Kennedy/Jenks Consultants

Engineers & Scientists

530 South 336th Street
Federal Way, Washington 98003
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FAX 253-952-3435

9 November 1999

Ms. Barbara Trejo
Voluntary Cleanup Program
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

Subject: Additional Information
The Shops at first Street Project Site
108th Avenue N.E. and Main Street
Bellevue, Washington
K/J 946059.01

Dear Ms. Trejo:

In response to your request during our site visit on 4 November 1999, we are enclosing additional information pertaining to the subject investigation and remediation project site. Information enclosed is:

- *Supplement to Remedial Investigation/Feasibility Study Report, Phase II Remedial Action Progress*
- Tables 4 and 5 of the Remedial Investigation/Feasibility Study Report
- Memorandum to the project file dated 5 June 1996 regarding Benenson SVE Pilot Test Data Analysis
- Soil boring and well completion logs from investigations of other sites in the vicinity of the subject project site

We trust that this information satisfies your present needs. Please contact us at (253) 874-5555 once you have had the opportunity to complete your review of this and the other information provided with our VCP application.

Very truly yours,

KENNEDY/JENKS CONSULTANTS

John E. Norris
Project Manager

JEN:nd
w:\94\946059.01\11jen1l.doc
Enclosures

cc: Richard Kessler, The Benenson Capital Company

SUPPLEMENT TO REMEDIAL INVESTIGATION/ FEASIBILITY STUDY REPORT PHASE II REMEDIAL ACTION PROGRESS The Shops at First Street Project Site Bellevue, Washington

This supplement presents a description of the remedial system constructed for The Shops at First Street Project Site, located at 110 – 108th Avenue NE Bellevue, Washington. The Phase II remedial action was performed in response to the discovery of perchloroethylene (PCE) in soil beneath a storm sewer system manhole at the site.

The remedial system involves the operation of a soil vapor extraction (SVE) system (see Figure A). The SVE system at the site utilizes a Roots positive displacement rotary blower (Universal RAI Model 22 U-RAI), which is powered by a one-horsepower Baldor motor. The blower operates at a vacuum of approximately 60 inches of water, and delivers a flow of approximately 1.3 standard cubic feet per minute at an average vapor temperature of approximately 60 degrees Fahrenheit.

Soil vapors are extracted from a single SVE well, routed through a 55-gallon moisture knockout tank, and then through two 2,000-pound carbon vessels. After passing through the blower, system effluent is discharged to the atmosphere through a stack with a height of 15 feet. Vacuum and temperature gauges, and vapor concentration and flow sampling ports are located at the wellhead, between carbon vessels, and after the carbon vessels in the system piping.

The system was first tested in May 1996 and was started in November 1996. The system operates under a Puget Sound Air Pollution Control Agency permit (Notice of Construction No. 6670) that requires treatment of soil vapors below a 15 parts per million by volume (ppmv) discharge limit. All carbon in both 2,000-pound carbon vessels was replaced on 20 October 1997.

The initial blower developed a cracked case, resulting in the system being down. The blower was replaced and the system was restarted on 27 February 1998. On 10 April 1998, the SVE system was shutdown for system pulsing. The system was restarted on 5 May 1998 and ran continuously until October 1998, when all carbon in both 2,000-pound carbon vessels was replaced for a second time (21 October 1998). The system ran constantly until 27 January 1999, when one of the two bearings on the motor pulley system failed. The damaged bearing was replaced on 9 February 1999, and the system was again restarted. The system ran continuously until 8 July 1999 when it was turned off for pulsing. The system is currently being operated on a 2-week on and 2-week off pulsing cycle.

SYSTEM PERFORMANCE

Equilibrium soil vapor concentrations in the extraction well headspace have been measured during recent sampling events at approximately 200 ppmv (L/1E6 L). This concentration would result in a PCE removal rate of:

$$\frac{200\ L\ PCE}{1E6\ L\ AIR} \times \frac{1\ M\ PCE}{22.4\ L\ PCE} \times \frac{164\ G\ PCE}{1\ M\ PCE} \times \frac{1\ LB\ PCE}{454\ G\ PCE} \times \frac{28.3\ L\ AIR}{1\ FT^3\ AIR} \times \frac{1.3\ FT^3\ AIR}{1\ MIN} \times \frac{1440\ MIN}{1\ DAY} = 0.17\ LB\ PCE / DAY$$

Effluent soil vapor concentrations have not shown an appreciable decrease for the past year, and the present system configuration appears to have reached an asymptotic endpoint.

FUTURE REMEDIAL ACTIVITIES

Kennedy/Jenks Consultants is planning to advance a soil boring to the northwest of the manhole, and collect soil samples at various depths for analysis. If the results of soil sample analyses indicate that PCE concentrations have been reduced to below the proposed Method B cleanup level of 19.6 mg/kg, then SVE system shutdown and application for a "No Further Action" determination is planned. If the concentrations detected in the soil samples exceed the proposed cleanup level, then the new soil boring will be converted to a SVE well and connected to the blower system for additional SVE remedial action. Details of the proposed actions are provided in the internal memorandum entitled "Work Plan for Soil Vapor Extraction System Upgrade, Benenson Bellevue Site," dated 20 August 1999 (attached).

20 August 1999

MEMORANDUM

To: Project File

From: John Norris

Subject: Subject: Work Plan for Soil Vapor Extraction System Upgrade, Benenson Bellevue Site
K/J 946059.01

A soil vapor extraction system currently operates at the Benenson Bellevue site (site). The system consists of a single extraction well located approximately 28 inches southeast of a manhole located on site. The extraction well extracts subsurface air containing PCE vapor from PCE-impacted soils surrounding the manhole between approximate depths of 8 and 20 feet below grade. Off/on cycling of system operation no longer leads to appreciable rebounding of PCE vapor concentrations in the extracted air stream (Figure 1). Mass recovery rate of PCE from the extraction well has leveled off (Figure 2). It is believed that the PCE has effectively been removed from soil near the location of the extraction well. In order to confirm the attainment of the cleanup levels, two soil borings will be drilled approximately 2 feet northwest and northeast of the manhole. The borings will be advanced to a total depth of 40 feet below grade with soil samples collected at approximate 5-foot vertical intervals. Soil samples will be field screened for organic vapor emissions using a photoionization detector (PID). Six soil samples (three from each boring) will be selected for rapid turnaround laboratory analyses for purgeable halocarbons using EPA method 8010 or 8260. If high PID readings or PCE odors are noted during drilling, then samples will not be submitted for rapid turnaround analyses. Instead, the will installation described below will performed. Assuming that high PID readings and PCE odors are not noted, decisions about additional actions will be based on the analytical results for the six soil samples. If any of the six soil samples contains a PCE concentration exceeding 19.6 mg/kg then the additional SVE well installation below will be performed.

If the laboratory results indicate PCE concentrations are less than the MTCA Method B limit of 19.6 mg/kg, we will proceed with submitting a request for No Further Action determination to Ecology. If field observations or laboratory analytical results indicated that the attainment of the cleanup level has not been accomplished, then a new SVE well will be installed in the soil boring located approximately two feet northwest of the manhole (roughly opposite the existing SVE well) as shown on Figure 3. It will be constructed similar to the existing well, a 4-inch diameter, Schedule 40 PVC pipe, to a total depth of approximately 40 feet below grade.

The new well will be screened from approximately 20 to 40 feet below grade, similar to the existing well. The exact screen interval should be determined in the field to span the PCE-affected soil zone, based on the PID measurements. The attached log for boring BB-15, advanced during previous investigations near the manhole, and the existing well indicates brown silty sand and gravel till soils to the total depth of the well. Additional details regarding well completion are given on Figure 4. Care should be taken to site the well sufficiently far away from the sewer pipes that connect to the manhole.

A piece of PVC tubing in the form of an inverted J will be mounted on the existing SVE well to convert this will to an intake well, which allows ambient air to be drawn in and through the formation toward the new extraction well. The inlet end of the J will be covered with a screen to prevent objects from entering the well. The blower and treatment equipment will be connected to the new extraction well using Schedule 40 PVC pipe and flexible hose. Original instrumentation will be used to monitor the system. Operation of the blower and treatment system and monitoring of system parameters and PCE concentration will remain unchanged.

Enclosure(s)

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION	THE SHOPS AT FIRST STREET PROJECT
DRILLING COMPANY	CASCADE DRILLING, INC.
DRILLER	SCOTT
DRILLING METHOD	HOLLOW STEM AUGER
DRILL BIT(S) SIZE	6 5/8" O.D.
ISOLATION CASING	N.A. FROM TO FT.
BLANK CASING	N.A. FROM TO FT.
PERFORATED CASING	N.A. FROM TO FT.
SIZE AND TYPE OF FILTER PACK	N.A. FROM TO FT.
SEAL	CONCRETE FROM 0.0 TO 2.0 FT.
GROUT	VOLCLAY FROM 2.0 TO 100.0 FT.

Boring/Well Name	BB-15
Project Name	BENENSON BELLEVUE II
Project Number	946059.00
ELEVATION AND DATUM	
TOTAL DEPTH	100.0
DATE STARTED	10/15/1994
DATE COMPLETED	10/15/1994
INITIAL WATER DEPTH (FT)	
LOGGED BY	T. MORIN
SAMPLING METHODS	2" SPOON W/ BRASS
WELL COMPLETION	☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.

SAMPLES TYPE	RECOVERY (FEET)	PENETRATION RESIST (BLOWS/6 IN.)	DEPTH (FEET)	SAMPLE NO.	WELL NOT CONSTRUCTED	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
G						2.6			**Sandy SILT with gravel; grey, damp,** very dense; mostly silt, some medium to coarse sand, some medium subangular gravel, minor clay; good dry strength, slight to moderate dilatency, very poorly sorted; interpreted as Glacial Till
G			5			2.4			
G			10			12.0			
S	0.5	160	15	BB-15-15.0		320		ML	very distinct solvent odor
S	0.5	100	20	BB-15-20.0		190			
S	0.5	150	25	BB-15-25.0		75			odor significantly decreased

Un Aparge

RESOURCE PROTECTION WELL REPORT

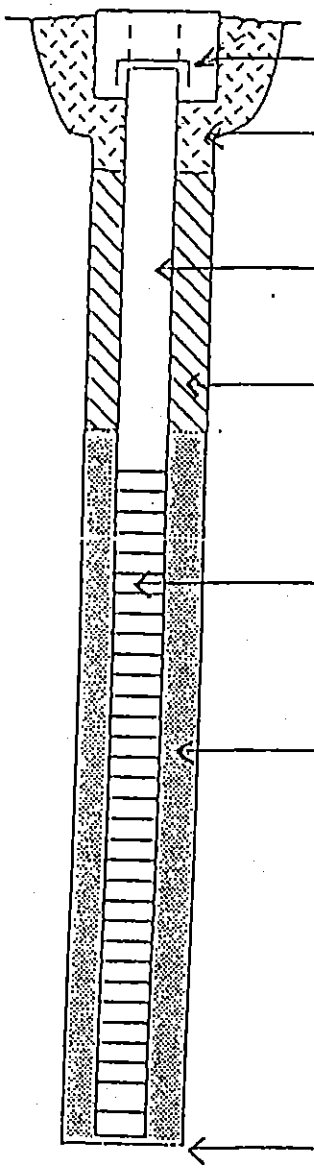
START CARD NO. R27184

PROJECT NAME: Benenson
WELL IDENTIFICATION NO. ACG-359
DRILLING METHOD: HSA
DRILLER: Scott Krueger
FIRM: Cascade Drilling, Inc.
SIGNATURE:
CONSULTING FIRM: Kennedy/Jenks
REPRESENTATIVE: Thom Morin

COUNTY: King
LOCATION NE¼ SW¼ Sec 32 Twn 25N R 5E
STREET ADDRESS OF WELL: 108th & Main St. - Bellevue
WATER LEVEL ELEVATION: N/A
GROUND SURFACE ELEVATION: N/A
INSTALLED: 5-16-96
DEVELOPED: N/A

6220

AS-BUILT



WELL DATA

WELL COVER

CONCRETE SURFACE SEAL
DEPTH = 1/ft

PVC BLANK 4 "x 20'

BACKFILL 18 ft.
TYPE: Bent chips.

