOD 6DC (	)-1/' <u>-1.3//</u>
1	DATE TIME SAMPLED DEPTH	DE: III	to	91 *	CT (	Cable Tool) 0-21'
	11-18 3:00 17'	17'	10	911*		
	11-18 4:15 21'	Sèe Note	to		CREW CHIEF	Mason
-	11-20 9:00		10			
E		- 002 CROMWELL AVENUE S	OIL EXPLOP	COURSE!	<b>9</b> , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	

				LOG O	TEST	BORIL	VG.					2-85	
	400 (	12055	÷	VFI	RTICAL SC	ALE	= 3'		В	ORING	NO	2-03	
JOB NO		12955 TIGER		<u> - YAKIM</u>	A, WAS	HINGTON	T	T	SAN	APLE		OMMENTS	
'H			PTION OF MA 1067.5	TERIAL		GEOLOGIC	N	WL	-	TYPE	Ü	OMMENTO	
PEET	SURFACE EL	EVATION						+					
	SANDY LEA	N CLAY W/	A LITTLE	GRAVEL, (CL)	I AL	XED LUVIUM	+						_
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	1						-		1				
10	SILTY SA	AND W/A L	ITTLE GR	AVEL, (SM/	sc)		-			3 CT			
	brownish	n gray, W	et	(314)	30)				- 1				
( 2		- N. N. N. / A	LITTLE G	RAVEL.			Ī				H		
	<ul> <li>(i) (ii) (iii) (i</li></ul>	SAND W/A h gray wi	111 / 111	, , , , , , , ,	lish		t	1			1		
	brown a	n gray wi nd green	below at	out 17°			ŀ		- 1	4 C	Г		
	1	26		0.72			-				- 1		
	4												1
						ľ	Ī				Ŋ		1
						1	+			11	H		
	1				<b>*</b>		-			11	1		1
	1									11	Ä		
	4								1		1		
	20												
	20	End (	of Borin	g		1	+		1	11			
_	Note:	Monitor	ing well	install	ed in		-			1 1	1		
	4	boring. "Instal	See att lation o	f Monito	ring					11			
		Well" s	heet.				1		1				
1								•				1	-8-85
_		WA	TER LEVEL N	EASUREMEN	rs			STAR	-	-7-8		_ COMPLETE _	8:00
1	W.C.W.	SAMPLED	CASING	CAVE-IN DEPTH		DEPTHS	WATER	METH	IOD	6DC (	0-19'	Tool) 0-2	21'
-	1-7 3:00	DEPTH	191	22.77		0	7' NMR	-		UI (	Cable	10017 0 2	10
-	1-8 8:00	20'	19' SEE NOT	=		0	TOTAL	1			Masor	<u> </u>	
-	1-8 2:00	1			-	0			PAUL.	F MN 5511	and the state of t		
E			- 862 CROWN	ELL AVENUE S	or ex	(PLOR		5.	- x 3 5 5 5 6				

				LOG	OF TES	ST BOI	RING				
	120	-12955	<b>a</b>		VERTICAL	SCALE	l" = 3	•	_	BORING	3 NO. <u>4-85</u>
B NO		TIGER	OIL #3	- YAKII	MA, WASH	INGTON				-	
TH ÉT	SURFACE	DES	CRIPTION O			GEOLOGIC ORIGIN	:	N M	_	TYPE	COMMENTS
-	SANDY LE dark bro	AN CLAY		TLE GRAV (CL	EL, N	MIXED ALLUVIU	М			1 CT	
4	CLAYEY S	SAND W/GR	RAVEL, b	rown (SC	3)		-			2 CT	
7 -	SILTY S/ grayish	AND W/A L brown, v	ITTLE Gwet	RAVEL, (SM	- 3	COARSE ALLUVI	JM -			3 CT	٠
11	I SAND WI	SILT AND waterbea	GRAVEL, ring	, grayisl (Sl	n P-SM)						
		*						-		4 C	Т
					•	t a					
21	Note:	End of Monitor boring. "Instal Well" sl	ing well See att lation c	install ached of Monito				-			
•		WA	TER LEVEL	MEASUREMEN	ITS			START	1-	10-85	COMPLETE 1-14-85
_	TIME	SAMPLED	CASING DEPTH	CAVE-IN DEPTH	BAILED D	EPTHS	WATER LEVEL	метно	op 61	DC 0-	20' @ 8:30
DAT	E IMIC	DEPTH	JEFIN	30	to			_	C.	T (Ca	ble Tool) 0-21'
1-1	4 2:00		SEE NO	E	to to			CREW	CHIEF		1ason
		1		ELL AVENUE S			abon.			N 55114	

					LOG	OF TE	ST BOI	RING						E 0.E	8
37030		120	-12955	\$	_	VERTICA	L SCALE	" s	3'		В	ORING	NO	5-85	
OB NO			TIGER		- YAKIM	A, WAS	HINGTON			1	CAN	MPLE			
TH				RIPTION OF	MATERIAL 7		GEOLOGIC		N	w	-	TYPE		COMME	NTS
_ET	9		EVATION				ORIGIN		N	100	-	-	_		
一	CLAYE	Y SA	ND W/A L	ITTLE G	RAVEL,	٠,	MIXED ALLUVIU	м							
-	brown				(50	ر) (	ALLOVIO	" [					H		
1								ŀ			1	CT	1		
1												Ì			
	l .														
					61151		001005		•						
4 -	SILTY	SAI	ND W/A L	ITTLE GR	AVEL,		COARSE	IM	_						
-	gray'	ish i	orown, m	0156 60	(SM	)	ALLOVI	" [		V	4				
								1	-			1			
	1										2	СТ			
	1						i.								
									-	1		1	H		
	1								1						
	1											1	l		
10				WEL his	ownich		+		-			1			
10			ND W/GRA	WEL, Dr	OWILISH (SM	1)			-				N		
	gray	, we	: (		•				I		12	СТ			
									t		3	СТ			
									-						
	1														
14	1		TI T AND	A LITTLE	GRAVEL		1		t	1		-			
17	SANI	) W/S	ILT AND	arained.	grayis	<b>,</b> h			-			-	-		
	brov	vn, I	to fine waterbea	ring	(SI	P-SM)					4	т Ст	-		
									t		1	+	ı		
	1							ST.	-	1	- 1		B		
	1										- 1	1	H		
18	-								T			- 1	1		
	ł		End of	Boring					H			1			
	1					lod in	*		L				l		
	- Not	e:	Monitori boring.	ng werr See att	ached	ieu iii					١		ì		
			"Install	lation o	f Monito	oring			t				ı		
	1		Well" sh	neet.					1						
	+						1								
1						(4)			t						
									-						
						170			ST	ART_	1-	14-8	35	COMPLE	TE 1-15-85
´ _					CAVEIN			WATER	,	-	-	)C 0-	-		<u>@ 2:00</u>
DA	ATE T	IME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILE	D DEPTHS	LEVEL		INOL	C.1	Ca (Ca	able	Tool)	
							to		<b></b>			,,,,,			
7.	-16 9	:00		SEE NO	E		to		1				Maso	n	
10.0	10 1 3			1		1	to	1	C	REW C	HIEF	1	1050	11	

LOG OF TEST BORING													
JOB NO													
	PROJECT TIGER OIL #3 - YAKIMA, WASHINGTON											MPLE	OCHUENTO
'H ≯tET	SURFA	CE EL	DES _ EVATION _	1072	.51		GEOLOG		N	WL	_	ТҮРЕ	COMMENTS
	CLAYEY some	' SA	ND W/A les, br	LITTLE (	GRAVEL, gray (SC		MIXED ALLUV			12	1	СТ	
. 12	SILTY	SA	ND W/GR	AVEL, by	rownish		COAR	State Control of the second			2	СТ	
	gray,				(S	M)	ALLU	V I UM			3	СТ	
20	medii brow	um t	to fine waterbea End Monitor	grained aring of Bori ing well See att lation o	ng instal	SP-SM)						4 CT	
						V			-				
<u> </u>			WA	TER LEVEL M	EASUREMEN	ITS			STA	RT _1	-21	-85	сомренте1-22-85
1 -		Т	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DE	PTHS	WATER	MET	HOD	6D(	0-1	8' @ <u>1:00</u>
DAT	E TIM	-	DEPTH	DEPTH	DEPTH	to	as AC 854	20,00	I		CT	(Cab	ole Tool) 0-20'
		$\perp$		SEE NOTE		to			L				
1-2	22 3:	30]		SEE NOTE		to to			CRE	w chi	EF	Maso	on
				= 862 CROMM	ELL AVENUE S	OIL EXI	PLOP	atior		PAUL	MN	55114	

				LOC	OF TE	ST BO	RING							
JOB NO														
	PROJECT TIGER OIL #3 - YAKIMA, WASHINGTON  DESCRIPTION OF MATERIAL  DESCRIPTION OF MATERIAL													
YTH V EET	COURTACE	DES		1.41		GEOLOG	ic	N			TYPE	COMMENTS		
rEET	LEAN CLA			AVEL.		FINE								
	dark bro	own	1122	(CL	)	ALLUVI	UM -							
	0 3						+							
										1	СТ			
1	1								1					
-								9						
-					1		Ī	-						
6	CANDY I	AN CLAY	W/A LIT	TIF GRAV	EL.	MIXED		-						
	brown	-AN OLAT		(CL	/SC)	ALLUV	IUM	-	V					
					1			-						
								-			0.			
	1				1			_		2	СТ			
	1													
J	1													
(	+							•						
13	STITYS	AND W/A	ITTLE (	GRAVEL.		COARS								
	brownis	h gray,	wet	(S	M)	ALLUV	IUM	•						
		*						-		3	СТ			
								}			"			
	1						<b>3</b> 3	-						
	1				.*									
	1					1)								
	1					185				4	СТ			
İ	4							-						
21	-							+						
	No. to 3	End of Monitori	Boring		ed in			}						
I	Note:	boring. "Install	See att	ached				+						
	1	"Install Well" sh	ation o eet.	r Monito	ring			L						
	1			MEASUREMEN	ITS	1		STA	RT	1-1	7-85			
DAT	E TIME	SAMPLED DEPTH	CASING DEPTH			DEPTHS WATER LEVEL		мет	метнор 6DC 0-19' @ 10					
					to			+		СТ	(Cab	ole Tool) 0-21'		
7-	18 1:00		SEE NO	TE	10				w chi		Mar	son		
			<u> </u>		OIL EX		ation	The state of the last of the l	PAUL.	-		J011		
e E - V	-18(84-B)-	.3	- EEZ CROMM	ELL AVENUE	UN EX		COMPAN	Ý						