PVC SCREEN 4 "x 20'
SLOT SIZE: .050

GRAVEL PACK 21 ft.
MATERIAL: Pea gravel

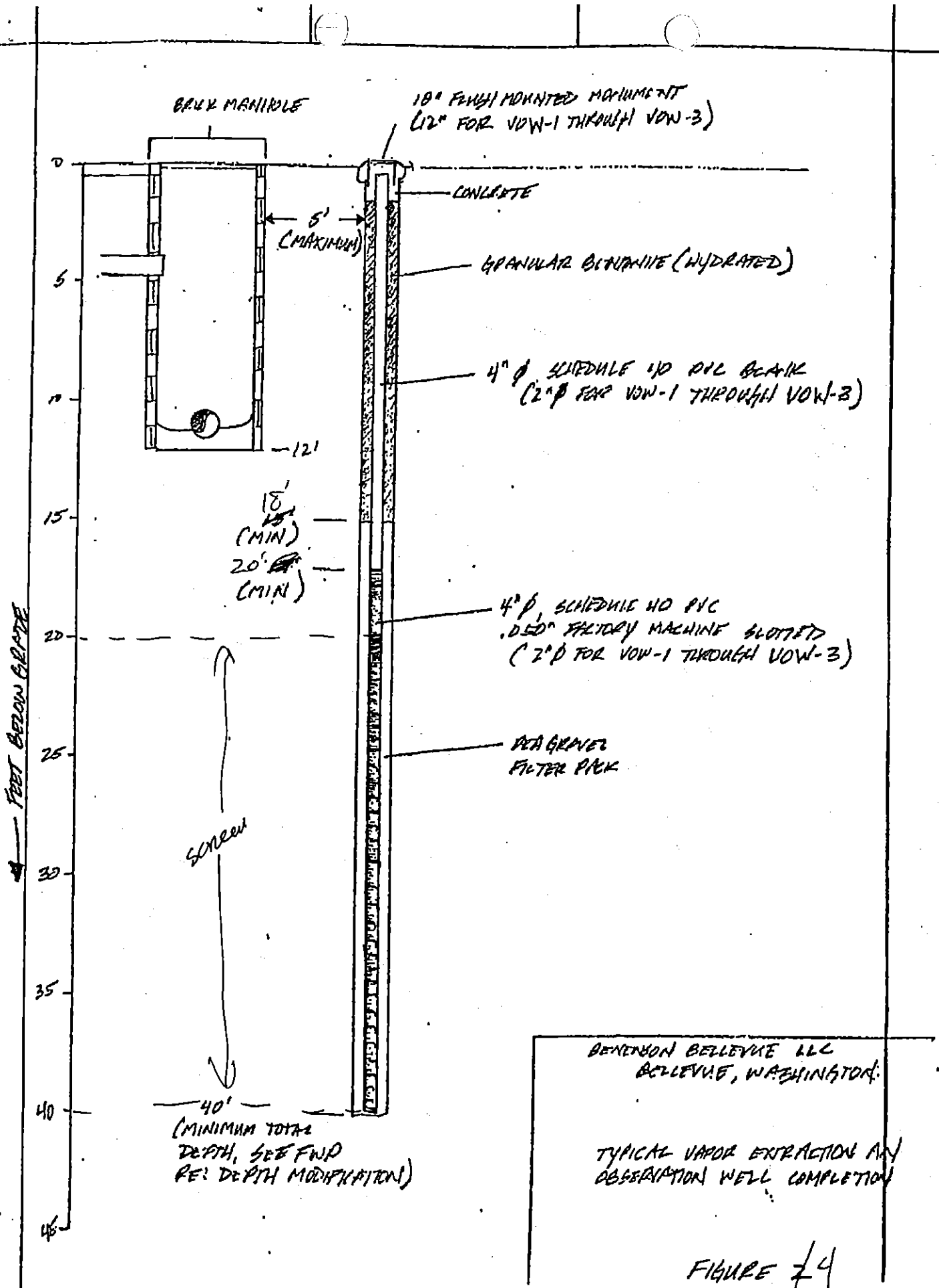
WELL DEPTH 40 ' "

FORMATION DESCRIPTION

0 - 40 ft.
brown silty
Sand gravel
Till
- ft.

- ft.

SCALE: 1" = _____ PAGE _____ OF _____

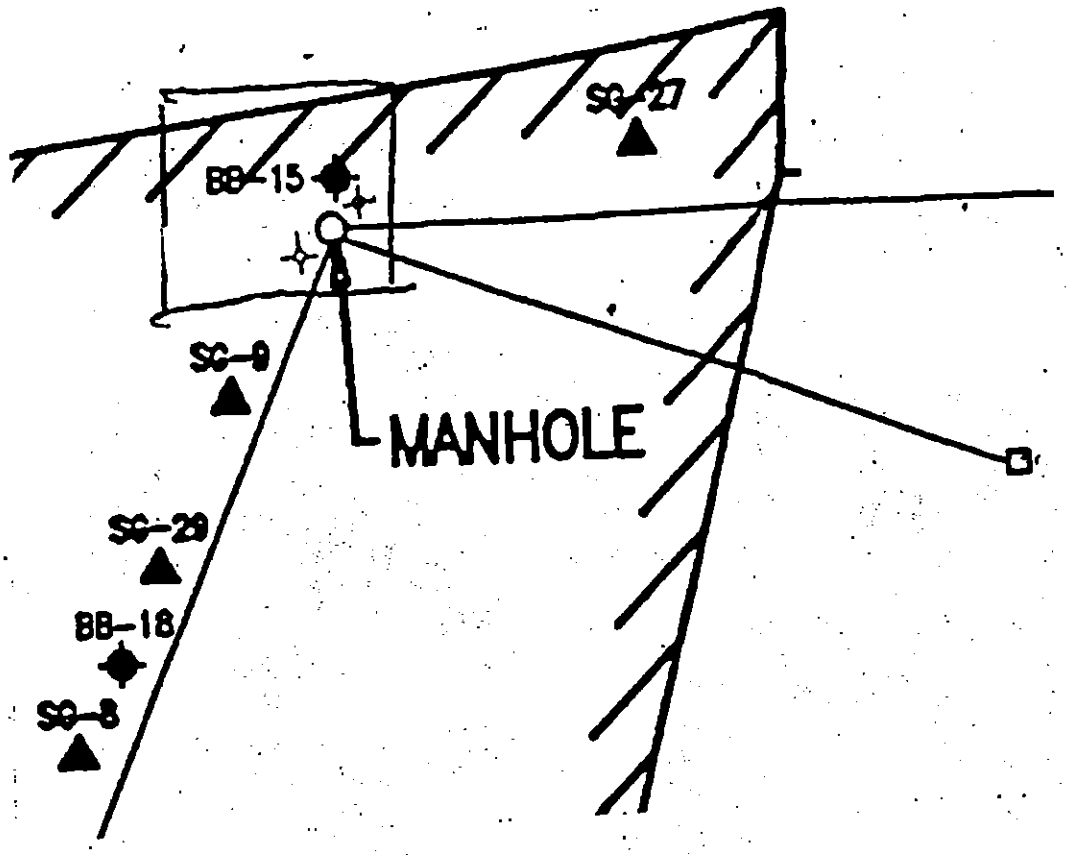


22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

BENTHON BELLEVUE LLC
BELLEVUE, WASHINGTON

TYPICAL VAPOR EXTRACTION AND OBSERVATION WELL COMPLETION

FIGURE 4



EXISTING EXTRACTION WELL

PROPOSED NEW EXTRACTION WELL

NOT TO SCALE

N

Figure 3

Estimated Cumulative Pounds PCE Removed

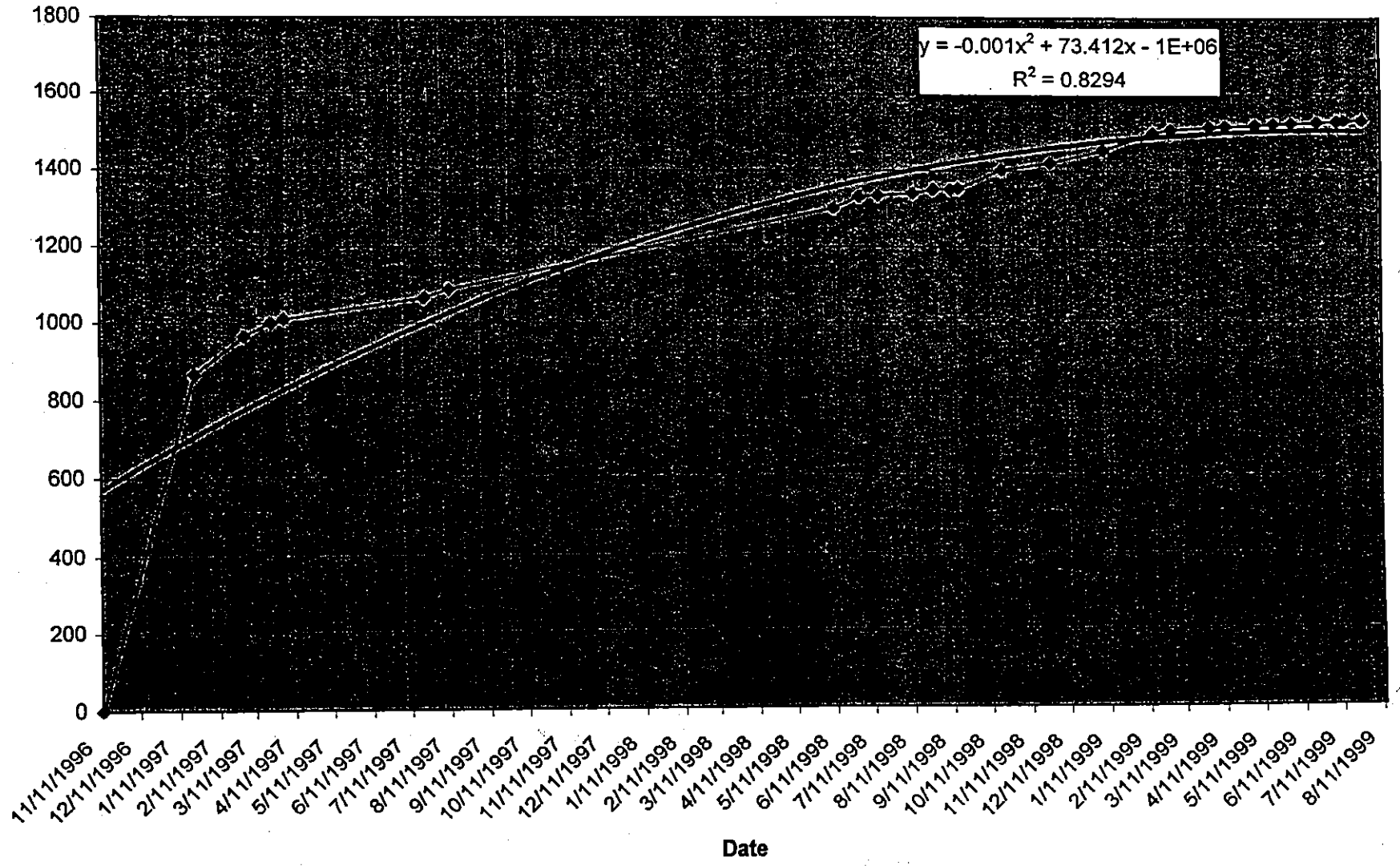


FIGURE 2

Estimated PCE Concentrations Removed

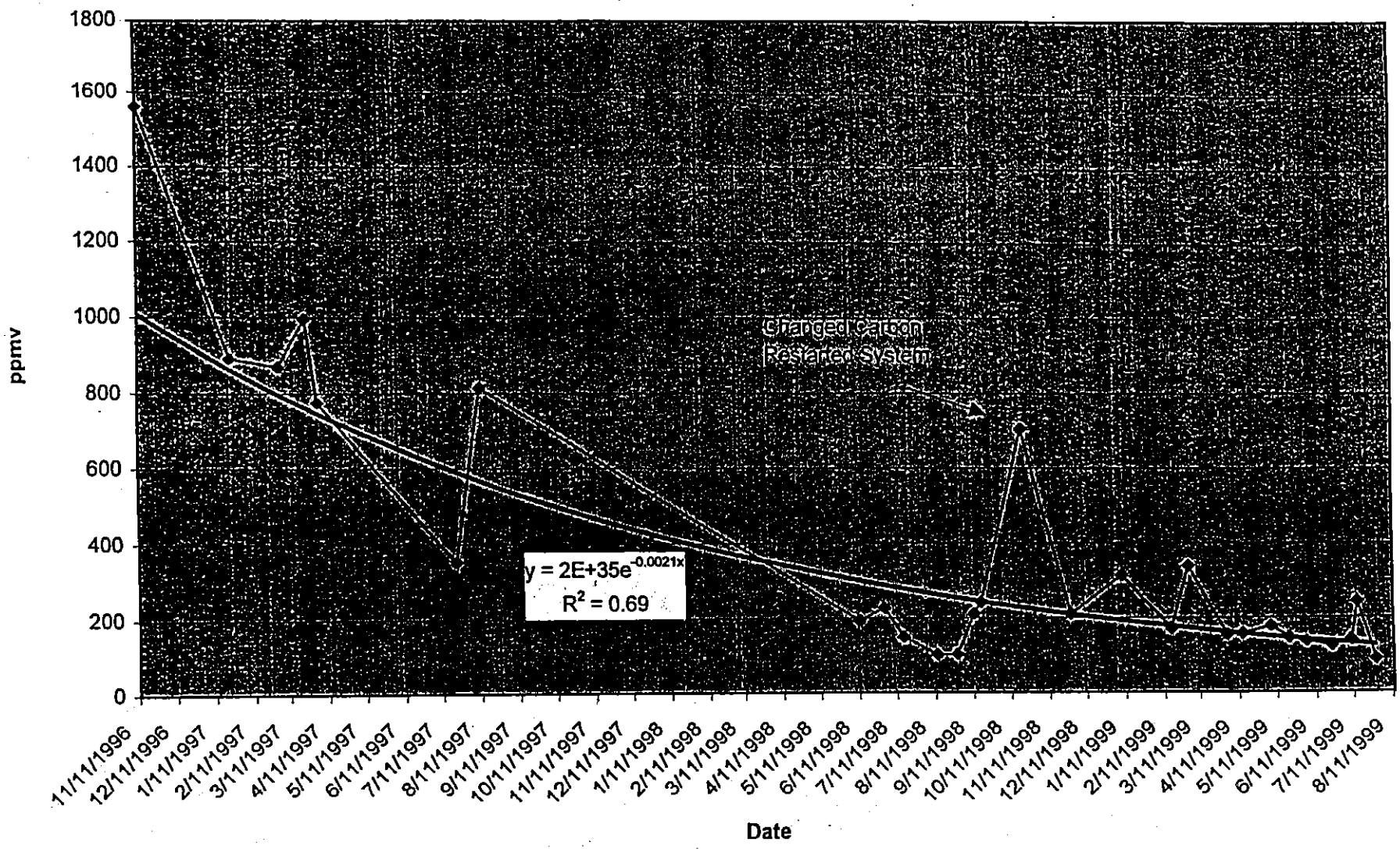
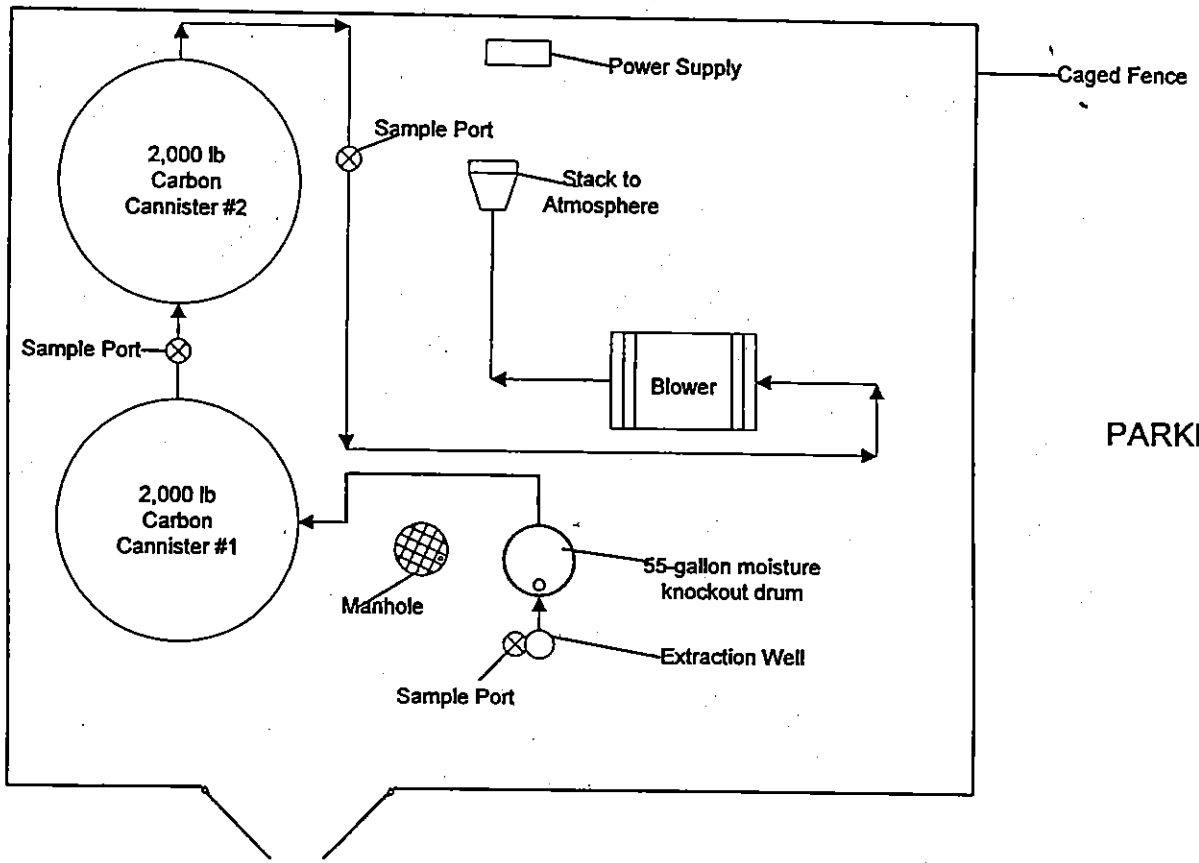


Figure 1

PARKING LOT



PARKING LOT

PARKING LOT

PARKING LOT

BENENSON BELLEVUE COMPANY
BELLEVUE, WA

SITE DETAILS
FIGURE A

Boring & Well Construction Log — Kennedy/Jenks Consultants

Project Name BENENSON BELLEVUE II **Project Number** 946059.00 **Boring/Well Name** BB-15

SAMPLES TYPE	SAMPLES RECOVERY (FEET)	SAMPLES PENETRATION RESIST (BLOWS/6 IN)	DEPTH (FEET)	SAMPLE NO.	WELL NOT CONSTRUCTED	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
S	0.5	90	30	BB-15-30.0		22			
S	0.5	165	35	BB-15-35.0		16			gravelly
S	0.5	120	40	BB-15-40.0		7.4			
S	0.5	130	45	BB-15-45.0		8.50		ML	
S	0.5	110	50	BB-15-50.0		2.5			
S	0.5	100	55	BB-15-55.0		1.30			siltier
S	0.5	200	60	BB-15-60.0					no recovery, cuttings become dark grey
S	0.5	140	65	BB-15-65.0		5.8			

Boring & Well Construction Log

Project Name BENENSON BELLEVUE II **Project Number** 946059.00 **Boring/Well Name** BB-15

SAMPLES TYPE	SAMPLES RECOVERY (FEET)	SAMPLES PENETRATION RESIST (BLOWS/6 IN)	DEPTH (FEET)	SAMPLE NO.	WELL NOT CONSTRUCTED	OVA	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
S	0.5	120	70	BB-15-70.0		0.2			
									Sandy lean CLAY: tan grey, damp, very stiff; mostly clay, 30 to 40% silt, no odor
S	0.5	100	75	BB-15-75.0		0.2		CL	
S	0.5	120	80	BB-15-80.0		0.0			becomes sandy with trace of subrounded coarse gravel
									Poorly graded SAND: grey, moist, dense; mostly subangular medium to coarse sand, minor silt, minor fine gravel
S	0.5	140	85	BB-15-85.0		0.1		SP	
									Sandy SILT with gravel: grey, damp, very dense; same Glacial Till as above
S	0.5	110	90	BB-15-90.0		0.2			
								ML	grey, moist, slight increase in clay content
S	0.5	150	95	BB-15-95.0		0.2			
S	0.5	140	100	BB-15-100.0		0.0			

Notes:

Refusal at 100 feet bgs. Groundwater not encountered to maximum depth of boring.

TABLE 4

SUMMARY OF EMR SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Sample	Depth (feet bgs)	Perchloroethylene (PCE) (mg/kg)
B-1V	37	1.1
B-2E	25	0.51
B-3C	15	1.2
B-4D	20	2.9
B-5C	15	0.45
B-7A	40	3.0 (H)[a]
B-7B	45	0.36
B-7C	50	ND (H)
B-7D	55	ND (H)
B-7E	60	ND
B-8A	30	2.5 (H)
B-8C	40	2.2 (H)
B-8D	45	0.43
B-8E	50	ND (H)
B-8F	55	ND
B-8G	60	ND (H)
Detection Limit		0.20
MTCA Method A Soil Cleanup Level[b]		0.50

Notes:

All samples were analyzed for volatile organics using EPA Method 8240. Only compounds detected are reported.

ND Indicates not detected above the detection limit.

(a) "(H)" following the analytical results for PCE denotes that only halogenated volatile organics were reported by the analytical laboratory.

(b) Model Toxics Control Act [WAC 173-340-740(2)].

TABLE 5

SUMMARY OF ONSITE MOBILE LABORATORY SUBSURFACE SOIL ANALYTICAL RESULTS

Boring	Depth (ft)	Detected Volatile Organic Compound (mg/kg)
		Perchloroethylene (PCE)
BB-1	15	0.16
	25	ND
	35	ND
	45	ND/ND[a]
	55	ND
	60	ND
	65	ND
	70	ND
BB-2	15	0.07
	25	***0.88***
	35	***0.77/0.95***[a]
	45	0.16
	55	0.16
	60	ND
	65	ND
	70	ND
BB-3	15	0.43
	25	0.37
	35	***4.64***
	45	0.19
	55	0.05
	60	ND
	65	ND
	70	ND
BB-4	15	0.13/0.17[a]
	25	0.12
	35	ND
	45	ND
	55	ND
	60	ND
	65	ND
	70	ND
BB-5	15	ND
	25	0.15/0.10[a]
	35	0.24

TABLE 5

SUMMARY OF ONSITE MOBILE LABORATORY SUBSURFACE SOIL ANALYTICAL RESULTS

Boring	Depth (ft)	Detected Volatile Organic Compound (mg/kg) Perchloroethylene (PCE)
BB-5 (cont.)	45	***1.34***
	55	0.30
	60	0.09
	65	0.08
	70	ND
BB-6	15	0.13
	25	***0.69***
	35	***2.17***
	45	ND/ND[a]
	55	0.06
	60	ND
	65	ND
	70	ND
	80	ND
BB-7	15	ND
	25	0.06/0.08[a]
	35	***0.51***
	45	ND
	55	ND
	60	ND
	65	ND
	70	ND
BB-8	15	ND
	25	***0.89***
	35	0.06
	45	0.22/0.25[a]
	55	ND
	60	ND
	65	ND
	70	ND
Detection Limits[b]		0.05
BB-9	5	ND
	15	0.01
	25	0.03
	35	0.09/0.08[a]

TABLE 5

SUMMARY OF ONSITE MOBILE LABORATORY SUBSURFACE SOIL ANALYTICAL RESULTS

Boring	Depth (ft)	Detected Volatile Organic Compound (mg/kg)
		Perchloroethylene (PCE)
BB-9 (cont.)	45	0.04
	55	ND
	60	ND
BB-10	5	ND
	15	ND
	25	0.03
	35	0.05/ND[a]
	45	ND
	55	0.03
	62	ND
BB-11	5	ND
	15	ND
	25	ND
	35	0.02
	45	0.07
	55	0.08/0.07[a]
	60	0.06
BB-12	5	ND
	15	0.03
	25	0.01
	35	0.08
	45	*0.54*
	55[c]	0.39
	60	0.42
	65	0.25
	70	0.26/0.44[a]
	77	0.07
	80	ND
	85	ND
	90	0.03
BB-13	5	ND
	15	ND
	25	ND
	35	ND
	45	ND

TABLE 5

SUMMARY OF ONSITE MOBILE LABORATORY SUBSURFACE SOIL ANALYTICAL RESULTS

Boring	Depth (ft)	Detected Volatile Organic Compound (mg/kg)
		Perchloroethylene (PCE)
BB-13 (cont.)	55	0.04
	60	0.22
	70	*0.61/0.61*[a]
	80	0.07
	85	ND
	90	ND
BB-14	5	ND
	15	ND
	25	ND/ND[a]
	35	0.03
	45	ND
	55	ND
	60	ND
BB-15	15[d]	4,180
	25	6.96
	35	0.99
	45	0.20
	55	0.07
	65	0.39
	70	0.02
	75	0.07
	80	0.03
	85	0.03
	90	0.04
	95	0.02/0.02[a]
	100	0.02
BB-16	5	ND
	15	ND
	25	0.01/0.01[a]
	35	ND
	40	ND
	45	ND
BB-17	5	0.01
	10	0.11
	15	0.08

TABLE 5

SUMMARY OF ONSITE MOBILE LABORATORY SUBSURFACE SOIL ANALYTICAL RESULTS

Boring	Depth (ft)	Detected Volatile Organic Compound (mg/kg) Perchloroethylene (PCE)
BB-17 (cont.)	20	ND
BB-18	5	0.07
	10	0.02
	15	ND
	20	0.10
	25	0.01
	30	0.02
	35	ND
STOCK-1	0	0.07
STOCK-2	0	0.02
STOCK-3	0	0.01
STOCK-4	0	ND
STOCK-5	0	0.02
STOCK-6	0	0.03/0.03[c]
DECON1	NA	<1.0 µg/L
DECON2	NA	<1.0 µg/L
DECON10	NA	30 µg/L
DECON11	NA	33 µg/L
Detection Limits		0.01
MTCA Method A Cleanup Levels[e]		0.50

Notes:

All samples were analyzed for selected chlorinated solvents using modified EPA Method 8021. Only compounds detected are reported.