				LOG	OF TI	EST BO	RING					
00.00		120-12955			VERTICA	L SCALE_	1" =	3 '		В	ORING	NO. <u>8-85</u>
OB NO				- YAKI	MA, WAS	SHINGTO	<u> </u>			CAL	MPLE	
H	SURFACE		CRIPTION O	F MATERIAL		GEOLOG		N	WL	-	TYPE	COMMENTS
$\dashv$	CLAYEY SA dark brow	AND W/A L wn	.ITTLE G	RAVEL,	E)	MIXED ALLUVI	UM					č
							Ī			1	СТ	
							F			'		
-												
6 -	SILTY SA some cob gray	ND W/A L bles, mo	ITTLE GR ist to v	et, bro	wnish M/SC)	COARSI ALLUV						
		s.						0	V		СТ	
•										2	СТ	
								•				
14	SILTY SA	AND W/GRA	VEL, a	few cobb (S	oles, SM)			_				
							8	•			з ст	
	1					ar.		-				
	1					ā.					4 CT	Slight gasoilne odor
22	,							-				
	Note:	Monitor	See att	ached		ا 1 [ وا	neet	-				
<u>.</u>	1			f Monito		GII 2	ICC I.a	STAR	T	2-1	3-85	COMPLETE 2-14-85
_		SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH		DEPTHS	WATER LEVEL	_		6DC	0-2	
DAT	E TIME	DEPTH	DEPTH	DEPTH		0	LLYLL					le Tool) 0-22'
			NEE 110==		- Comment	0						
2-1	3:00		SEE NOTE			0		CREV	v CHI	EF	Ma	ison
			- ****	ELL AVENUE S			ation		PAUL.		55114 -	

				1
MW 11-85 Pr	NG INFORM	#3	120 12055	
Sampling PointMW 11-85Pr		W.	O. #120-12955	
Sample ID #02211300Date Describe Sampling Point2" flush with	Sampled	2/21/85	_TimeA	M/PM
Sample ID #Date	grade PVC mo	nitoring we	11	
Describe Sampling Point		1995	2	inches
Well Depth20ft. below MFDepth to Water (below MP)10.48	P Casin	g Diameter	no 1510 A	M/PM
Depth to Water (below MP)10.48	ft. Date	0.05115	cfs.	
Depth to Water (below MP)	n x 0.00225 = have been evacu	ated before sa	impling.	
At least bole volumes t	iavo boon o			
	V			
Sampling Method: Tap ☐ Submersible Pu	ımp 🗆 Bailer 🖸	Other		
Pump intake or bailer set at	n. poloti ti	Cleaned to	collect all samples (y	es, no)
Tubing (type: <u>Teflon</u> ), (new o and all field measurements (yes, no). Tubing	used only for	1) 1140 4004 11	1990 May 199	
and all field measurements (yes, no). Tubing	0000 0,			
Approximate sample collection and field mea	surement discha	rge rate = _	V/A	
27	(	Odor: Strong	gasorine rine	or
Sample Appearance:				
Note any Sampling Problems				
Samples Collected: Volatiles				
EVACUATION	/ STABALIA	WATER	CUMULATIVE	SUMBITUD.
TEMPERATURE CORRECTED		LEVEL	VOLUME OF WATER REMOVED FROM WELL	PUMPING RATE
2-20-85 pH CONDUCTANCE (umhos/cm)	TEMPERATURE (°C)	(NEAREST 0.01 ft)	(gallons)	(gpm)
TIME (UNITS) Common to the com	, 0,	10.60		
1516		10,60		
1524				
Date Time		10.47		
2-21 1300		10.47		
	-			
	+	1		
	)		WL 10.48	
Pumping start time 1512	1	3.48	WL 10.60	_
Pumping stop time1524	· · · · · · · · · · · · · · · · · · ·	ting three		bailer
Comments: Developed with pump pri	ior to extrac	ting three		
	SM	Witnesser	d by:	
Form Completed by:MS			# 100 g	
SOI	EXPLOR			

					LOG	OF TES	T BO	RING					0.05
		120	)-12955	23		VERTICAL S	CALE	" = 3	3 '		В	ORING	NO9-85
OB NO.			TIGER O	II #3	- YAKIMA	WASHI	NGTON			-			
ROJEC			DECC	DIPTION OF			GEOLOGIC					APLE	COMMENTS
HTH	SE OUDT	ACE EI	EVATION	1075.81			ORIGIN		N	WL	NO.	TYPE	
EET					(CL)		FINE						
	LEAN	CLAY	, dark b	rown	(CL)		ALLUVI	um 💄		67.			
-													
1						1		+				١	
1											1	СТ	
1											'		
1								-					
-						Į.				1			
								-					
, =	1							1		1		1	
6 -	CLAVE	-V CA	ND W/GRA	VFI ar	avish		MIXED					1	
U	brown		NIO WY CINT	wee, g	(SC	)	ALLUV	TIM F				1	
•	4 DI OWI						ALLOV						
						1		t				1	
,	1										2	СТ	.
	4							- 1				1	
			8			1		+	•	-	7		
,	1					1		1				1	
						1							
									i			1	
12	STIT	Y SA	ND W/GRA	VEL, br	ownish		COARS	E				ı	1
		, we		5.	(SM	1)	ALLUV	IUM				ı	
	1										1		
	4											3 C	Г
			56						-			1	
	1						140						
	1												N .
	ı					ii ee		2	-			1	
17	SANI	) W/S	SILT AND	GRAVEL.	medium	· 10				1		- 1	
	gra	ined.	brownis	sh gray	water-				+			1	
	bear	ring	6-4-00 (00 )		(5)	P-SM)	ī			- 1	1	4 C	т 🛮
	4										- 1		
									-	1		1	1
1	4												
21	1 —								1		1		
"			End	of Bor	ing				-				
1	Not	e: I	Monitori	ng well	install	ed in							
1	1,000		poring.	See att	ached				+				N
1	1		"Install	ation o	f Monito	ring							
	-		Well" sh	eet.					+		2.	0.5	COMPLETE 1-24-85
			WA	TER LEVEL N	MEASUREMEN	ITS			_	-		8-85	1.00
1 -			SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED	EPTHS	WATER LEVEL	ME	THOD		OC 0-	325 7807
DA	TE T	IME	DEPTH	DEFIN	Jer	to			1		C	C (C	able Tool) 0-21'
	_					to			-				
1-	24 3	:00		SEE NOT	E	10			CR	EW C	HEF		Mason
1 -												The Party of the P	

		SAMPL	ING INFORM	NOITAN		
Compling F	Point Yocham	ResidenceP	rojectTiger	0i1 #3	.O. # _ 120-12955	
Location	Yakima, k	IA		W	. <b>o</b> . # <u>120-12955</u>	
Sample ID	#02191400	Date Vitabon sink	Sampled02	./ 13/ 00	_Time1400 A	
Describe S	Sampling Point	Kitchen Sink				
Mall Donth	28	ft. below M	P Casin	g Diameter	me	inches
Depth to V	Vater (below MF	P)	ft. Date	/ Tir	me	AIVI/FIVI
At least _	3	bore volumes	have been evacu	ated belove so	inping.	
Compling	Method: Tap	Submersible P	ump 🗆 Bailer 🛭	Other		
Pump inta	ake or bailer set	at	ft. below N	MP.	callegt all camples (V	es no)
Tubing (t)	/pe:	), (new o	or previously used	d) was used to	collect all samples (y	
and all fie	eld measuremen	its (yes, no). Tubing	used only loi			
1 <u></u>		action and field me	surement discha	rge rate = _		
Approxim	ate sample coll	ection and new med	Joure III	Odor: noi	1e	
Sample A	Appearance:	clear		Juoi		
Moto any	Sampling Prob	lems:				
	Callested:	Volatiles				<del></del>
Samples						
	E	VACUATION	/ STABALI	ZATION T	EST DATA	
	pH	TEMPERATURE CORRECTED CONDUCTANCE	TEMPERATURE	WATER LEVEL (NEAREST	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	PUMPING RATE (gpm)
TIME	(UNITS)	(umhos/cm)	(oC)	0.01 ft)	(gallons)	
		100				
						-
						-
	Pumping	start time			WL	-
	Pumping	start timestop time			WL	<del>-</del> :
	ALTO CHOOLS AND	unning for 20 m	ninutes before	e collectin	g water samples	
Comme						
	Form C	ompleted by:M	ark Mason	Witnessed	d by:	
	1011110			ation		
		501	CAPLUIT	COMPSOY		

		SAMPL	ING INFOR	MATION		
0 " D	-:- Suddeth	Residence P	roject Tiger	0il #3		
ocation 3	302 "S" Stre	et, Yakima, WA		W	.O. # <u>120-12955</u>	1451-1-1
			0	/19 /85	_Time1540 A	M/PM
Sample ID	# 0219154	Vitchen sink	Sampled	-/ 13 / 33		
Mall Donth	18	ft, below M	IP Casin	g Diameter _	me J	inches
		31	77 11216	/ / !!	110	AM/PM
	PA - 1 -	(111)	II X U.UUEEU			
At least	3	bore volumes	have been evacu	lated before s	ampling.	
2		Cubmarsible P	ump 🗆 Bailer 🗆	Other		
					collect all samples (y	es, no)
and all fiel	d measuremen	its (yes, no). Tubing	used only for			
Approxima	ate sample colle	ection and field mea	asurement discha	rge rate = _		
			,	Odor: No	ne	
Sample A	Sampling Prob					
Note any	Sampling 1102					
Samples	Collected:	Volatiles				
<b>J</b>					FOT DATA	
	E	VACUATION	/ STABALIZ	ZATIONI		
		TEMPERATURE		WATER LEVEL	CUMULATIVE VOLUME OF WATER	PUMPING
	pH	CORRECTED CONDUCTANCE	TEMPERATURE	(NEAREST	REMOVED FROM WELL	RATE (gpm)
TIME	(UNITS)	(umhos/cm)	( <sub>0</sub> C)	0.01 ft)	(gallons)	
	4					
			-			
		-				
					14/1	
	Pumping	start timestop time			WL	
	Pumping	stop time				-
Commen	Hadan I	running for 20	minutes befor	<u>e collectir</u>	ng water samples	
Commen						
	Form Co	mpleted by: Mark	Mason	Witnessed	l by:	
		501	.explora	COMPSON		