(a) Laboratory duplicate sample results.
(b) Detection limits for borings BB-1 through BB-8.
(c) Trichloroethene was also detected in this sample at a concentration of 0.06 mg/kg.
(d) Other compounds detected in this sample include trichloroethene (0.11 mg/kg), 1,1,1-trichloroethane (0.04 mg/kg), and 1,1,2-trichloroethane (0.89 mg/kg).
(e) Model Toxics Control Act [WAC 173-340-740(2)].

ND Indicates compound not detected at a concentration equal or greater than method detection limit.
Values in bold and italics indicates concentration exceeds MTCA Method A cleanup level.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

LOG OF SOIL BORING MW1

Coordinates:

Elevation top of casing:

Casing below surface:

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th & Main St. Bellevue, WA

DRILLING AND SAMPLING METHODS: 8.25" OD Hollow Stem Auger; 2.5" ID Split Spoon Sampler w/6" brass sleeves

				DRILLING START	DRILLING FINISH
WATER LEVEL					
TIME				TIME 10:12	TIME 13:24
DATE				DATE 8/27/90	DATE 8/27/90
REFERENCE					

SURFACE CONDITIONS: Asphalt.

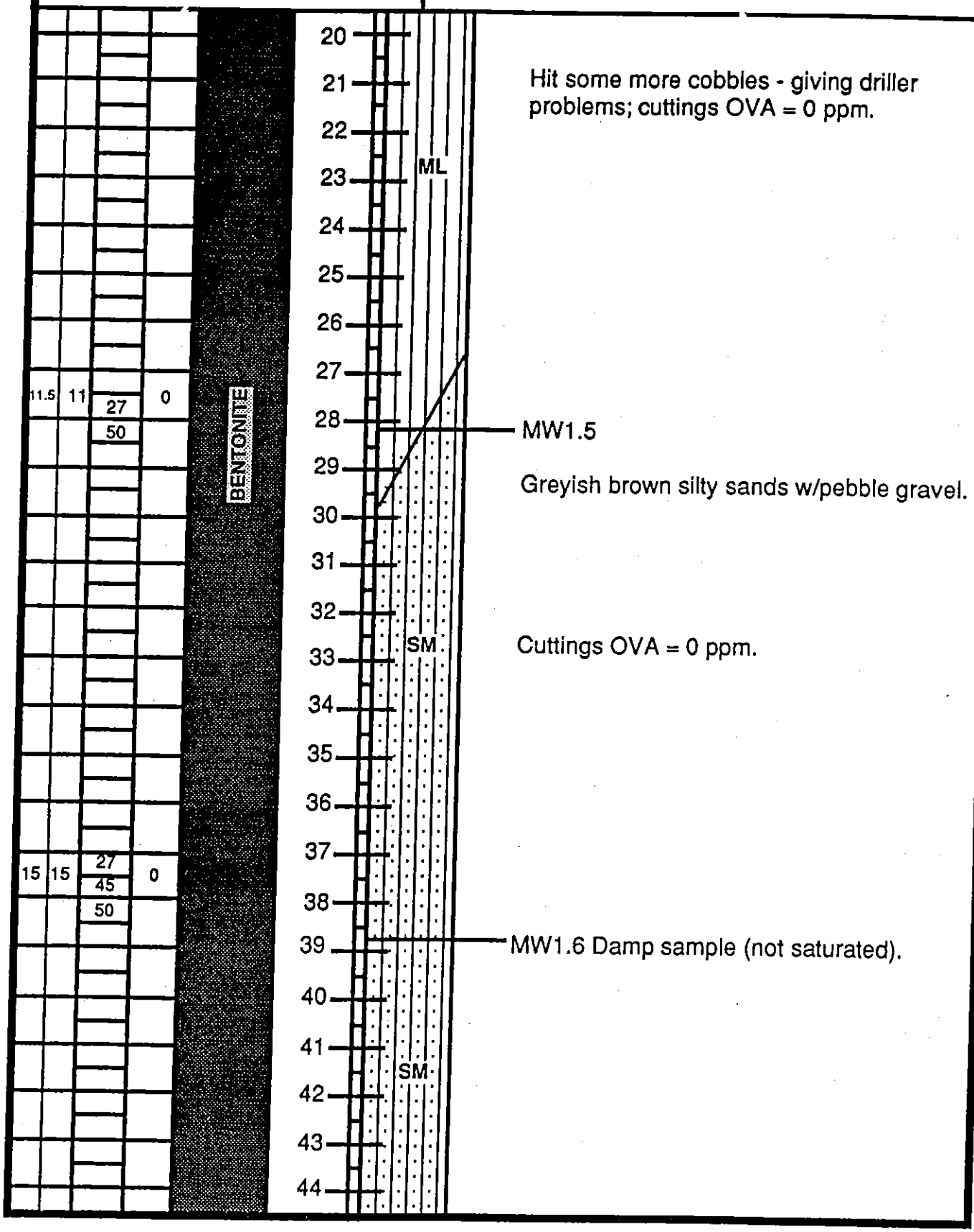
DESCRIPTION by: J. Harris

Inches Driven	Inches Recover	Blows/6" Sampler	OVA Reading	WELL DETAIL	DEPTH (Feet)	GRAPHIC LOG	
				Portland Cement →	0		Asphalt (4").
					1		Dry brown sandy silt w/pebbles-cobbles; no odor, USC ML.
18	18	12			2		
		43	0		3		Sample MW1.1
		50			4		
					5		Hard drilling.
					6	ML	
					7		
11	10	21	0	BENTONITE	8		MW1.2
		50			9		
					10		
					11		
					12		
9	9	34	0		13		MW1.3
		50			14		
					15		Hitting some larger pebbles/cobbles to 3" diameter.
					16	ML	
					17		
10	10	40	0		18		MW1.4
		50			19		No change in soils; dry; go to 10' sampling interval.
					20		

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th& Main St. Bellevue, WA

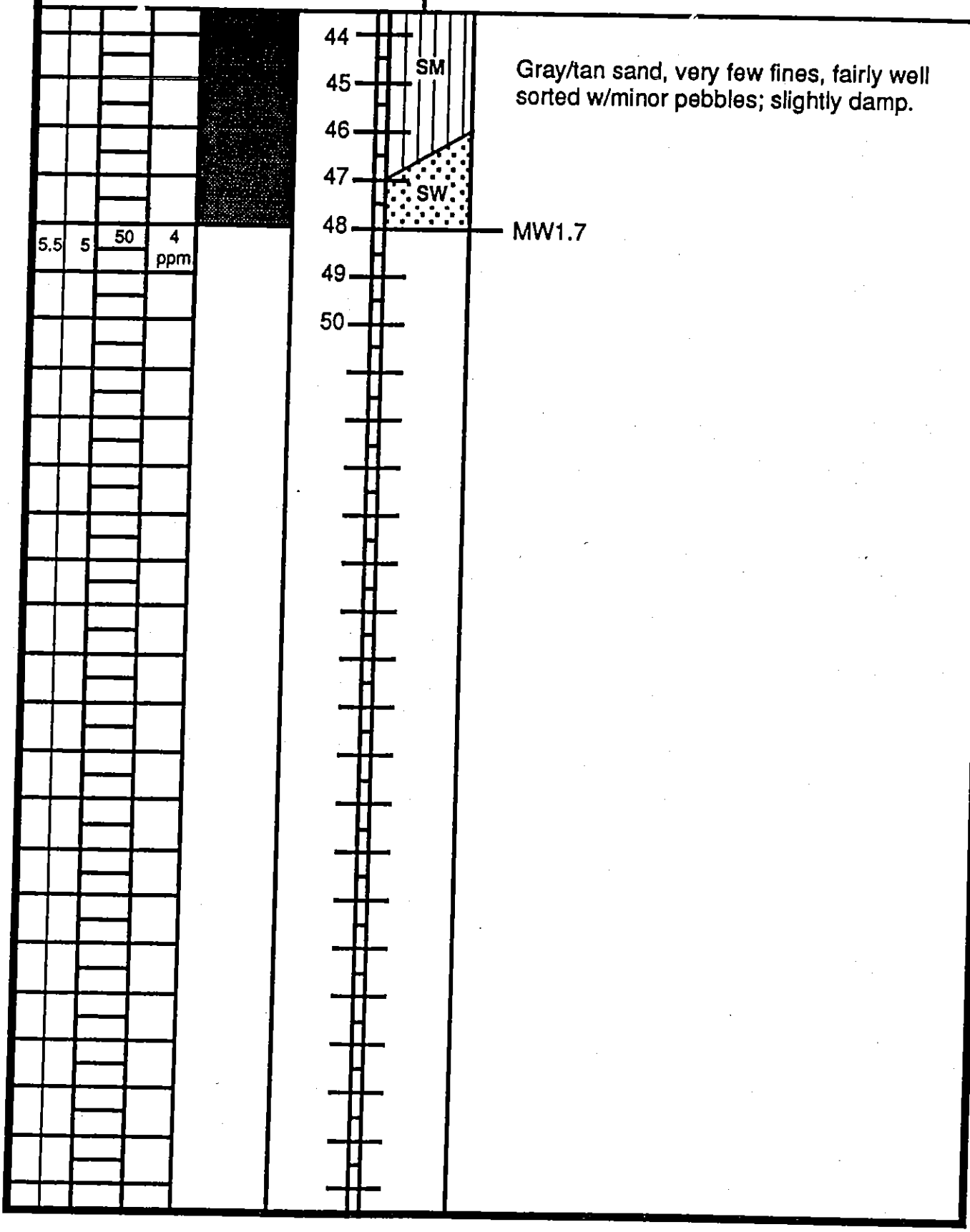
LOG OF SOIL BORING **MW1**



EA ENGINEERING, SCIENCE, AND TECHNOLOGY

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th& Main St. Bellevue, WA

LOG OF SOIL BORING **MW1**



Gray/tan sand, very few fines, fairly well sorted w/minor pebbles; slightly damp.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

LOG OF SOIL BORING **MW2**

Coordinates:

Elevation top of casing:

Casing below surface:

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th & Main St. Bellevue, WA

DRILLING AND SAMPLING METHODS: 8.25" OD Hollow Stem Auger; 2.5" ID Split Spoon Sampler w/6" brass sleeves

				DRILLING START	DRILLING FINISH
WATER LEVEL					
TIME				TIME 15:31	TIME 8:20
DATE				DATE 8/27/90	DATE 8/28/90
REFERENCE					

SURFACE CONDITIONS: Asphalt.

DESCRIPTION by: J. Harris

Inches Driven	Inches Recover	Blows/6" Sampler	OVA Reading
18	18	15, 27	0
		27	
11	11	26, 50	0
17.5	17.5	22, 36	0
10	10	27, 50	0

Portland Cement →

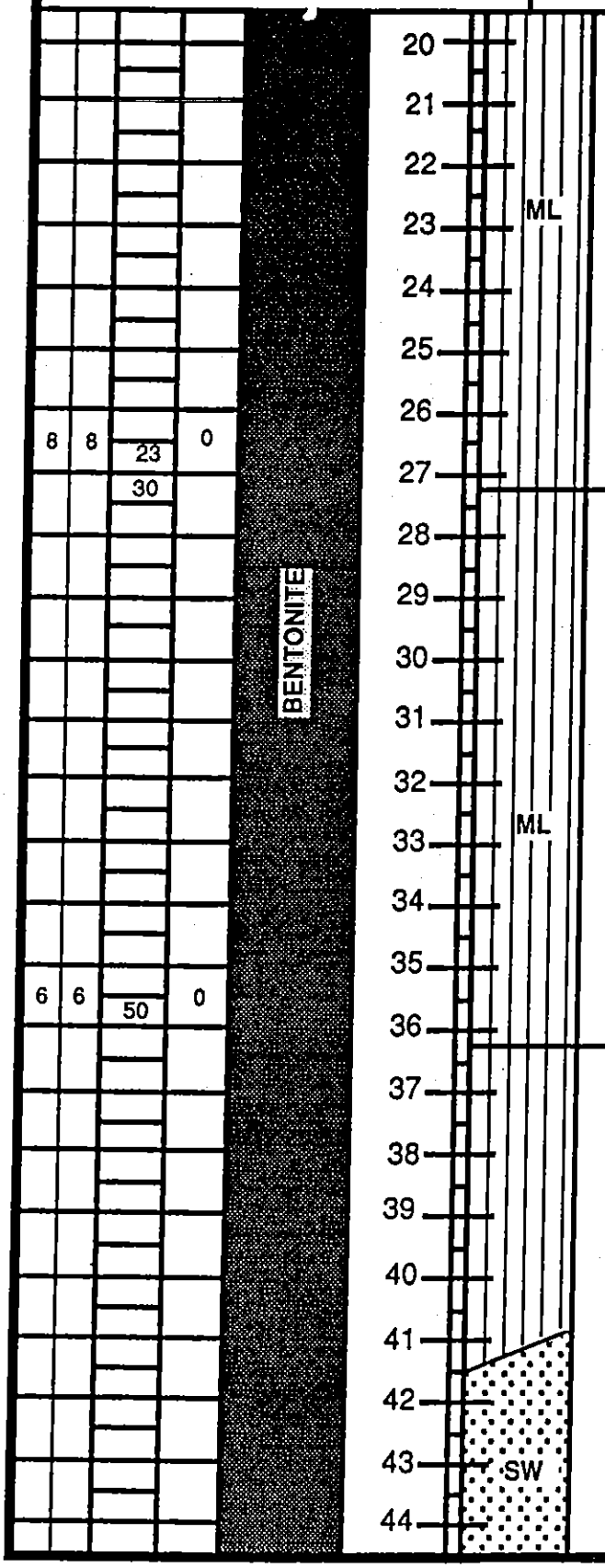
BENTONITE

DEPTH (Feet)	GRAPHIC LOG	
0		Asphalt (4").
1		Brown, very fine sandy silt; no odor; <5% pebbles to 2" diameter.
2		
3		Sample MW2.1
4		
5		
6	ML	
7		
8		MW2.2
9		Cobbly, dry. Hard drilling.
10		
11		
12		
13	SM.	MW2.3 Damp sample; silty sand, USC SM.
14		
15		
16	ML	
17		
18		MW2.4 Grayish brown till, <5% pebbles; go to 10' sampling interval.
19		
20		

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th& Main St. Bellevue, WA

LOG OF SOIL BORING **MW2**



MW2.5

2"-4" pebbles/cobbles.

MW2.6

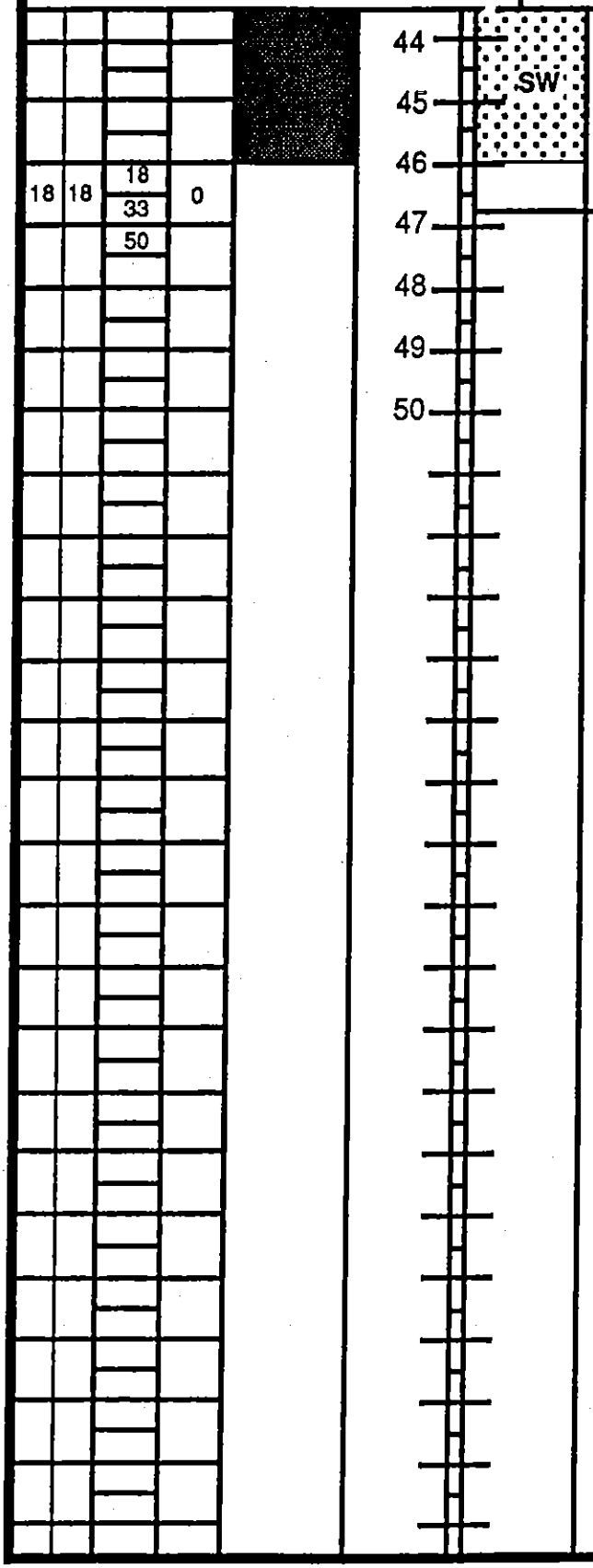
Fewer pebbles, ~2" diameter.

Out of pebbly soils; much softer drilling.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th& Main St. Bellevue, WA

LOG OF SOIL BORING **MW2**



MW2.7
Dry sample; very fine, well rounded, well sorted sand.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

LOG OF SOIL BORING **MW3**

Coordinates:

Elevation top of casing:

Casing below surface:

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th & Main St. Bellevue, WA

DRILLING AND SAMPLING METHODS: 8.25" OD Hollow Stem Auger; 2.5" ID Split Spoon Sampler w/6" brass sleeves

				DRILLING START	DRILLING FINISH
WATER LEVEL					
TIME				TIME 11:05	TIME 13:40
DATE				DATE 8/28/90	DATE 8/28/90
REFERENCE					

SURFACE CONDITIONS: Asphalt.

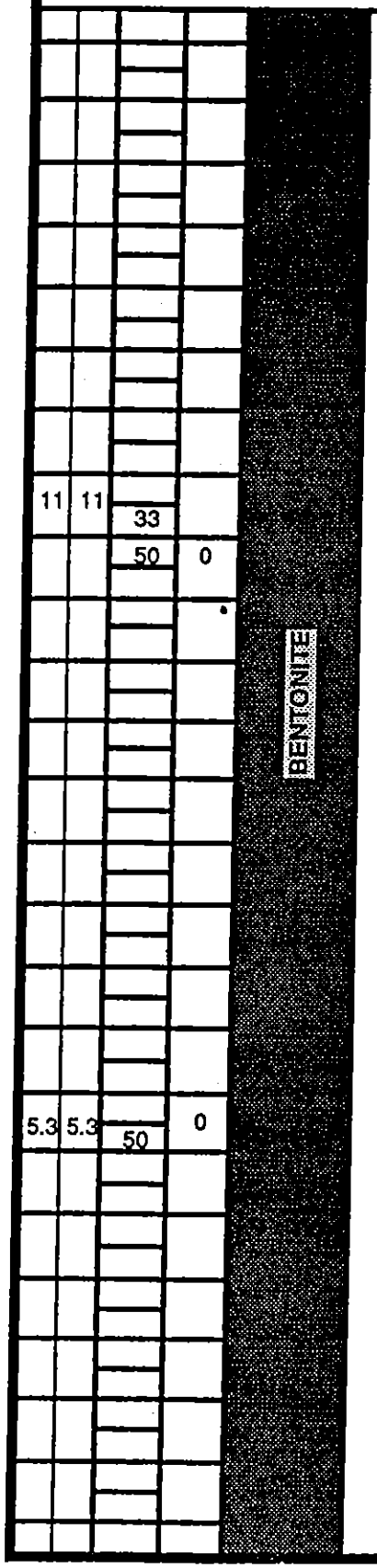
DESCRIPTION by: R. Leet

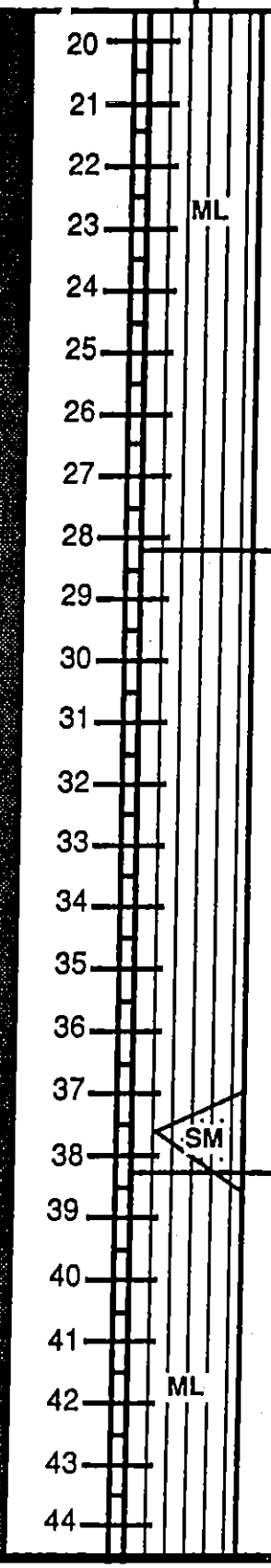
Inches Driven	Inches Recover	Blows/6" Sampler	OVA Reading	WELL DETAIL	DEPTH (Feet)	GRAPHIC LOG	
				Portland Cement →	0		Asphalt (4").
					1		Brown coarse silts.
18	18	6	0		2		
		11			3		Sample MW3.1
		15			4		
					5		Hard Drilling.
					6	ML	
					7		
16	16	21	0		8		MW3.2
		42			9		
		50		BENTONITE	10		Grayish brown silts.
					11		
					12		
11	11	21	0		13		MW3.3
		50			14		
					15		Brownish gray silts.
					16	ML	
					17		
18	18	17	0		18		MW3.4
		28			19		Thin sand lenses (<1/2") in sample; moderately damp. Go to 10' sample interval.
		38			20		

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th& Main St. Bellevue, WA

LOG OF SOIL BORING **MW3**





Grinding on cobbles to 4" diameter; hard drilling.

Out of cobble horizon.

MW3.5

Grinding on pebbles/cobbles again; 1"-3" diameter cobbles in cuttings; 5%-10% by volume.

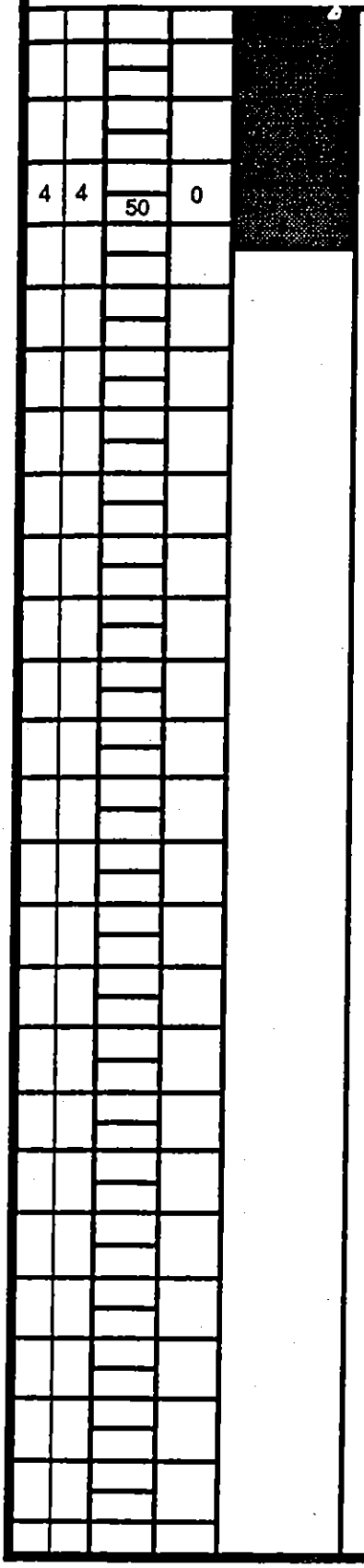
MW3.6
Sample is brownish gray silty sand w/medium pebbles.

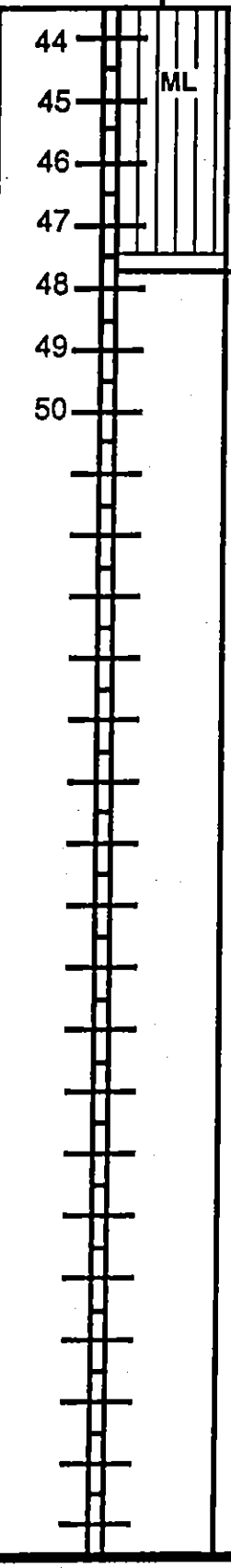
Gravels becoming less abundant, and smaller diameter (<2").

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

CLIENT	SITE NUMBER	LOCATION
Chevron	SS 9-2581	108th& Main St. Bellevue, WA

LOG OF SOIL BORING **MW3**





Gravels becoming less abundant.

MW3.7

Last 2.5' of auger pulled from hole was damp to moderately wet.

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING NO. MW-1 SHEET 1 OF 1

PROJECT LOCATION: BELLEVUE, WASH.