Sampling Point McGahan Residence Project Tiger 0il #3  Location Yakima, WA W.O. # 120-12955  Sample ID # 02191337 Date Sampled 02 / 19 / 85 Time 1337 AM/PM  Describe Sampling Point Kitchen sink  Well Depth 70 ft. below MP Casing Diameter 6" inches AM/PM
Sample ID # 02191337 Date Sampled 02 / 19 / 85 Time 1337 AM/PM  Describe Sampling Point Kitchen sink  Casing Diameter 6" inches
Sample ID #02191337Date Sampled02 / 19 / 85Time1337AM/PM  Describe Sampling PointKitchen sink
Describe Sampling PointNTCHEN 3111K
Describe Sampling PointNTCHEN 3111K
Describe Sampling PointNTCHEN 3111K
6"inches
Well Depth 70 ft. below MP Casing Diameter 6 Inches
Well Depthft. below MP Casing DiameterAM/PM  Depth to Water (below MP)ft. Datecfs.
DOM X 0,00660
At least bore volumes have been evacuated before sampling.
/// 1000
8
Sampling Method: Tap   Submersible Pump   Bailer   Other   Other
Tubing (type:), (new or previously used) was used to be and all field measurements (yes, no). Tubing used only for
Approximate sample collection and field measurement discharge rate =
oloan Odor: None
Note any Sampling Problems:
Samples Collected:
Samples Collected.
EVACUATION / STABALIZATION TEST DATA
EVACUATION / STABALIZATION TEST DATA
TEMPERATURE WATER CUMULATIVE PUMPIN CORRECTED LEVEL VOLUME OF WATER RATE
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE WATER CUMULATIVE PUMPIN CORRECTED LEVEL VOLUME OF WATER RATE CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (ADM)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TEMPERATURE CORRECTED  PH CONDUCTANCE TEMPERATURE (NEAREST REMOVED FROM WELL (gml) (gml) (gml)
TIME CORRECTED CONDUCTANCE (umhos/cm) TEMPERATURE (NEAREST (NEAREST (O.0) ft) (gallons) PUMPIN RATE (gpm)
TIME CORRECTED CONDUCTANCE (umhos/cm) TEMPERATURE (NEAREST (NEAREST (O.0) ft) (gallons) PUMPIN RATE (gpm)
TIME
TIME CORRECTED CONDUCTANCE (OC) TEMPERATURE (NEAREST REMOVED FROM WELL (gallons)  TEMPERATURE (OC) TEMPERATU
TIME
TIME
TIME CORRECTED CONDUCTANCE (OC) TEMPERATURE (NEAREST REMOVED FROM WELL (gallons)  TEMPERATURE (OC) TEMPERATU

ampling P	oint Tangemo	n Posidence =	ING INFORI	0i1 #3	/.O. # <u>120-12955</u>	
ample ID	#0219141! ampling Point	Date Kitchen sink	Sampled 02	/19 / 85	_Time1415 A	AM/PM
Vell Depth Depth to W	/ater (below M		MP Casin _ ft. Date m x 0.00223 = _	g Diameter // Ti	me	inches
Pump intal Tubing (ty) and all fiel	ke or bailer se be: d measuremer	t at), (new onts (yes, no). Tubing	or previously used used only for	d) was used to	collect all samples (y	es, no)
		Clear	(	Odor:	None	
Samples	Collected:	Volatiles  EVACUATION  TEMPERATURE CORRECTED CONDUCTANCE				PUMPING RATE
TIME	pH (UNITS)	(umhos/cm)	(oc)	0.01 ft)	(gallons)	(gpm)
	*					
	Pumping Pumping	start timestop time		Section in Section	WL	<del>-</del> 00
	. Water	running for 20	minutes before	e collectin	g samples	
Commen					by:	

		SAMPI	ING INFOR	MATION		
Compling F	Daine Hutson F	Residence	Project Tige	r 0i1 #3		
Sampling r	Yakima,	WA .		v	v.O. # <u>120-12955</u>	
Location	7 4.1.					
			0′	/ 10 / 85	<b>-:</b> 1515	AM/PM
Sample ID	# 02191515	Date	e Sampled0	13/ 00	Time1515	3.141/1
Describe S	Sampling Point	Kitchen sink				
	28	ft helow N	AP Casir	ng Diameter _		inches
Donth to M	Votor (helow ME	2)	ft. Date		me	AM/PM
Discharge	Rate -	api	m x 0.00223 = _			
At least	3	bore volumes	have been evac	uated before s	ampling.	
/ (( 10000 )						
Sampling	Method: Tap		ump  Bailer	Other		
Pump inta	ke or bailer set	at	T. Delow I	VIP. d) was used to	collect all samples (v	es, no)
Tubing (ty	pe:	), (new (	or previously use	u) was used to	o collect all samples (y	
Anneyim	ato sample colle	ection and field me	asurement discha	arge rate = _		
Approxima	ate sample conc	Ol		Odor: Not	ne	
Sample A	ppearance:	Clear		Odor	ne	
Note any	Sampling Probl	ems:				
		Volatiles				
Samples	Collected:	701401100				
	F	VACUATION	/ STABALI	ZATION T	EST DATA	
		TEMPERATURE		WATER	CUMULATIVE	PUMPING
		CORRECTED		LEVEL (NEAREST	VOLUME OF WATER REMOVED FROM WELL	RATE
TIME	pH (UNITS)	CONDUCTANCE (umhos/cm)	TEMPERATURE (°C)	0.01 ft)	(gallons)	(gpm)
IZML	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		THE S			
			2			
	+					
	D!	tort time			WL	
	Pumping s	tart time stop time		(142)	WL	
	rumping s	6 20	inutos hafora	collecting	water samples	
Comment	<b>s:</b> Water ru	inning for 20 M	mutes before	COTTECUTING	Distance of Control of	
		Marale	Macon	Witnessed	by:	
	Form Cor					
		SOIL	<b>EXPLOR</b>	otion _		
			C	:OMPBNY		

		SAMI	LING INFOR			
Sampling P	oint MW	-5-85	ProjectTige	r #3	.o. #120-12955	<del></del>
Location	Yakima, WA			W	.O. #120-1295	)
	022100	10 5-4	- Complete 2	/21 /85	_Time	AM/PM
Sample ID	# UZZIUS	2" flush with	grade PVC mon	itoring wel	1	3.00 MILATER 11 11 10 10 10 10 10 10 10 10 10 10 10
Describe S	ampling Point					
Well Dapth	14.95	ft. below f	MP Casir	g Diameter	1016	_inches
Depth to W	ater (below M	P)5.90	_ ft. Date	/ 20/00 Til	me	_AM/PM
Discharge	Rate =	gp	m x 0.00223 = 2	lated before s	2 me 1016 cfs. ampling.	
At least	3	bore volumes	nave been evace	Jaced Doloro of	anping.	
Sampling I	Method: Tap	☐ Submersible F	Pump   Bailer	Other		
Tubing (typ	oe:Teflo	n), (new	or previously use	dy was used to	collect all samples	(985, 110)
Approxima	to sample coll	ection and field me	asurement discha	rge rate = _	N/A	
Approxima	ite sample con			Odor: none		
Sample A	ppearance:	orown cloudy		July 1		
		lems: none				
Samples (	Collected: V	olatiles				
Samples	3011001001					
,	E	VACUATION				
	E	VACUATION		ZATION TI	CUMULATIVE	PUMPING
2-20-85		TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
	pH (UNITS)	TEMPERATURE CORRECTED	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER	RATE (gpm)
2-20-85 TIME 1020	рН	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft) 11.78	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85	рН	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020	рН	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft) 11.78	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft) 11.78	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft) 11.78	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI: TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)  WL 5.11	RATE (gpm)
2-20-85 TIME 1020 1025 ate Time -21 0949	Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time101 stop time102	TEMPERATURE (°C)	MATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)  WL 5.11 WL 11.80	RATE (gpm) 5 qpm
2-20-85 TIME 1020 1025 ate Time -21 0949	Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time101 stop time102	TEMPERATURE (°C)	MATER LEVEL (NEAREST 0.01 ft)  11.78 11.80	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)  WL 5.11 WL 11.80	RATE (gpm) 5 qpm
2-20-85 TIME 1020 1025 ate Time -21 0949	Pumping s Pumping s Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time101 stop time102 d with pump pri	TEMPERATURE (°C)  8 9 or to extract	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80  5,11	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)  WL 5.11 WL 11.80 Volumes with bai	RATE (gpm) 5 qpm
2-20-85 TIME 1020 1025 ate Time -21 0949	Pumping s Pumping s Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time101 stop time102 d with pump pri	TEMPERATURE (°C)  8 9 or to extract	WATER LEVEL (NEAREST 0.01 ft)  11.78 11.80  5,11	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)  WL 5.11 WL 11.80	RATE (gpm) 5 qpm

		SAMP	ING INFOR	MATION		
Sampling P	oint MW-	6-85 WA	ProjectTiger	· #3	/.O. #120~12955	
Location	Yakima,	WA		W	1.0. #	
Sample ID Describe Sa	# <u>022110</u> ampling Point	07Date _2"_flush_with	e Sampled 2 grade PVC mor	/21 /85 nitoring we	_Time1007/	
Well Depth Depth to W Discharge At least	Rate =	ft. below M 7.17 5 gp bore volumes	MP Casir _ ft. Date2 m x 0.00223 = _ have been evacu	ng Diameter	me 1037 cfs. ampling.	_inches AM/PM
Pump intak Tubing (typ and all fiel	ke or bailer set be:Tef] d measuremen	on ), (new outs (yes, no). Tubing	n. below roor previously used only for	d) was used to	collect all samples (y	yes, no)
		- 1 d		Odor: none	N/A	
	Collected: Vo	latiles VACUATION				
2-20-85 TIME	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
1047	W. de a di sa constanti			7.50		5
1051			2	7.50		
Date Time 2-21 1007				7,17		
Comment	Pumping s Pumping s Pumping s S: Develope	start time 1042 stop time 1052 ed with pump pr	ior to extrac		WL 7.17 WL 7.50 volumes with bas	ilers
	Form Co	mpleted by: MSM	explor		by:	