CLIENT: CHRYSLER

SAMPLER
TYPE: S/S
HAMMER: 150 lb
FALL: 30"

GROUND WATER
DEPTH 9' DATE 8/16/88 ELEV. 102.17
DEPTH DATE ELEV.

FILE NO.:

BORING CO.: R & R INC.
FOREMAN: T. CARROLL
OBG GEOLOGIST: R.G. STRAMAGLIA

BORING LOCATION:
GROUND ELEVATION: 111.17
DATES: STARTED: 8/11/88 ENDED: 8/12/88

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRN/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRTUM CHANGE DEPTH	EQUIPMENT INSTALLED	FIELD TESTING SAL. 0/00	FIELD TESTING SP. COND.	FIELD TESTING HNU	PPM K S*
	1	1-2'	GRAB			MED. GRAY, DAMP MED COMPACT COARSE TO FINE SAND GRAVEL, SOME COBBLES					320	
	2	2.5-3'	50/5.5"			MED GRAY, HARD, BROKEN COBBLES AND GRAVEL	3-4'				150	
5												
	3	7-7'	5/6 50/4			BLUISH GRAY MOIST, COMPACT MED-FINE SAND, GRAVEL, TR. CL SAND					84	
10												
	4	10-11'	35-50/4			BLUISH GRAY, MOIST INTERBEDDED MED-FINE SAND, LITTLE SILT, AND FINE SAND & SILT (NO ODOR)					1120	
	5	12.5-14'	16-35-50				15'				380	
15						- TILL -						
	6	17.5-18.5'	—			BLUISH GRAY, DAMP, TIGHT SILT MED COMPACT. (NO ODOR)					50-120	
20												
	7	23-24'	35-30			- AS ABOVE -					30-50	
25												
	8	27-28'	6-9-11			BLUISH GRAY, MED COMPACT, WET, SILTY MED-FINE SAND, LITTLE CLAY GRAVEL						
0						TILL						
	1	33-35	5-19-31			- AS ABOVE -						
35												

BOG @ 35'

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING NO. MW-2 SHEET 1 OF 2

PROJECT LOCATION: BELLEVUE, WASH

CLIENT: CHEVRON

SAMPLER
TYPE: S/S
HAMMER: 140#
FALL: 30"

GROUND WATER
DEPTH 5.99 DATE 8/12 ELEV. 94.11
DEPTH DATE ELEV.

FILE NO.: 3040.050

BORING CO.: R & R INC.
FOREMAN: T. CARROLL
OBG GEOLOGIST: R. C. STRUMBACH

BORING LOCATION:
GROUND ELEVATION: 100.~ METRIC HIM
DATES: STARTED: 8/11/88 ENDED: 8/12/88

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRN/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRTUM CHANGE DEPTH	EQUIPMENT INSTALLED	FIELD TESTING SAL. 0/00	FIELD TESTING SP. COND.	FIELD TESTING HNU	REMARKS
0	1	2-2.5'	—	NO REC		ASPHALT DIRT, GRAY CLODS, WITH SOME CS-FINE SAND & GRAVEL					55	
5	2	7-8'	50/12"	6"		LIGHT BROWN, WET, COMPACT, CS-FINE SAND, LITTLE GRAVEL, TRACE SILT					55	
10	3	11.5-12.5	17-17-33	12"		GRAY, MOIST, VERY COMPACT MED-FINE SAND, LITTLE SILT, GRAVEL					5*	
15	4	15-16'	—	2"		GRAY, MOIST, VERY COMPACT, MED-FINE SAND, LITTLE GRAVEL BOE @ 16'					20*	

* NOTE: TIP METER FITS BUT NO CLEARLY CODES ??
BACKGRND TIP = 0-1 PPM, MAYBE INCREASE.

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING NO. MW-3 SHEET 1 OF 1

PROJECT LOCATION: BELLEVUE, WASH

CLIENT: CHRYSLER

SAMPLER
TYPE: S/S
HAMMER: 140#
FALL: 30"

GROUND WATER
DEPTH 5.62 DATE 8/12 ELEV. 93.28
DEPTH DATE ELEV.

FILE NO.:

BORING CO.: R & R INC.
FOREMAN: T. CRAIG
OBG GEOLOGIST: R.G. STRUMSKIS

BORING LOCATION:
GROUND ELEVATION: 98.90 MEAN SEA LEVEL
DATES: STARTED: 8/12/87 ENDED: 8/12/87

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRN/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRTUM CHANGE DEPTH	EQUIPMENT INSTALLED	FIELD TESTING SAL. 0/00	FIELD TESTING SP. COND.	FIELD TESTING HNU	REMARKS
0												
						MED - LIGHT BROWN DAMP-MOIST, MED COMPACT CS-FINE SAND LITTLE GRAVEL, ASPHALT - FILL -						
	1	2-3'	2-6-10				3'				48	
5												
	2	7-8'	16 15 20			LIGHT BROWN, WET, MED COMPACT CS-FINE SAND, SOME GRAVEL					56	
10							10					
	3	12-13	13-11-9			GRAY, WET, COMPACT, GRAVELLY CS-FINE SAND LITTLE SILT. - FILL -					165	
						BOE = 12.5'						
15												

4

[illegible]IEN & GERE ENGINEERS, INC.	TEST BORING LOG	REPORT OF BORING NO. MW-4 SHEET 1 OF 1
PROJECT LOCATION: BELLEVUE, WASH	SAMPLER TYPE: S/S HAMMER: 140# FALL: 30"	GROUND WATER DEPTH 7.7' DATE 8/12 ELEV. 99.62 DEPTH DATE ELEV.
CLIENT: CITY/SUCC		FILE NO.:

BORING CO.: R & R CO. INC.
FOREMAN: T. CIARELLI
CBG GEOLOGIST: R.C. [illegible]

BORING LOCATION:
GROUND ELEVATION: 97.93 MEAS RIM
DATES: STARTED: 8/12/93 ENDED: 8/12/93

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRN/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRTUM CHANGE DEPTH	EQUIPMENT INSTALLED	FIELD TESTING SAL. 0/00	FIELD TESTING SP. COND.	FIELD TESTING HNU	R M K S#
0						ASPHALT						
	1	2.5-3.5	—	12"		BROWN GRAY, MOIST-DAMP, COMPACT, CS-FINE SAND, SOME GRAVEL, LITTLE SILT -FILL-	2.5				3C	
5	2	7.5-8.5	—	6"		MED GRAY, WET, COMPACT GRAVELLY CS-FINE SAND, TRACE SILT, (COBBLES)					3.7	
10	3	12-12.5	—	10"		DARK GRAY, WET, COARSE-FINE SAND LITTLE SILT, GRAVEL -TILL- BCE @ 12.5	10	* SEE NOTE MW-2			55	
15												

LOG OF EXPLORATORY BORING WITH WELL INSTALLATION DATA

PROJECT NO. 6-91-7208 | WELL NO. MW-1
CLIENT: Cosmos | DATE: 10/18/92
LOCATION: Ernst Site | DRILLER: Holt Drilling
LOGGED BY: J. Daigle | PAGE: 1 of 1

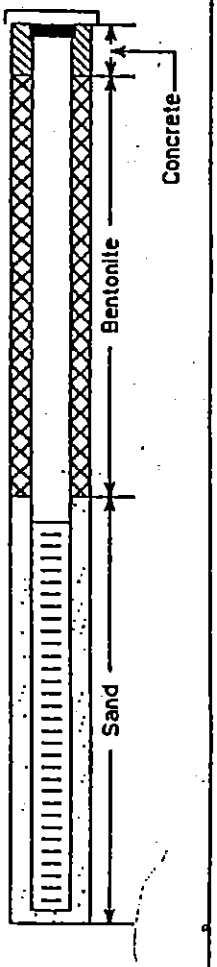
FIELD LOCATION: NW Corner
BENCHMARK ELEVATION: 80' Relative
WELL CASING ELEVATION: 79.57
WELL CASING TYPE: PVC
SCREEN PERFORATION: 0.020

WELL COMPLETION DEPTH: 34.5'
TOTAL DEPTH: 35'
BORING DIAMETER: 9.25"
WELL DIAMETER: 2"
FILTER PACK TYPE: Sand

SEAL TYPE: Bentonite Chips
WATER DEPTH FIRST: 27.66
WATER DEPTH COMPLETED: 22.83
WATER DEPTH 24HRS:

DEPTH	VAPOR CONC. (PPM)	BLOW/FT	SAMPLE TYPE	USCS SOIL TYPE	GRAPHICS LOG	DESCRIPTION
0				gm		ASPHALT.
						SAND, fine to medium grained, light brown, slightly moist, loose with gravel, no odor (fill).
5	1	12/40/49	Ring	sm		Silty SAND, fine grained, brown to gray, dry, loose, with small gravel, odor.
10	66	22/50/50	Ring			Silty SAND, fine grained, light gray, dry, loose, trace of gravel, odor.
	50	50/50-	Ring	sm		
15						
	1	40/50-	Ring			Silty SAND, fine grained, light brown, dry to moist, loose, with gravel, no odor.
20						
	0.8	50/50-	Ring	sm		
25						
	2.5	49/50-	Ring			Silty SAND, coarse grained, light brown, wet, medium dense, with small gravel, no odor.
30						
	3.0	50/50-	Ring	sm		
35						Total Depth: 35'
40						
45						
50						

WELL DIAGRAM



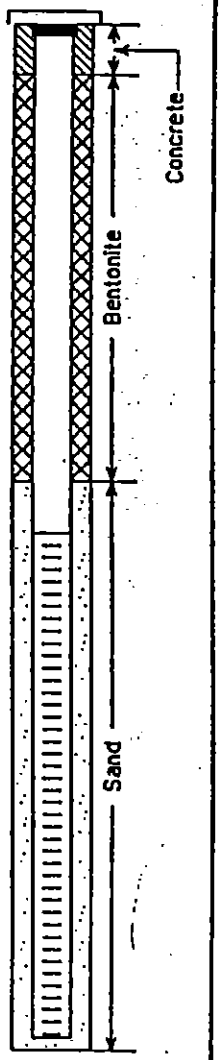
LOG OF EXPLORATORY BORING WITH WELL INSTALLATION DATA

PROJECT NO. 6-92-7208	WELL NO. MH-2
CLIENT: Cosmos	DATE: 10/16/92
LOCATION: Ernst Site	DRILLER: Holt Drilling
LOGGED BY: J. Daigle	PAGE: 1 of 1

FIELD LOCATION: SE Corner	WELL COMPLETION DEPTH: 39.5'	SEAL TYPE: Bentonite Chips
BENCHMARK ELEVATION: 80.0'	TOTAL DEPTH: 40.0'	WATER DEPTH FIRST: -
WELL CASING ELEVATION: 77.0'	BORING DIAMETER: 9.25"	WATER DEPTH COMPLETED: 34.03'
WELL CASING TYPE: PVC	WELL DIAMETER: 2"	WATER DEPTH 24HRS:
SCREEN PERFORATION: 0.020	FILTER PACK TYPE: Sand	

DEPTH	VAPOR CONC. (PPM)	BLOW/FT	SAMPLE TYPE	USCS SOIL TYPE	GRAPHICS LOG	DESCRIPTION
0				gm		ASPHALT.
						SAND, fine grained, light brown, moist, loose, with gravel, no odor (fill).
5	0	3/5/6	Ring			Silty SAND, fine grained, orange brown, dry, loose, no odor (fill?).
10	0	4/5/6	Ring	sm		
15	0	8/11/12	Ring			
20	0	12/17/27	Ring			Silty SAND, fine grained, orange brown, moist, medium dense, no odor.
25	0	30/50-	Ring	sm		
30	0	25/35/50	Ring			
35	0	17/50-	Ring			Silty SAND, fine grained, gray brown, moist, medium dense, no odor.
				sm		
40						Total Depth: 40'
45						
50						

WELL DIAGRAM



A CB&I COMPANY

LOG OF EXPLORATORY BORING WITH WELL INSTALLATION DATA

CLIENT: Cosmos
LOCATION: Ernst Site
LOGGED BY: J. Daigle

WELL NO: MW-3
DATE: 10/27/92
DRILLER: McGarrell Drilling
PAGE: 1 of 1

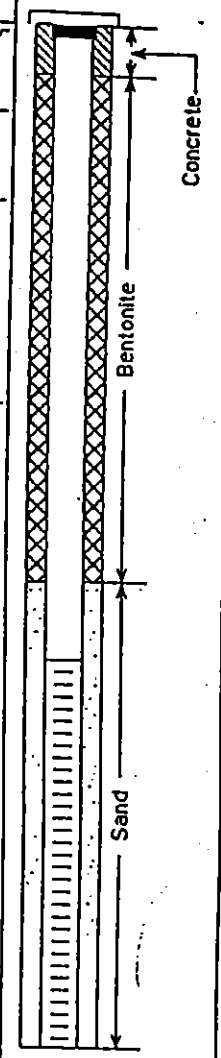
FIELD LOCATION: South Central
BENCHMARK ELEVATION: 80.0'
WELL CASING ELEVATION: 72.3'
WELL CASING TYPE: PVC
SCREEN PERFORATION: 0.020"

WELL COMPLETION DEPTH: 40.0'
TOTAL DEPTH: 40.0'
BORING DIAMETER: 9.25"
WELL DIAMETER: 2"
FILTER PACK TYPE: Sand

SEAL TYPE: Bentonite Chips
WATER DEPTH FIRST: 30.3'
WATER DEPTH COMPLETED: 29.49'
WATER DEPTH 24HRS:

DEPTH	VAPOR CONC. (PPM)	BLOW/FT	SAMPLE TYPE	USCS SOIL TYPE	GRAPHICS LOG	DESCRIPTION
0				gm		ASPHALT.
						SAND, fine grained, light brown, dry, loose, with silt and gravel, no odor (fill).
5	24	11/26/26	Ring	sm		Silty SAND, fine grained, dark gray, moist, loose, with pea gravel, odor (fill?).
10	130	6/8/13	Ring	sm/sc		Silty SAND/sandy CLAY, light green to gray, moist, soft, odor.
15	320	10/11/20	Ring			Silty SAND, fine grained, light gray to light brown, dry, loose, odor.
20	60	15/28/30	Ring	sm		
25	110	20/25/24	Ring			SAND, coarse grained, light brown, damp to wet, medium dense, odor.
30	270	15/24/25	Ring	sp		
35	20	15/25/25				
40						Total Depth: 40'
45						
50						

WELL DIAGRAM



LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-1
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	101.72' (a)
DRILL METHOD	See below	TOTAL DEPTH	27.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.3 (approximately) feet: ASPHALT.
								0.3 - 1.0 feet: SAND with SILT and GRAVEL (SP-SM), brown, few silt, little fine to medium gravel (up to 1-1/2 inch diameter), loose, dense. (FILL)
SS/S1	19	9						1.0 - 27.7 feet: SILTY SAND (SM), fine, brown, little silt, trace gravel, (rounded to 1 inch diameter), loose, moist.
				5				
SS/S2	25	39						-- @ 8.5 - 11 feet: orange mottling.
				10				
SS/S3	< 1	60						
				15				
SS/S4	1	50/6						-- @ 17.5 - 22.5 feet: orange mottling
				20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = <1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-1
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	101.72' (a)
DRILL METHOD	See below	TOTAL DEPTH	27.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S5	< 1	50/5	▽ 7/31/90	25				SILTY SAND (SM), fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, damp.
SS/S6	(b)	50/3"		30				Boring terminated at 27.7 feet.
				35				
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = <1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511 --	BORING NO.	MW-2
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	101.97' (a)
DRILL METHOD	See below	TOTAL DEPTH	32.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.3 (approximately) feet: ASPHALT.
								0.3 - 1.0 feet: SAND with SILT and GRAVEL (SP-SM), medium to fine, brown, few silt, little gravel (up to 1-1/2 inch diameter), loose, damp. (FILL)
SS/S1	28	17						1.0 - 20.0 feet: SILTY SAND (SM), fine, dark gray-brown, little silt, trace gravel (up to 1-1/2-inch diameter), medium dense, moist, slight petroleum-like odor to approximately 12 feet, grades to gray below 8 feet with orange mottling between 8 and 16 feet.
				5				
SS/S2	20	36						
				10				
								-- @ 12 feet: PID reading in cuttings, 80 ppm.
SS/S3	18	50/4						
				15				
SS/S4	21	50/6						
				20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = < 1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

SWEET-EDWARDS/EMCON

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-2
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	101.97' (a)
DRILL METHOD	See below	TOTAL DEPTH	32.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								20 - 24 feet: INTERBEDDED SILTY SAND (SM) - SANDY SILT (ML): SILTY SAND, as above, beds to 1/2 inch thick. SANDY SILT, gray, little fine sand, hard, moist to wet, beds to 2 inches thick.
SS/S5	< 1	50/6						
				25				24 - 32.7 feet: SILTY SAND (SM), fine, gray, little silt, trace gravel up to 1-1/2-inch diameter, very dense, moist.
SS/S6	< 1	50/6						
				30				-- @ approximately 30 feet: wet cuttings.
			▽ 7/31/90					
SS/S7	(b)	50/3						Boring terminated at 32.7 feet.
				35				
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = <1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-3
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	99.72' (a)
DRILL METHOD	See below	TOTAL DEPTH	30.40'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/12/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.3 feet: ASPHALT
SS/S1	22	7						0.3 - 13 feet: SILTY SAND (SM), fine, gray, little silt, trace gravel (up to 3/4-inch diameter), loose, moist, petroleum-like odor at 2-1/2 feet. (FILL)
				5				
SS/S2	15	3						-- @ 7.8 feet: orange mottled layer, some soil discoloration noted. -- slight petroleum-like odor between 8.5 and 13 feet.
				10				
SS/S3	5	23						13 - 30.4 feet: SILTY SAND (SM), medium to fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, moist.
				15				
SS/S4	< 1	50/4						
				20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = <1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-3
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	99.72' (a)
DRILL METHOD	See below	TOTAL DEPTH	30.40'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/12/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
			▽ 7/31/90					SILTY SAND (SM), medium to fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, moist.
SS/S5	< 1	50/6						-- becomes wet at 22.0 feet
				25				
SS/S6	(b)	50/3						-- trace orange mottling, becomes moist below 27.5 feet.
SS/S7	< 1	50/3		30				Boring terminated at 30.4 feet.
				35				
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = < 1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-4
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	98.81' (a)
DRILL METHOD	See below	TOTAL DEPTH	30.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.3 (approximately) feet: ASPHALT.
								0.3 - 7.5 feet: SILTY SAND (SM), medium to fine, brown, little silt, trace gravel (up to 1 inch), loose, moist. (FILL)
SS/S1	156	9						
SS/S2	169	7		5				
								-- @ 7.5 feet: iron pipe encountered.
SS/S3	165	50/6						7.5 - 8.0 feet: SILTY SAND (SM), as above, trace wood debris, glass fragments. (FILL)
								8.0 - 30.4 feet: SILTY SAND (SM), medium to fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, moist.
				10				
SS/S4	< 1	61/6						
				15				
SS/S5	(b)	50/3						-- trace orange mottling at 17.5 to 18.3 feet
				20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS=Split spoon sampler. PID=Photoionization detector, background reading=<1 ppm. (a) Local datum=assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-4
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	98.81' (a)
DRILL METHOD	See below	TOTAL DEPTH	30.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/13/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S6	< 1	50/3	▽ 7/31/90	25				SILTY SAND (SM), medium to fine, gray, little silt, trace gravel (up to 1-inch diameter), very dense, moist.
SS/S7	82	50/5						-- @ 27.5 feet: trace wood debris.
SS/S9	< 1	50/3		30				-- becomes wet at 30.0 feet
				35				Boring terminated at 30.4 feet. NOTE: Pipe encountered at 7.5 feet. Boring advanced to 17.5 feet before abandoned with bentonite chips. Moved 2 feet south, advanced new boring to 22.5 feet for first sample.
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = < 1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-5
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	98.75' (a)
DRILL METHOD	See below	TOTAL DEPTH	32.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/17/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.3 (approximately) feet: ASPHALT.
								0.3 - 1.0 foot: SAND with SILT and GRAVEL (SP-SM), fine to, medium, brown, few silt, little gravel (up to 1-1/2 inch diameter), loose, damp. (FILL)
SS/S1	100	8						1.0 - 32.7 feet: SILTY SAND (SM), medium to fine, brown, little silt, trace gravel (up to 3/4-inch diameter), loose, moist to wet.
				5				
SS/S2	NONE	47						
				10				-- grades to gray below 10 feet, trace orange mottling
SS/S3	18	50/5						
				15				
SS/S4	34	50/6						
				20				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = <1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW- 5
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	RandR - McGarritt	REFERENCE ELEV.	98.75' (a)
DRILL METHOD	See below	TOTAL DEPTH	32.70'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	7/17/90

SAMPLING METHOD/ NUMBER	PID in ppm	BLOW COUNTS	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS/S5	9	50/5		25				SILTY SAND (SM), medium to fine, brown, trace orange mottling, little silt, trace gravel (up to 3/4-inch diameter), very dense, moist to wet.
SS/S6	(b)	50/3		30				
SS/S7	(b)	50/4		35				Boring terminated at 32.7 feet.
				40				

REMARKS

Drilled with Gus Peck GP1000R, 4-inch I.D. hollow stem auger, standard penetration test. Flush mount security casing, locking pentagonal tamper-proof bolts. SS = Split spoon sampler. PID = Photoionization detector, background reading = <1 ppm. (a) Local datum = assumed to be 100 feet at fire hydrant on the southwest corner of the site. (b) Insufficient sample volume.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-12
LOCATION	Bellevue, Washington	PAGE	1 OF 3
DRILLED BY	Geoboring & Develop.	REFERENCE ELEV.	(a)
DRILL METHOD	H.S. Auger	TOTAL DEPTH	40.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	08/30/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.45 feet: ASPHALT. (AS)
								0.45 - 2.5 feet: SAND with GRAVEL (SW), brown, trace silt, fine to coarse, fine gravel (crushed), loose, damp, odorless. (FILL)
DM/MW -12-2.5	2.4	5 4 5						2.5 - 6.5 feet: SAND with GRAVEL (SW), gray with orange mottles, trace to few silt, fine to medium, trace coarse, some fine gravel (rounded), loose, damp, odorless. (WEATHERED TILL)
				5				
DM/MW -12-7.5	1.6	1 3 6						6.5 - 8.0 feet: SANDY CLAY (CL), yellow brown with red brown mottles in streaks, plastic fine, little silt, trace fine to coarse sand, trace gravel (very weathered, rounded), trace organic debris, stiff, damp, odorless. (WEATHERED TILL)
				10				9.0 - 20.0 feet: SAND with SILT and GRAVEL (SW-SM), gray, few silt, fine to coarse, some fine to coarse gravel (weathered, rounded), medium dense, moist, odorless. (WEATHERED TILL)
DM/MW -12-12.5	1.2	9 10 13						
				15				
DM/MW -12-17.5	2.4	31 50/6"						@ 17.5 feet: as above; brown.
				20				

REMARKS
(1) Drilled with a Mobile Drill B-61, 4-inch ID hollow stem auger. DM = Dames and Moore split barrel samples driven with a 300 lb. hammer free falling 30- inches. (2) PID = Photoionization detector, background reading 1 ppm = < 1 1 ppm. (3) Boring abandoned with bentonite-cement grout. (a) Soil boring elevation not surveyed.

SWEET-EDWARDS/EMCON

U24-08.03.UNOBE.L32/cr:2.10/15/91

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-12
LOCATION	Bellevue, Washington	PAGE	2 OF 3
DRILLED BY	Geoboring & Develop.	REFERENCE ELEV.	(a)
DRILL METHOD	H.S. Auger	TOTAL DEPTH	40.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	08/30/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
DM/MW-12-22.5	0.5	36 50/6"		25				20.0 - 39.0 feet: SILTY SAND with GRAVEL (SM), olive brown, orange mottles, little silt, fine to coarse, some fine to coarse gravel (weathered, rounded), very dense, damp, odorless. (WEATHERED TILL)
DM/MW-12-27.5	0.4	50/6"		30				@ 27.5 feet: as above; olive gray, silt, variable to some, granules rounded and fractured.
DM/MW-12-32.5	1.2	50/6"		35				@ 32.0 feet: as above; olive brown with orange mottles, wet.
DM/MW-12-37.5	0.4	50/3"		40				39.0 - 40.3 feet: SM-SP, blue gray, few silt, fine, trace coarse, little gravel (rounded and

REMARKS

(1) Drilled with a Mobile Drill B-61, 4-inch ID hollow stem auger. DM = Dames and Moore split barrel samples driven with a 300 lb. hammer free falling 30- inches. (2) PID = Photoionization detector, background reading 1 ppm = < 1 1 ppm. (3) Boring abandoned with bentonite-cement grout. (a) Soil boring elevation not surveyed.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL 4511	BORING NO.	MW-12
LOCATION	Bellevue, Washington	PAGE	3 OF 3
DRILLED BY	Geoboring & Develop.	REFERENCE ELEV.	(a)
DRILL METHOD	H.S. Auger	TOTAL DEPTH	40.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	08/30/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
DM/MW -12-40	1.2	50/4"		45 50 55 60				fractured), very dense, moist, odorless. (TILL) @ 40.0 feet: auger refusal. Depth drilled to 40.0 feet below ground surface. Depth sampled to 40.3 feet below ground surface. **Well Completion Details** 0 - 14.69 feet: 2-inch-diameter schedule 40 PVC riser. 14.69 - 39.69 feet: 2-inch-diameter schedule 40 PVC screen with 0.010-inch machine cut slots. 39.69 - 40.25 feet: 2-inch-diameter schedule 40 PVC tapered threaded end plug. 0 - 2.0 feet: concrete. 2.0 - 8.0 feet: bentonite-cement grout. 8.0 - 11.4 feet: bentonite chips. 11.4 - 40.3 feet: 10 x 20 Colorado Silica Sand.