Sampling Po	oint MW-	8-85 WA	ProjectTige	er #3		100 10055	
Location	Yakima,	WA		V	v.o. #	120-12955	
	022110	40Date	Compled	2/21/85	Time	1040	AM/PM
Sample ID #	moling Point	2" flush wi	th grade PVC	monitoring	well_		
							-
Well Depth	19.90	ft. below N	MP Casi	ng Diameter _		2	_inches
	the state A4	D) 0.53	ft Date	7720 785 TI	ime	150	AM/PM
Discharge F	Rate = $\frac{3}{3}$	gp	m x 0.00223 = _	uated before s	ampling.		
At least		bore volumes	TIAVE DECIT CVAC				
Sampling M	Method: Tap	□ Submersible P	ump 🗆 Bailer	☑. Other			
Pump intak	e or bailer se	t at), (new	ft. below	MP. cleaned.	a collect of	all camples (v	(og gay
Tubing (typ	e: <u>Teflon</u>	nts (yes, no). Tubing	or previously use	d) was used to	Collect	ali samples ()	
and all field	d measuremer	nts (yes, no). Tubing	g used only loi_				
Approximat	te sample coll	ection and field me	asurement discha	arge rate = _			
прртолите.		cloudy		Odor: none			, , , , , , , , , , , , , , , , , , ,
Sample Ap	pearance:	None		000.1			
	1	1-1-+-1					
Samples C	Collected:	olatiles					
Samples C		olatiles/					
Samples C		VACUATION		ZATION T	EST D	ATA	
Samples C		VACUATION TEMPERATURE		WATER	CUMI	JLATIVE	PUMPING
Samples C	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85	E	TEMPERATURE CORRECTED	/ STABALI	WATER LEVEL (NEAREST 0.01 ft)	CUMU VOLUME REMOVED	JLATIVE OF WATER	
2-20-85 TIME	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft)	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft)	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft)	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft)	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME 157 701	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft)	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME 157 701	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft)	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME 157 701	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft) 9.60 9.60	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME 157 701	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft) 9.60 9.60	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME 157 701	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft) 9.60 9.60	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME 157 701	рн	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI	WATER LEVEL (NEAREST 0.01 ft) 9.60 9.60	CUMU VOLUME REMOVED	JLATIVE OF WATER FROM WELL	RATE
2-20-85 TIME 157 701	рн	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI  TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft) 9.60 9.60	CUML VOLUME REMOVEC (ga)	JLATIVE E OF WATER D FROM WELL 11ons)	RATE
2-20-85 TIME 157 701	Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft) 9.60 9.60	CUMU VOLUME REMOVED (ga)	JLATIVE E OF WATER D FROM WELL Nons)	RATE
2-20-85 TIME 157 701	Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time 1153 stop time 1203	/ STABALI  TEMPERATURE (OC)	#ATER LEVEL (NEAREST 0.01 ft)  9.60  9.60  9.51	CUML YOLUME REMOVED (ga*)	JLATIVE E OF WATER D FROM WELL NIONS)	RATE (gpm)
2-20-85 TIME 157 701 Time 1040	Pumping s Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI  TEMPERATURE (OC)	#ATER LEVEL (NEAREST 0.01 ft)  9.60  9.60  9.51	CUML YOLUME REMOVED (ga*)	JLATIVE E OF WATER D FROM WELL NIONS)	RATE (gpm)
2-20-85 TIME 157 701	Pumping s Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time 1153 stop time 1203 ed with pump pr	/ STABALI  TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft)  9.60 9.60  9.51  ting 3 well	VOLUME REMOVED (ga)	JLATIVE E OF WATER D FROM WELL Hons)  ,51 2,60 es with bai	RATE (gpm)
2-20-85 TIME 157 701 Time 1040	Pumping s Pumping s Pumping s	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time 1153 stop time 1203 ed with pump pr	/ STABALI  TEMPERATURE (OC)	#ATER LEVEL (NEAREST 0.01 ft)  9.60  9.60  9.51	VOLUME REMOVED (ga)	JLATIVE E OF WATER D FROM WELL Hons)  ,51 2,60 es with bai	RATE (gpm)

			LING INFOR			
Sampling F	PointMW-	7-85	ProjectTiger	#3	100 10055	
Location _	Yakima, WA			v	v.O. # <u>120-12955</u>	
					Time1022	
Well Depth Depth to V Discharge At least	18.90 Vater (below MI Rate =	ft. below f 	MP Casir _ ft. Date om x 0.00223 = _ s have been evacu	ng Diameter // Ti 0.05115  uated before s	me1104 cfs. ampling.	_inches AM/PM
Pump inta Tubing (ty and all fie	ke or bailer set pe: <u>Teflon</u> Id measuremen	at	or previously used g used only for	MP <sub>cleaned</sub> d) was used to	collect all samples (y	/es, no)
Approxima	ate sample colle	ection and field me	easurement discha	rge rate =	I/A	3.6
Sample A	ppearance:	cloudy	(	Odor: <u>none</u>		
Note any	Sampling Prob	lems:				
<b>Samples</b> 2-20-85	pH E	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
TIME	(UNITS)	(umhos/cm)	(°C)		(garrons)	5
1121				7.48 7.50		
1125				7.100		
ate Time				7 11		
-21 1022	2			7.11		
			-			
				L		
	Pumping s	start time 1117 stop time 1127	orior to extra		WL 7.11 WL 7.50  1 volumes with ba	niler_
Comment						

	MU O		LING INFOR			
Sampling F	Point	85	Project	# J	v.o. # 120-12955	
Location _	Yakima, W	A		v	V.O. # _120-12955	
Sample ID	#02211135 Sampling Point	Dat 2" Flush with	e Sampled2 n grade PVC mo	/21 / 85 nitoring we	Time1135	AM/PM
Well Depth Depth to V Discharge At least	19.50 Vater (below M Rate = 3	P)ft. below I 9.54 5 gp bore volumes	MP Casir _ ft. Date2 m x 0.00223 = _ s have been evac	ng Diameter _ /20 /85 T 0.05115 uated before s	ime1336 cfs. :ampling.	_inches AM/PM
Pump inta Tubing (ty and all fie	ke or bailer se pe: <u>Tef</u> Id measuremer	t at	ft. below for previously usegoing used only for	MPcleaned d) was used to	o collect all samples (	/es, no)
50 J.W		cloudy	1	odor: none		
Sample A Note any	ppearance: Sampling Prob	lems:none				
Samples		olatiles VACUATION				
2-20-85 TIME	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	TEMPERATURE (OC)	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
1343				9.78		
1348			•	9.78		
ate Time -21 1135				9.55		
-77 1100						
				-		
Comment	Pumping s	start time 1338 stop time 1349 d with bailer p	)	cting 3 we	WL 9.54 WL 9.78	ailer_
C	Form Co	mpleted by:MSN	1	Witnessed	by:	

Location	Yakima, N	NA	Fiolect Tiget #	V	v.o. #120-12955	
Sample ID	#022	11200	e Sampled2 h grade PVC mo	/21 /85 onitoring w	_Time1200	AM/PM
	10.00		On also	- Diameter	2" me1245 cfs. ampling.	inches
Pump intak	e or bailer se	ot at11	ft. below for previously used	MP. cleaned d) was used to	collect all samples (	yes, no)
		cloudy none		Odor:	N/A	
Samples C	Collected: V	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)				PUMPIN RATE (gpm)
1253 1257			4	10.10 10.10		
				8.99		
e Time 1 1200						
	Pumping	start time 1248			WL 9.00	
	Pumping  Develop			ting 3 well	WL 9.00 WL 10.10 volumes with bai	

		SAMP	LING INFOR	MATION		
Sampling	Point Knight	Residence	ProjectTige	er 0il #3	120 1205	
Location _	1815 Third S	t., Yakima, WA		V	<b>V.O.</b> #120-12955	
Sample IF	0219183	0 Dat	e Sampled02	/ 19 / 85	Time1830	AM/PM
Describe S	Sampling Point	Kitchen sink				
Well Dept	hM	ft. below f	MP Casii ft Date	/ / T	ime	AM/PM
Depth to t	water (below wir Rate =	gp	$m \times 0.00223 = _$		cfs.	
At least _	3	bore volumes	have been evac	uated before s	sampling.	
0 "	Makadi Tan	⊠v Submersible F	Pump □ Bailer	□ Other		
Dump into	ake or hailer set	at	ft. below I	MP.		
Tubing /h	(DO!	) (new	or previously use	d) was used to	collect all samples (	/es, no)
and all fie	eld measuremen	ts (yes, no). Tubin	g used only for			
Annoul	nto comple celle	action and field me	asurement discha	rge rate =		
Approxim	ate sample colle	Clare	asaroment stooms	Odan.	None	
Sample A	Appearance:	Clear		Odor:	None	
Samples	Collected:	Volatiles				
Oup.						
	E	VACUATION	/ STABALI	ZATION T	T	
		TEMPERATURE CORRECTED		WATER LEVEL	CUMULATIVE VOLUME OF WATER	PUMPING
	pH	CONDUCTANCE (umhos/cm)	TEMPERATURE (°C)	(NEAREST 0.01 ft)	REMOVED FROM WELL (gallons)	RATE (gpm)
TIME	(UNITS)	(unitos) car)	(*6)		(gurrono)	
	-					
			<b> </b>	-		
			-			
	Dumalar a	tart time			WL	
	Pumping s	tart time top time			WL	
022		er running for			ting samples	
Commen						
	Form Cor	npleted bv: Mar	k Mason	Witnessed	by:	
	1 01111 001					
		SOIL	EXPLORE	OMPSOY		

Sampling Po	ointMW-1-8	5	ProjectTige	r #3	N. Opt. Wall	400 40055	
Location	Yakima	, WA		v	V.O. # _	120-12955	
Describe Sa	ampling Point	6 Dat 2" Flush with	grade PVC mo	nitoring we			
Well Depth	21	ft. below 12.78	MP Casi	ng Diameter	ime	0846	_inches
Depth to Wa	ater (below MF	g) gp	_ II. Date	0.05115		cfs.	<i>y</i> (((()))
Discriarye r At least	3	bore volumes	have been evac	uated before s	ampling		
Pump intake Tubing (type and all field	e or bailer set e: <u>Teflon</u> I measurement	Submersible F at	ft. below '&r previously use g used only for	MP. cleaned d) was used to	collect	all samples (	yes,xno)
<b>A</b> pproximat	e sample colle	ection and field me	asurement disch	arge rate =N/A	<u> </u>		
Sample An	pearance:	Clear		Odor:No	ne		
Note any S	ampling Probl	ems:					
		Volatiles					
Samples U	ollected:						
		VACUATION				And the second second	
TIME				WATER LEVEL (NEAREST	CUN VOLUM REMOVE	OATA  MULATIVE ME OF WATER ED FROM WELL Allons)	PUMPING RATE (gpm)
	pH (UNITS)	V A CUATION  TEMPERATURE CORRECTED CONDUCTANCE	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft)	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft)	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft) ell driller	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft)	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft) ell driller	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft) ell driller	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft) ell driller	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft) ell driller	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft) ell driller	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft) ell driller	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	pH (UNITS)	VACUATION  TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	/ STABALI TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft) ell driller	CUN VOLUM REMOVE (ga	MULATIVE ME OF WATER ED FROM WELL Allons)	RATE
TIME Time	Pumping st Pumping st	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  d on December  art time cop time	TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft) ell driller 12.78	CUIN YOLUN REMOVE (ga	AULATIVE ME OF WATER ED FROM WELL allons)	RATE (gpm)
TIME Time	Pumping st Pumping st Pumping st Pumping st	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  d on December  art time op time leveloped with bailer	pump prior to	water LEVEL (NEAREST 0.01 ft) ell driller  12.78 extracting	CUN- VOLUM REMOVE (ga	AULATIVE ME OF WATER ED FROM WELL allons)	mes
Time 85 0846	Pumping st Pumping st Pumping st Pumping st	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  d on December  art time op time leveloped with	pump prior to	water LEVEL (NEAREST 0.01 ft) ell driller  12.78 extracting	CUN- VOLUM REMOVE (ga	AULATIVE ME OF WATER ED FROM WELL allons)	mes

		SAME	PLING INFO	RMATION		
Sampling F	ointMW-	2-85	_ProjectTig	er 0il #3	120 12055	
Location	Yakima.	WA			W.O. # 120-12955	
Sample ID Describe S	# <u>02210910</u> ampling Point	Da 2" Flush w	ite Sampled ith grade PVC	02/21/85 monitoring		AM/PM
Depth to W Discharge	/ater (below M Rate =	ft. below P) 5.79 5 g	ft. Date <u>02</u> pm x 0.00223 = .	0.5115	ime 0859 cfs. sampling.	_inches _AM/PM
Pump intak Tubing (typ	ke or bailer se be: <u>Teflon</u>	at	ft. below Xør previously use	MP. cleaned	i o collect all samples (	yes, mo)
Sample Ap	pearance:	Clear		Odor:	N/A None	
(F)	Collected:	Vacuation	es			
02-20-85 TIME	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
0902				5.75		8
0913				5.76		
Date Time						
22185 0910				5.74		
	Pumping st	op time	0900 0915		WL 5.74 WL 5.79 e well volumes wi	th hailer
Comments:	Develo	peu with pullip	prior to extra	accing thre	C WELL VOLUMES WI	UII DUI ICI
	Form Com	pleted by: Mar	k Mason	_ Witnessed	by:	49
		SOIL	explora	tion		

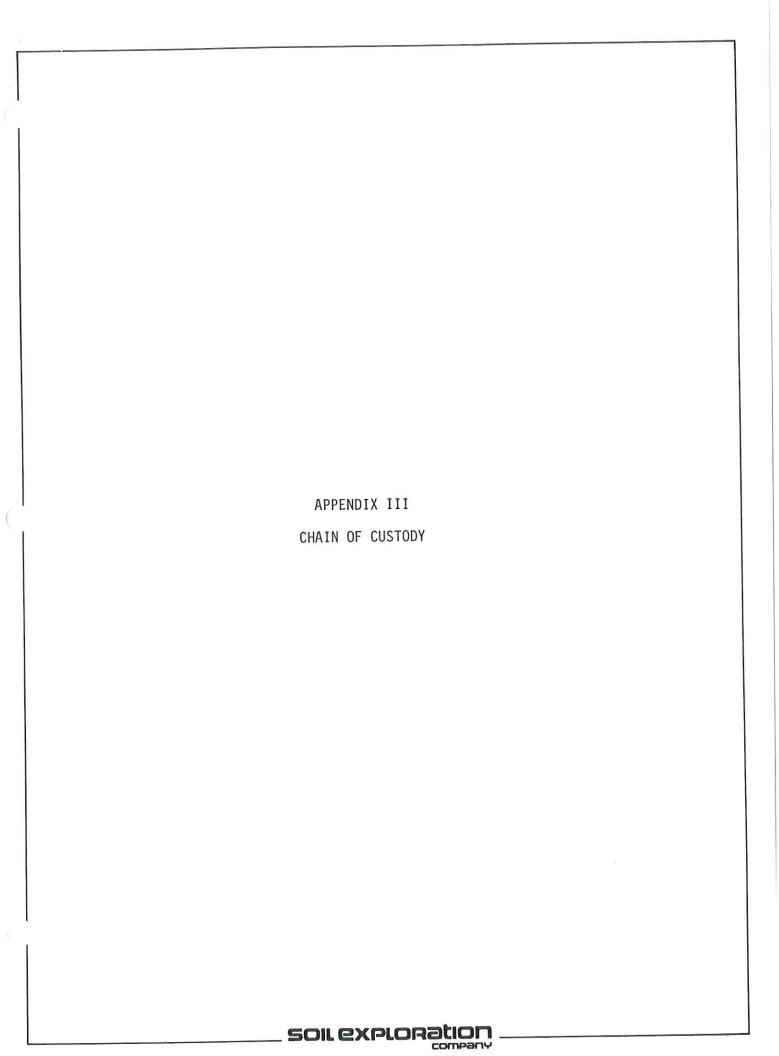
			ING INFOR			
Sampling P	oint MW-3	-85F	ProjectT	<u>iger 0il #3</u>	/.O. #120-12955	
Location	Yakir	ma, WA		W	I.O. #120-12955	
			02	/21 /85	Time0928# Well	AM/PM
		50 N 12	0	- Diameter	2	inches
Depth to W	ater (below Mi	7.69 5 gpi	$m \times 0.00223 = $	0.05115	2 me <u>0950</u> cfs. ampling.	AM/PM
Pump intak Tubing (typ and all fiel	ke or bailer set be: <u>Teflon</u> d measuremen	at	π. below r or previously use g used only for	d) was used to	Collect all samples (y	ves, XXX
Approxima	te sample colle	ection and field me	asurement discha	arge rate = _	N/A	
Sample A	opearance:	Cloudy		Odor: No	one	
Note any	Sampling Prob	lems: None				
Samples (						
02-20-85	pH E	TEMPERATURE CORRECTED CONDUCTANCE	TEMPERATURE	WATER LEVEL (NEAREST	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	PUMPING RATE (gpm)
TIME	(UNITS)	(umhos/cm)	( <sub>0</sub> C)	0.01 ft)	(gallons)	5
0954				8.30 8.35		5
0957				0.00		
022185 0928			5.	7.67		
<u> </u>					-	
				-		
			-	-		
			-			
		1				
Comment	Pumping	start time095 stop time090 loped with pump	0	racting thr	WL 7.60 WL 8.35 ee well volumes v	vith bailer
			k Mason		by:	
				COMPANY		

SE-V-2(84-B)

			INC INFORM	ATION		
	10 0	SAMPL	ING INFORM	er #3		
Sampling Poi	nt	P	roject	W	O. # <u>120-12955</u>	
Location	Yakima, WA			VV		
				/ 01 / 05	_Time1245 A 1	M/PM
					011	nahae
Depth to War Discharge Ra At least	ter (below MP) ate =3	5 gpr bore volumes	n x 0.00223 = have been evacu	0.05115 ated before sa	2" me <u>1410</u> A cfs. ampling.	
Pump intake Tubing (type and all field	e or bailer set : <u>Teflon</u> measurement	at	or previously used	i) was used to	collect all samples (y	es, no)
Approximate	e sample colle	ction and field me	asurement discha	rge rate = _	N/A	
Sample Ap	pearance:(	lloudy ems: <u>None</u>		Odor: None		
Samples C		etiles VACUATION				
2-20-85	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
TIME	CONTION			9,68		
1416 1421			*	9.72		
1421	*					
te Time				9,38		
21 1245						
			,			
			<u> </u>			
Comment	Pumping Pumping s: Develope	start time 1412 stop time 1423 d with pump pr	ior to extrac	ting three	WL 9.38 WL 9.72 well volumes with	n bailer
		mpleted by:MS		Witnesse	d by:	

Sampling D			LING INFOR	AMERICAN ST. ST. SECOND SECONDS		
	oint MW 1	.2-85	ProjectTig	er #3	/.O. # <u>120-12955</u>	
Location	Yakima, WA		•	W	/.O. # <u>120-12955</u>	
					_ <b>Time</b> 1225	
Describe Sa	ampling Point					
Woll Depth	21	ft. below f	MP Casir	g Diameter _	2 me1440 cfs. ampling.	_inches
Depth to W	ater (below M	P) 11.25	_ ft. Date2	<u>/20/85</u> Ti	me1440	AM/PM
Discharge I	Rate =	gp	$m \times 0.00223 = $	0.05115	cfs.	
At least	3	bore volumes	s have been evacu	lated before s	ampling.	
Approxima Sample Ap	te sample collopearance:	ection and field me cloudy plems: none	easurement discha	arge rate = _ Odor: _none	N/A	
Samples C	Collected:	Volatiles				
2-20-85	pH E	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ		CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
2-20-85 TIME	E	TEMPERATURE CORRECTED	/ STABALIZ	WATER LEVEL (NEAREST	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448	pH E	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME	pH E	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft) 11.30	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448	pH E	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft) 11.30	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448 1452 te Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.30  11.20	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	
2-20-85 TIME 1448 1452 te Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft) 11.30	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448 1452 te Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.30  11.20	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448 1452 te Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.30  11.20	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448 1452 te Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.30  11.20	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448 1452 te Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.30  11.20	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448 1452 te Time	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE	/ STABALIZ	WATER LEVEL (NEAREST 0.01 ft)  11.30  11.20	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL	RATE
2-20-85 TIME 1448 1452 te Time	Pumping :	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time144 stop time145	TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft)  11.30  11.20	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)  WL 11.25 WL 11.20	RATE (gpm)
2-20-85 TIME 1448 1452 te Time	Pumping Pumping	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)  start time144 stop time145	TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft)  11.30  11.20	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)  WL 11.25	RATE (gpm)

SOIL EXPLORATION



					for receipt of samples.	rn original form after signi	ving Laboratory: Please
The state of the s	to him o has	S tolorel	Comments		Date/Time	(0	Received for Lab by: (signature)
为於學	11 11 10		Test of the sales		際は	東京の後のおりであるでありという	
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						15. Mar	Sampler(s) (signature)
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	The state of the state of the	J. C.		""	2 2 /	1	10
	Vololilis	7	Water	02-21-85	.96801770	Yakina , WA	58-1-11:11
(optional) Lab ID	Analysis Required	No. of Containers	Sample Type	Date	Field ID #	Sampling Point Location	Sampling Point
d? {\yes/nc	aterials suspected? (yes/no)	Hazardous materials	EH SOLVE	1.5. The The State of the State	7. 30 - 1.30 (ASA) 5		Comments:
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# Sample Identification/Field Unain of Custody Record

Project:	Tige 01	Oil #3 Yathina	ma 10A		M	ク **。	2767.0
Shipped by:	)	× No.					三世 人名 人名 人名
Shipped to:	10 Carter 10 Car				×	Attention of:	
Comments:					I()	Hazardous mat	terials suspected? (yes/ho
Sampling Point		Location	# Gl Pleid	Date	Sample Type	No. of Containers	Analysis (optional) Required Lab ID
Hen fond	11 000	Yalling, W.A.	02/9/500	58-61-20	water	2	Volatilis
or nandez g	Besidence	1	24416120	- "	1	2	" Maganas
Pro	cree		0219 1430.		N	- 2 min	and the second of the second
and man Beard	dence	, ,	5/4/6/50			2	The Control of Control of
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;	V		02/9/337			J	The same of the second
6	1		02.19.15/2	***************************************	* * * * * * * * * * * * * * * * * * * *	- 7 ess	the state of the s
Sucletell 3.	· ·		02/9/50		. 7	8	The second Vision
N. 1 1.	disco		8/6/0	·	2	The state of the s	S. The state of the state of
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	**** * * * * * * * * * * * * * * * * *		The second description of the second	190 Kg - 100 C 20	1 1/ 1/ 3/5		and the property of the second second
		Mark I Marie					
Sampler(s) (signature) Field ID	1	Relinguished by: (signature)	Received by: (signature)	(gnature)		Date/Time	Comments
1.12	6. 100	110, 1 1 1Mare	111		23.76.5	WW50.5	a management of the contraction
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eived for Lab b	Received for Lab by: (signature)		Date/Time	10000000000000000000000000000000000000	- Comments	Its   //	1 100
orde I adula		of the second contract contrac	南 大き と でき		10000000000000000000000000000000000000	Land	June June of
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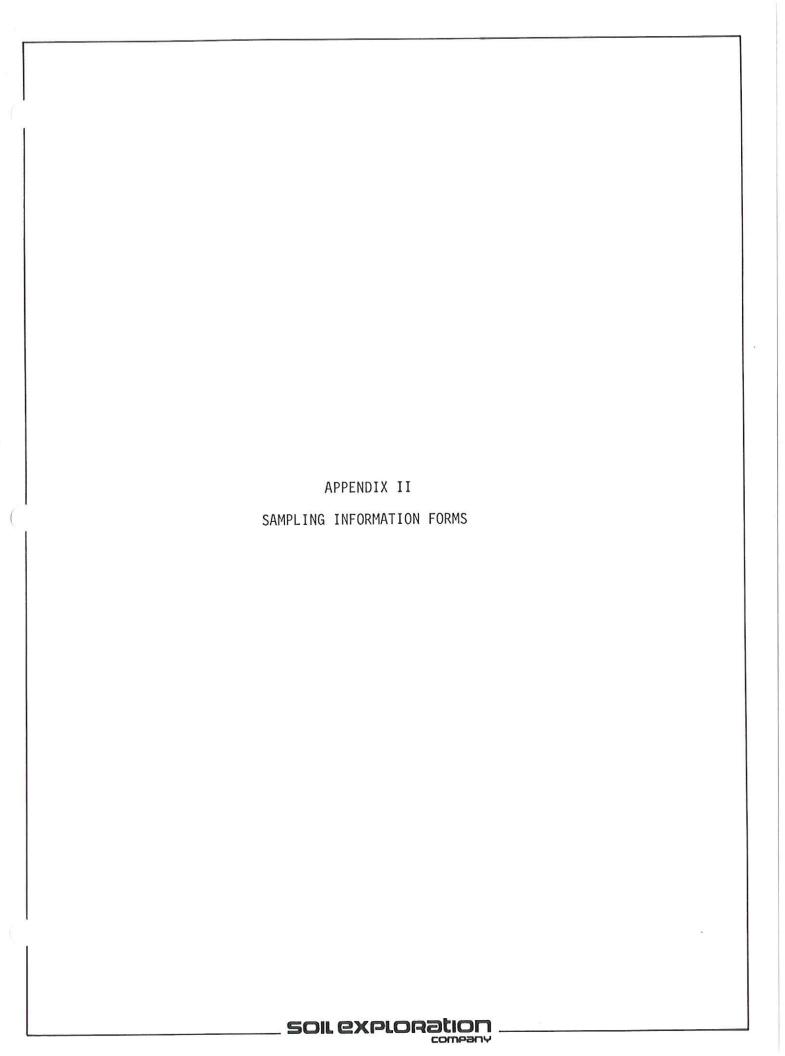
Hazardous materials suspected? (yes/no) (optional) 0197 Required 选了 美有 以 海 人名英英英格 Analysis Attention of: Containers No. of Shipment method: W.O Comments Type Sample ure) Date SollexPloRation Receiving Laboratory: Please return original form after signing for receipt of samples. Date/Time Field ID # Relinquished by: (signature) Location 0/6 Sealed for shipment by: (signature) Received for Lab by: (signature) 165 Sampler(s) (signature) Sampling 10-10 B Field ID Shipped by: Shipped to: Comments:

SE-V-1(83-A)

				LO	G OF T	EST B	ORING	Ŕ				al V
JOB NO	1	20-12955			VERTICA	LSCALE	1" =	3'		B	ORING	NO11-85
PROJEC				#3 - YAK	IMA, WAS	HINGT	UN			C.1.	MPLE	
, _r	SURFACE	D E ELEVATION		OF MATERIA	L	GEOL		N	WL		TYPE	COMMENTS
	SILTY C	LAY W/SA	ND, dar	k brown (C	L-ML)	FINE ALLU	VIUM	-	٠			
6						MTV		-		1	СТ	
- - - -	CLAYEY gray	SAND W/C	GRAVEL,	brownish (S	SC/SM)	MIXE ALLU	JV I UM	-		2		Strong gasoline odor
2 •		SAND W/A sh gray,			SM/SP)	COAF	RSE JVIUM	+		3	CT	Slight gasoline
18 -					į.	girl (	49			3		odor
-	SAND W, medium bearing	SILT ANI grained	D A LITT, brown,	water-	EL, SP-SM)	J		-		4	ст	
22 •	Note:	Monitor boring.	See att	instal		]1" sl	neet.					
		WA	TER LEVEL N	MEASUREMEN	ITS			START	1	-29	-85	сомрієте 1-30-85
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DE	EPTHS	WATER LEVEL	метно			0-20	
					to			+		CT	(Lab	le Tool) 0-22'
1-31	11:00		SEE NOT	E	to			CREW	CHIEF		Ma	son
			- M20001	ELLAVEMUE S			ation					
RE-V-	18(84-8)-	3	- BEZ CROMM	ELL AVENUE	UR EX			,		8 55		

,				L	G OF T	EST	BORING	3				
JOB NO	,	120-12	2955		VERTIC	AL SCAL	E 1" =	3 '		E	BORING	NO. 10-85
PROJEC		TIG	FR OIL	#3 - YAI	KIMA, WAS				-			
TH , _ET	SURFAC	CE ELEVATION		1076.31			OLOGIC RIGIN	N	WL	NO.	TYPE	COMMENTS
	AND BO	SAND W/ ULDERS, e fill)	GRAVEL, brownis	h gray	SC)	FILL MIXE ALLU		-	7	1	СТ	
7 - - - -	SILTY wet	GRAVEL,	brownis	h gray, (	GM)	COAR ALLU	SE IVIUM	-		2	СТ	
14 -	SUILD II	/SILT AN waterbea			ish SP-SM)		£			3	СТ	
18 -		SAND W/A sh gray,			SM)	*				4	СТ	
21 -	Note:	Monitor boring.	See att lation o	instal								
		WA	TER LEVEL A	MEASUREMEN	ITS			START_	1-	25-	85	сомрівтв1-28-85
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DE	PTHS	WATER LEVEL	METHOD	6D	C O	-20'	@ <u>3:00</u>
					to					1 - milion		Tool) 0-21'
1 00					to							
1-29	11:30		SEE NOT	E	to			CREW C	HIFF		Maso	n
			l i		to		1	CREW C	HIEF		Maso	on

				LO	G OF TI	EST B	ORING					
JOB NO	s	120-12955	=		VERTICA	L SCALE	1" =	3 '		В	ORING	NO12-85
PROJEC			ROIL #		MA, WAS	HINGTO	N T				- 7	
r 4			ESCRIPTION 1078	OF MATERIA	L	GEOLG		200		1	APLE	COMMENTS
FLET	SURFAC	E ELEVATION	1076			ORIG		N	WL	NO.	TYPE	
	LEAN C	LAY, dark	: brown	(C	L)	FINE ALLU		•		1	СТ	
5 -		SAND W/0 sh gray	GRAVEL,	a few co (S	bbles, C)	MIXE ALLU		-		2	СТ	Very slight gasoline odor
					٠	,		-				
		× 8								3	СТ	Very slight gasoline odor
17	SILTY brown,	SAND W/GI wet	RAVEL, g	rayish (S	SM)	COAF ALLU	SE VIUM			4	СТ	
22								-				
	Note:	Monitori boring. "Install	See atta	install ached f Monito	ring We	][]" sh	eet.	STAR		2-19	9-85	сомріете2-20-85
. –			TER LEVEL A				WATER	1				1.00
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED D	EPTHS	LEVEL	METH			$\frac{0-20}{(Cab)^2}$	
					to to			+-		CT	(Cab	le Tool) 0-22'
2-2	20 2:00		SEE NOT		to			1—				
			1		10			CREW	CHIEF			son
SE-V-	-18(84-B)	-3	- 662 CRONWI	ELL AVENUE S	OIL EX	PLOR			NUL. W	33		



		SAMPI	ING INFOR	MATION		
Sampling F	oint Wilton R	esidenceI	Project <u>Tiger</u> (	Dil #3	120-12955	
Location	Takima,	WA		v	v.o. # <u>120-12955</u>	
Sample ID	# 02191500	Date	e Sampled0	2/19/85	Time1500/	AM/PM
Well Depth	23	ft. below N	MP Casir	ng Diameter _		inches
D 11 4- 14	Johns Chalass MAE	٥١	ft. Date	/_/	me	AIVI/FIVI
Discharge	Rate =	gp bore volumes	m x 0.00223 = _ have been evacu	lated before s	ampling.	
At least	3	bole volulles	TIME DOON OTHER			
Sampling	Method: Tap	Submersible P	ump 🗆 Bailer [	Other		
	t Lullan aat		ft below i	MP.		
Tubing (ty	pe:	), (new	or previously used	u) was used it	o collect all samples (y	
Approxima	ate sample colle	ection and field me	asurement discha	arge rate = _		
	C	1.000		Odor:	None	
Sample A	ppearance:	lems.				
Note any	Sampling Prob	161115.				
Samples	Collected:V	olatiles				
Oup.						
	E	VACUATION	/ STABALIZ		The second power of the second	
<b>7711</b> F	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	TEMPERATURE	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
TIME	TONZIO		V			
			8			
			-			
					WL	
	Pumping s	start timestop time		š	WL	
	Pumping s	stop time	minutes before	o campling		
Commen	ts:Water_	running for 20	minutes befor	c samping		
		Man Man	Wason	Witnessed	by:	
	Form Co					
		5011	.explora	— <b>ПОІЈ</b>		

05 V 0/04-B1

			ING INFOR			
Sampling P	oint Corbin F	Residence F	ProjectTi	ger 0i1 #3	10 # 120-12955	
ocation	Yakima, V	IA		v	/. <b>O</b> . # <u>120-12955</u>	
escribe S	ampling Point	Kitchen Sink			_Time _1430 /	
	001	6 L 1 N	IP Casin	g Diameter _		inches
An 14	lator (holow MI	<b>)</b>	ft. Date		me	AM/PM
inchargo	Rate -	gpr bore volumes	T X U.UUZZ3 = _			
t least	3	bore voluntes	Have been evace			
Pump intal	ke or bailer set	at	tt. below to	d) was used to	collect all samples (y	ves, no)
Innrovima	ote sample colle	ection and field mea	asurement discha	rge rate = _		
		clear		Odor: N	one	
Note any	Sampling Prob	lems:				
	Collected:					
Samples		VACUATION	/ STABALI	ZATION T	EST DATA	
TIME	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
	*					
	-					
	Pumping s	start timestop time			WL	•
Comment	s: Water	running for 2	O minutes bef	ore collect	ing samples	
	Form Co				by:	
		SOIL	EXPLOR			

		•	LING INFOR			
Sampling F	Point Hernand	ez Residence	Project Tiger	^ 0il #3 ·	120 12055	
.ocation	Yakıma,	WA			<b>N.O.</b> # <u>120-12955</u>	
Sample ID Describe S	#02191 Sampling Point	445 Date Bathroom sir	e Sampled02 nk	2 / 19 /85	Time1445	AM/PM
Mall Depth	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ft. below N	AP Casi	ng Diameter _		_inches
Denth to M	Vater (below M	P)	_ ft. Date	<u>/</u> T	ime	AM/PM
Discharge	Rate =	gp	$m \times 0.00223 = _{-}$		CIS.	
At least	3	bore volumes	have been evac	uated before s	sampling.	
Pump inta	ke or bailer se	t at), (new (	ft. below to previously use	MP. d) was used to	o collect all samples (	/es, no)
Approxima	ate sample coll	ection and field me	asurement discha	arge rate = _		
Sample A	ppearance:	Clear		Odor:No	ne	
Note any	Sampling Prob	lems:				
Complea	Collected: V	olatiles				
Samples						
	E	VACUATION	/ STABALI			
TIME	pH (UNITS)	TEMPERATURE CORRECTED CONDUCTANCE (umhos/cm)	TEMPERATURE (°C)	WATER LEVEL (NEAREST 0.01 ft)	CUMULATIVE VOLUME OF WATER REMOVED FROM WELL (gallons)	PUMPING RATE (gpm)
			N)			
			-			
	*					
				<del> </del>		
						See 1 1 - 50 - 50 - 50 - 50 - 50 - 50 - 50
	Pumping s Pumping s	start timestop time			WL	
Comment	s:Water	running for 20	O minutes bef	ore samplin	g	
	Form Cor	npleted by: Man	rk Mason	Witnessed	by:	
	1 0.111 001					
		SOIL	EXPLORS	OMPSOV		

Laboratory No 2A-3512

Ewin city testing

Volatile Analysis TABLE 1 (continued)

SAMPLE IDENTIFICATION:

Tiger Oil #3, Yakima, WA

			2	2	10
	MM-8-85				
TCT #1925	1926	1927	1928	1929	1930
	MW-2-85				
TCT #1919	1920	1921	1922	1923	1924

MW-1 MW-	#1920 #1921 #	#1922	#1923	#1924	#1925	#1926	#1927	#1928	#1929	#1930	Lower
	MW-2 MW-3 M	MW-4	MW-5	MW-6	MW-7	MW-8	MM-9	MM-10	MW-11	MW-12	Detectable
$\leq$	(ug/L)			-1	_1		- 20	(ng/L)	(ng/L)		Limit (ug/L)

	# 10 m MW - 1	#1919 #1920 #1921 MW-1 MW-2 MW-3 I	MW-3	4M-4	MW-5	MW-6	V- MM	MM-8	0-MW	MW-10	MW-11	MW-11 MW-12	Detect
Parameter	(ug/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	
Total Hydrocarbons as Gasoline	ON	ND	QN	QN	ON	ND	ND	Q	N	Q	23390	ND	~
Benzene	ND	QN	ND	ND	N	ND	N	N	ND	ND	1460	ND	<b>-</b>
Toluene	QN	ND	ND	QN	ND	ND	ON	N	Q.	ND	5300	ND	~
Xylene	N	QN	ON	N Q	ND	ND	N	ND	QN	N	6260	N	<del>-</del>

For purposes of these samples ug/L = ppb

ND - Not Detected

SAMPLE IDENTIFICATION:

MA
Yakima,
#3,
0i1
iger

TCT #1915	1916	1917	2161	
Wilton	Hernandez	Corbin	Tangeman	Yochan
TCT #1910	1911			

McGohan Hutson Suddeth Knight

Lower Detectable Limit (ug,	-
#1918 Knight (ug/L)	Q
#1917 Suddeth (ug/L)	N
#1916 Hutson (ug/L)	
#1915 McGohan (ug/L)	Q
#1914 Yochan (ug/L)	14
#1913 Tangeman (ug/L)	ON
#1912 Corbin T (ug/L)	QN
#1911 n Hernand. ) (ug/L)	N
#1910 Wilton (ug/L)	QN
	ncarhons

Parameter

ON			
Q	N	N	N
QN	Q	ON	ND
ND 14	N	N	2
QN	QN	ND	QN
QN	ND	N	N
Q	N	N	Q
N	QN	N	N
Total Hydrocarbons as Gasoline	Benzene	Toluene	Xvlene

2

2

2

For purposes of this sample ug/L = ppb

ND - Not Detected

MEMO TO:

FROM:

DATE:

SUBJ:

Mark Mason, SEC

Harry Fisher, TCT

March 9, 1985

Purge and Trap SEC 120-12955 TCT 2A-3512

### INTRODUCTION:

This memo presents the results of our analysis of water samples for volatiles. The samples were received on February 25, 1985. The scope of our work was limited to analyzing the samples for the presence of benzene, toluene, xylenes and total hydrocarbons as gasoline using gas chromatographic techniques.

### SAMPLE IDENTIFICATION:

Tiger 0il #3, Yakima, WA TCT #1910-1930

### METHODOLOGY:

These samples were analyzed using a Tekmar LSC-2 Liquid Sample Concentrator linked to a Perkin-Elmer Sigma 300 Gas Chromatograph with FID on a six-foot stainless steel column packed with SP-1000 100/120 mesh packing. Xylene, benzene, and toluene were identified by retention time and quantified by comparison with known standards using a SP-4000 data system. We calculated gasoline concentration by ratioing total peak area to a gasoline standard total peak area.

Hary the

# RESULTS:

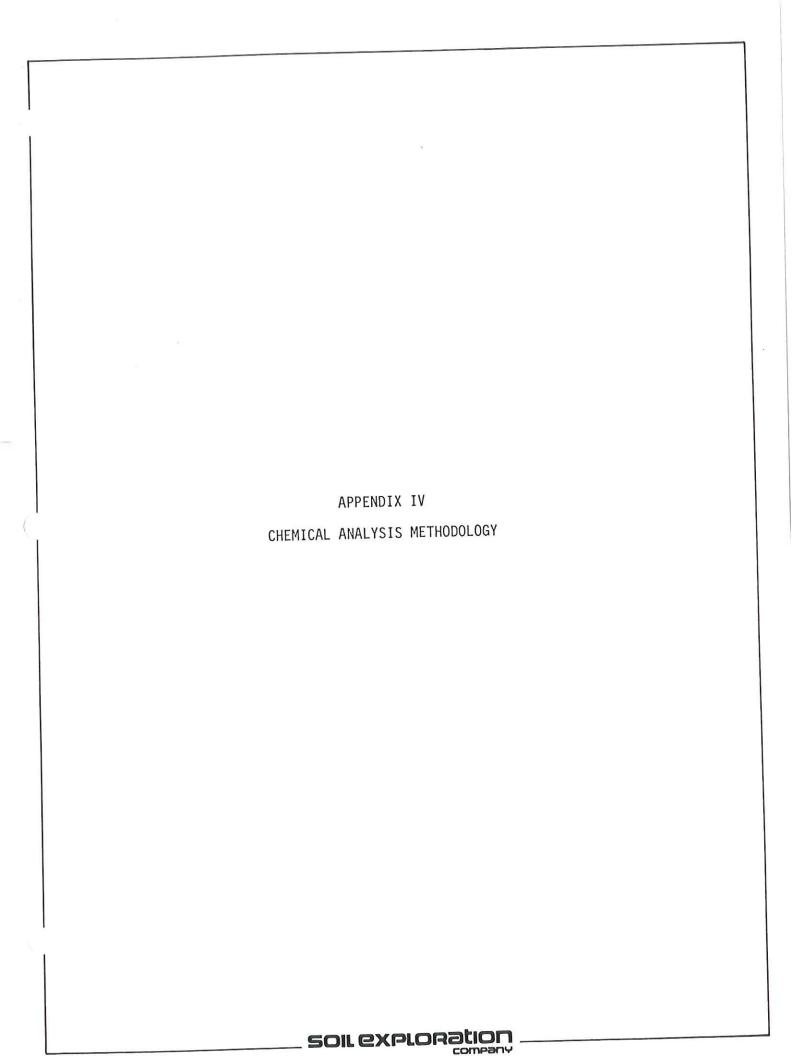
These are summarized in Table 1.

### **REMARKS:**

The samples were consumed in the analysis.

Credt 4416 - \$2310

HDF/ma



MEMO TO:

FROM:

DATE:

SUBJ:

Mark Mason, SEC

Harry Fisher, TCT

April 5, 1985

Purge and Trap SEC 120-12955 TCT 2A-3632

### INTRODUCTION:

This memo presents the results of our analysis of water samples for volatiles. The samples were received on March 27, 1985. The scope of our work was limited to analyzing the samples for the presence of benzene, toluene, xylenes and total hydrocarbons as gasoline using gas chromatographic techniques.

# SAMPLE IDENTIFICATION:

Tiger 0il #3

TCT #3003 Knight TCT #3004 Yocham

### METHODOLOGY:

These samples were analyzed using a Tekmar LSC-2 Liquid Sample Concentrator linked to a Perkin-Elmer Sigma Gas Chromatograph with FID on a six-foot stainless steel column packed with SP-1000 100/120 mesh packing. Xylene, benzene, and toluene were identified by retention time and quantified by comparison with known standards using a SP-4000 data system. We calculated gasoline concentration by ratioing total peak area to a gasoline standard total peak area.

### RESULTS:

These are summarized in Table 1.

## REMARKS:

The samples were consumed in the analysis.

Credit 4416 - \$220.00

HDF/ma

Harry Sh

Ewin city testing

# SAMPLE IDENTIFICATION:

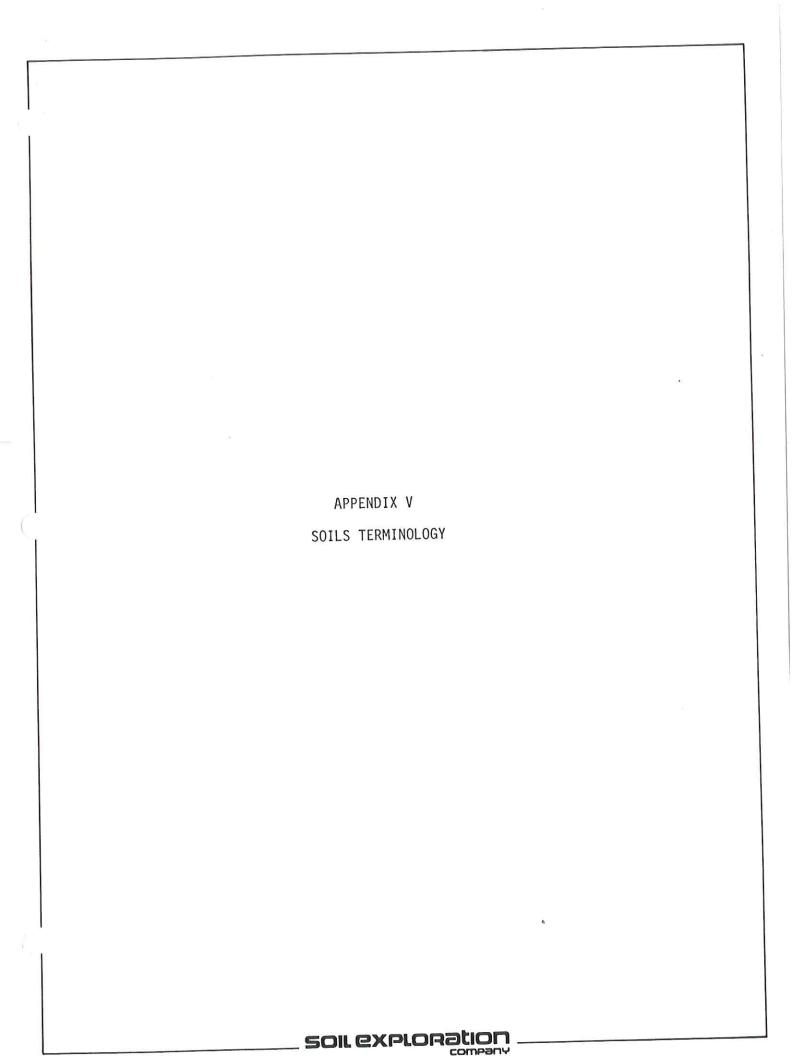
Tiger Oil #3

TCT #3003 Knight TCT #3004 Yocham

Lower Detectable Limit (ug/L)	<b>-</b>	_	_	~
#3004 Yocham (ug/L)	3120	28	980	980
#3003 Knight (ug/L)	ND	ND	ND	ND
Parameter	Total Hydrocarbons as Gasoline	Renzene	Toluene	Xylene

For purposes of these samples ug/L = ppb

ND - Not Detected



### **GENERAL NOTES**

## DRILLING AND SAMPLING SYMBOLS

### **TEST SYMBOLS**

SYMBOL	DEFINITION	SYMBOL	DEFINITION
HSA	3 1/4" I.D. Hollow Stem Auger	W	Water Content - % of Dry Wt ASTM D 2216
FA	4", 6" or 10" Diameter Flight Auger	D	Dry Density - Pounds Per Cubic Foot
_HA	2", 4" or 6" Hand Auger	LL, PL	Liquid and Plastic Limit - ASTM D 4318
DC	2 1/2", 4", 5" or 6" Steel Drive Casing	Additi	onal Insertions in Last Column
RC	Size A, B, or N Rotary Casing Pipe Drill or Cleanout Tube	Qu	Unconfined Comp. Strength-psf - ASTM D 2166
PD	Continuous Colis Parrol Campling	Pq	Penetrometer Reading - Tons/Square Foot
CS	Continuous Split Barrel Sampling	Ts	Torvane Reading - Tons/Square Foot
DM	Drilling Mud	G	Specific Gravity - ASTM D 854
JW	Jetting Water	SL	Shrinkage Limits - ASTM D 427
SB	2" O.D. Split Barrel Sample	OC	Organic Content - Combustion Method
_L	2 1/2" or 3 1/2" O.D. SB Liner Sample	SP	Swell Pressure - Tons/Square Foot
_T	2" or 3" Thin Walled Tube Sample	PS	Percent Swell
3TP	3" Thin Walled Tube (Pitcher Sampler)	FS	Free Swell - Percent
_TO	2" or 3" Thin Walled Tube (Osterberg Sampler)	рН	Hydrogen Ion Content, Meter Method
W	Wash Sample	SC	Sulfate Content - Parts/Million, same as mg/L
В	Bag Sample	CC	Chloride Content - Parts/Million, same as mg/L
P	Test Pit Sample	C*	One Dimensional Consolidation - ASTM D 2435
Q	BQ, NQ, or PQ Wireline System	Qc*	Triaxial Compression
_X	AX, BX, or NX Double Tube Barrel	D.S.*	Direct Shear - ASTM D 3080
CR	Core Recovery - Percent	K*	Coefficient of Permeability - cm/sec
NSR	No Sample Recovered, classification based on action of	Ď*	Dispersion Test
	drilling equipment and/or material noted in drilling fluid	DH*	Double Hydrometer - ASTM D 4221
	or on sampling bit.	MA*	Particle Size Analysis - ASTM D 422
NMR	No Measurement Recorded, primarily due to presence	R	Laboratory Resistivity, in ohm - cm - ASTM G 57
	of drilling or coring fluid.	E*	Pressuremeter Deformation Modulus - TSF
		PM*	Pressuremeter Test
	Water Level Symbol	VS*	Field Vane Shear - ASTM D 2573
		IR*	Infiltrometer Test - ASTM D 3385
		RQD	Rock Quality Designation - Percent
		KQD	nock Quality Besignment Telescon

<sup>\*</sup> See attached data sheet or graph

### WATER LEVEL

Water levels shown on the boring logs are the levels measured in the borings at the time and under the conditions indicated. In sand, the indicated levels may be considered reliable ground water levels. In clay soil, it may not be possible to determine the ground water level within the normal time required for test borings, except where lenses or layers of more pervious waterbearing soil are present. Even then, an extended period of time may be necessary to reach equilibrium. Therefore, the position of the water level symbol for cohesive or mixed texture soils may not indicate the true level of the ground water table. Perched water refers to water above an impervious layer, thus impeded in reaching the water table. The available water level information is given at the bottom of the log sheet.

# **DESCRIPTIVE TERMINOLOGY**

DENSITY TERM Very Loose Loose Medium Dense Dense Very Dense Standard "N" Penet	"N" VALUE  0.4  5.8  9.15  16.30  Over 30  ration: Blows Per Falling 30  Barrel Sam	CONSISTENCY TERM  Soft Medium Rather Stiff Stiff Very Stiff Foot of a 140 Pound Hammer inches on a 2 inch OD Split	Lamination Layer Lens Varved  Dry Moist Wet Waterbearing	Up to 1/2" thick stratum 1/2" to 6" thick stratum 1/2" to 6" discontinous stratum, pocket Alternating laminations of clay, silt and /or fine grained sand, or colors thereof Powdery, no noticeable water Below saturation Saturated, above liquid limit Pervious soil below water
		POPORTIONS		RELATIVE SIZES

RELATIVE GI	RAVEL PROPOR	TIONS	REI	RELATIVE SIZES	
CONDITION Coarse Grained Soils	TERM A little gravel With gravel	RANGE 2 - 14% 15 - 49%	Boulder Cobble Gravel Coarse	Over 12" 3" - 12" 3/4" - 3"	
Fine Grained Soils 15-29% + No. 200 15-29% + No. 200	A little gravel With gravel	2 - 7% 8 - 29%	Fine Sand Coarse Medium	#4 - 3/4'' #4 - #10 #10 - #40	
30% + No. 200 30% + No. 200 30% + No. 200	A little gravel With gravel Gravelly	2 - 14% 15 - 24% 16 - 49%	Fine Silt & Clay	#40 - #200 #200, Based on Plasticity	

# CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES ASTM Designation: D 2487 - 83

(Based on Unified Soil Classification System)

# **SOIL ENGINEERING**

				Soil Classification	
	Criteria for Assigning G	roup Symbols and Group Na	mes Using Laboratory Tests <sup>A</sup>	Group Symbol	Group Name <sup>8</sup>
Coarse-Grained Soils	Gravels	Clean Gravels	Cu≥4 and 1≤Cc≤3 <sup>E</sup>	GW	Well graded gravel <sup>F</sup>
More than 50% retained on No. 200 sieve	More than 50% coarse fraction retained on No. 4 sieve	Less than 5% fines <sup>C</sup>	Cu<4 and/or 1>Cc>3 <sup>E</sup>	GP	Poorly graded grave
		Gravels with Fines More than 12% fines <sup>C</sup>	Fines classify as ML or MH	GM	Silty gravel <sup>F,G,H</sup>
			Fines classify as CL or CH	GC	Clayey gravel <sup>F,G,H</sup>
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands	Cu≥6 and 1≤ Cc≤3 <sup>E</sup>	sw	Well-graded sand
		Less than 5% fines <sup>D</sup>	Cu<6 and/or 1>Cc>3 <sup>E</sup>	SP	Poorly graded sand
		Sands with Fines	Fines classify as ML or MH	SM	Silty sand G,H,I
		More than 12% fines <sup>0</sup>	Fines classify as CL or CH	sc	Clayey sand G,H,I
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	inorganic	PI>7 and plots on or above "A" line	CL	Lean clay <sup>K,L,M</sup>
			PI<4 or plots below "A" line	ML	Sill <sup>K,L,M</sup>
		organic	Liquid limit - oven dried Liquid limit - not dried	OL	Organic clay <sup>K,L,M,N</sup> Organic silt <sup>K,L,M,O</sup>
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	СН	Fat clay <sup>K,L,M</sup>
			PI plots below "A" line	МН	Elastic silt <sup>K,L,M</sup>
		organic	Liquid limit - oven dried Liquid limit - not dried	ОН	Organic clay <sup>K,L,M,P</sup>
					Organic silt <sup>K.L.M.Q</sup>
lighly organic soils	Primarily organic matter, dark in color, and organic odor Hemic Peat 33%-67% Fibers			PT Sapric	Peat Peat <b>&lt;</b> 33% Fibers

<sup>A</sup>Based on the material passing the 3-in. (75-mm) sieve.

<sup>B</sup>If field sample contained cobbles or boulders, or both, add

"with cobbles or boulders, or both" to group name. CGravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt GW-GC well-graded gravel with clay

GP-GM poorly graded gravel with silt GP-GC poorly graded gravel with clay

SW-SM well-graded sand with silt SW-SC well-graded sand with clay SP-SM poorly graded sand with silt

DSands with 5 to 12% fines require dual symbols:

 $E_{Cu} = D_{60} / D_{10} \quad Cc = \frac{C_{30}}{D_{10} \times D_{60}}$ 

FIf soil contains≥15% sand, add "with sand" to group

GIf fines classify as CL-ML, use dual symbol GC-GM, or

HIf fines are organic, add "with organic fines" to group

"If soil contains≥15% gravel, add "with gravel" to group name.

JIf Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.

KIf soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

LIf soil contains≥30% plus no. 200, predominantly sand, add "sandy" to to group name.

MII soil contains≥30% plus No. 200, predominantly gravel, add "gravelly" to group name.

NPI≥4 and plots on or above "A" line.

OPI<4 or plots below "A" line.

PPI plots on or above "A" line.

OPI plots below "A" line.