REMARKS

(1) Drilled with a Mobile Drill B-61, 4-inch ID hollow stem auger. DM = Dames and Moore split barrel samples driven with a 300 lb. hammer free falling 30- inches. (2) PID = Photoionization detector, background reading 1 ppm = < 1 1 ppm. (3) Boring abandoned with bentonite-cement grout. (a) Soil boring elevation not surveyed.

LOG OF EXPLORATORY BORING

PROJECT NAME Unocal 4384
LOCATION 1624 Bellevue Way Southeast, Bellevue, Washington
DRILLED BY Cascade Drilling, Inc.
DRILL METHOD Hollow Stem Auger
LOGGED BY T. Bodle

BORING NO. MW-10a/MW-10b
PAGE 1 OF 5
GROUND ELEV. 80.00'
TOTAL DEPTH 74.00'
DATE COMPLETED 04/12/94

SAMPLING METHOD SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 4.0 feet: SAND WITH SILT (SP-SM), dark brown, fine to medium, little silt, trace wood debris, loose, moist.
	0	3-5-10		5				**4.0 to 10.0 feet:** SAND WITH SILT AND GRAVEL (SP-SM), light brown, fine to medium, little silt, little gravel, trace wood debris, medium density, moist. @ 5.5 feet: wood debris ends.
	0	33-50		10				**10.0 to 15.0 feet:** SILT WITH SAND (ML), light brown, little fine sand, very dense, moist. @ 11.0 feet: few gravel. @ 11.0 to 15.0 feet: slower drilling.
	0	86		15				**15.0 to 20.5 feet:** SAND WITH SILT (SM), light brown, fine, some silt, very dense, moist.
				20				

REMARKS

(1) Samples collected with a 2-inch-outer-diameter split-spoon sampler. (2) PID = photolonization detector readings in parts per million. (3) ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME **Unocal 4384**
LOCATION **1624 Bellevue Way Southeast, Bellevue, Washington**
DRILLED BY **Cascade Drilling, Inc.**
DRILL METHOD **Hollow Stem Auger**
LOGGED BY **T. Bodle**

BORING NO. **MW-10a/MW-10b**
PAGE **2 OF 5**
GROUND ELEV. **80.00'**
TOTAL DEPTH **74.00'**
DATE COMPLETED **04/12/94**

SAMPLING METHOD SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	LITHOLOGIC DESCRIPTION
	0	46-50/3	**15.0 to 20.5 feet:** SAND WITH SILT (SM), continued. @ 20.0 feet: little silt.
			20.5 to 25.0 feet: SANDY SILT (ML), light brown, some fine sand, very dense, moist.
	0	35-77	**25.0 to 57.7 feet:** SAND WITH SILT (SP-SM), light brown, fine, few silt, few gravel, very dense, moist.
	0	22-66	
10-35'	0	36-50	

25
30
35
40

REMARKS

(1) Samples collected with a 2-inch-outer-diameter split-spoon sampler. (2) PID = photoionization detector readings in parts per million. (3) ATD = at time of drilling.

LOG OF EXPLORATOR[illegible]NG

PROJECT NAME Unocal 4384
LOCATION 1624 Bellevue Way Southeast, Bellevue,
DRILLED BY Cascade Drilling, Inc.
DRILL METHOD Hollow Stem Auger
LOGGED BY T. Bodle

[illegible]ORING NO. MW-10a/MW-10b
[illegible]AGE 4 OF 5
[illegible]UND ELEV. 80.00'
[illegible] DEPTH 74.00'
[illegible]OMPLETED 04/12/94

SAMPLING METHOD SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS
	0	38-50		25			
	0	23-50/4		45			
10-50'	0	45-80		50			
	0	31-50/3	▽				
	0	85		55			
	0	16-23-42		60			

@ 50.5 feet: 0.3 foot sandy silt, no gravel to 57.7 feet.

@ 52.5 feet: wet.
@ 53.0 feet: 0.2 foot sandy silt.

@ 56.0 feet: 0.2 foot sandy silt.

@ 57.5 feet: 0.2 foot sandy silt.

57.7 to 74.0 feet: SAND (SP), light brown, fine, trace gravel, trace silt, very dense, wet.

REMARKS

(1) Samples collected with a 2-inch-outer-diameter split-spoon sampler. (2) PID = photoionization detector readings in parts per million. (3) ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	Unocal 4384	BORING NO.	MW-10a/MW-10b
LOCATION	1624 Bellevue Way Southeast, Bellevue, Washington	PAGE	4 OF 5
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	80.00'
DRILL METHOD	Hollow Stem Auger	TOTAL DEPTH	74.00'
LOGGED BY	T. Bodle	DATE COMPLETED	04/12/94

SAMPLING METHOD SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	LITHOLOGIC DESCRIPTION
	0	21-36-37	57.7 to 74.0 feet: SAND (SP), continued.
			@ 60.5 feet: 0.2 foot sandy silt.
10-62.5'	0	28-33-45	
			@ 63.5 feet: 0.1 foot sandy silt.
	0	34-50	
	0	5-37-50	
			@ 68.5 feet: five sandy silt laminations, 3 mm each.
	0	29-33-49	@ 70.0 feet: no gravel to 74.0 feet.
10-72.5'	3.3	---	
			Total depth drilled = 72.5 feet.
			Total depth sampled = 74.0 feet.

See Page 5 for Well Completion Details.

REMARKS

(1) Samples collected with a 2-inch-outer-diameter split-spoon sampler. (2) PID = photoionization detector readings in parts per million. (3) ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	Unocal 4384	BORING NO.	MW-10a/MW-10b
LOCATION	1624 Bellevue Way Southeast, Bellevue, Washington	PAGE	5 OF 5
DRILLED BY	Cascade Drilling, Inc.	GROUND ELEV.	80.00'
DRILL METHOD	Hollow Stem Auger	TOTAL DEPTH	74.00'
LOGGED BY	T. Bodle	DATE COMPLETED	04/12/94

SAMPLING METHOD SAMPLE NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				85				
				90				
				95				
				100				

WELL COMPLETION DETAILS:

MONITORING WELL MW-10a

0 to 42.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe.

42.0 to 62.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.010-inch machined slots and a 2-inch-diameter, flush-threaded end cap.

MONITORING WELL MW-10b

0 to 67.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe.

67.0 to 72.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.010-inch machined slots and a 2-inch-diameter, flush-threaded end cap.

0 to 3.0 feet: Concrete.

3.0 to 39.0 feet: Bentonite chips hydrated with potable water.

39.0 to 62.3 feet: 10 - 20 Colorado Silica Sand.

62.3 to 65.2 feet: Bentonite chips.

65.2 to 72.5 feet: 10 - 20 Colorado Silica Sand.

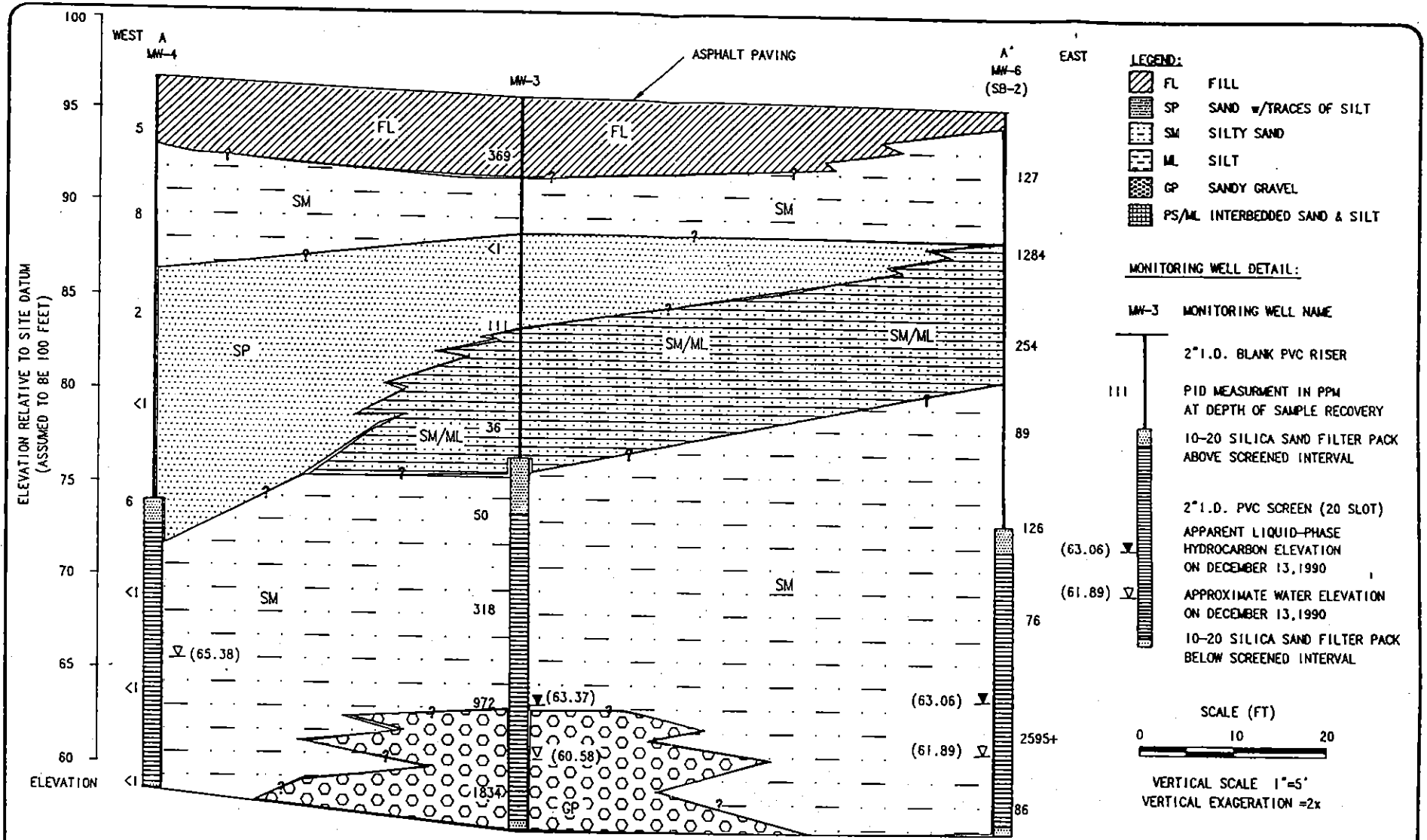
REMARKS

(1) Samples collected with a 2-inch-outer-diameter split-spoon sampler. (2) PID = photoionization detector readings in parts per million. (3) ATD = at time of drilling.

UNOCAL STATION # 0587
Bellevue, K. 5 NE Bellevue Way

(2139)

11/29/92



Sweet-Edwards
EMCON

NOTE: ALL LITHOLOGIC CONTACTS ARE INFERRED.
LIQUID PHASE HYDROCARBON AND WATER ELEVATIONS RELATIVE TO ARBITRARY SITE DATUM OF 100 FEET
THERE IS A SLIGHT BEND TO CROSS SECTION.

DATE 1/10/91
DRN. KLH/MLP
APPR. JK
REVIS.
PROJECT NO. U2415.01

Figure 3
UNOCAL SERVICE STATION #0587
BELLEVUE, WASHINGTON
GEOLOGIC CROSS SECTION

CADD FILE: UNOCAL\GCS-04C\ 1/8/91

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-1
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	McDonald Holt	REFERENCE ELEV.	94.77' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	37.40'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/21/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	LITHOLOGIC DESCRIPTION
			0 - 0.15 feet: ASPHALT.
SB/S1	150	45	0.15 - 4.5 feet: SAND with GRAVEL (SP), brown, trace silt, fine to medium sand, trace cobbles, damp, medium density, hydrocarbon-like odor. (FILL)
			4.5 - 8.5 feet: SILT (ML), brown to gray, little clay, moist, hard, laminated beds approximately 1/8" thick, hydrocarbon-like odor.
SB/S2	147	81	
			8.5 - 11.0 feet: SILTY SAND (SM), gray, trace to little silt, fine to medium sand, very dense, moist, hydrocarbon-like odor.
			11.0 - 12.5 feet: SILTY SAND with GRAVEL (SM), gray, trace to little silt, fine to medium sand, little gravel, dense, moist, hydrocarbon-like odor.
SB/S3	312	40	12.5 - 20.0 feet: Interbedded SILTY SAND/SILT (SM/ML), beds 3 to 6 inches thick: Silty sand (SM), gray, few to little silt, fine to medium sand, dense, moist, hydrocarbon-like odor. Silt (ML), gray to brown, trace fine sand, hard, laminated beds, hydrocarbon-like odor.
SB/S4	806	50/5	

GROUND WATER LEVELS | DEPTH IN FT. | SAMPLES | LITHOLOGIC COLUMN | WELL DETAILS

5 10 15 20

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-1
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	McDonald Holt	REFERENCE ELEV.	94.77' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	37.40'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/21/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								20.0 - 23.5 feet: SAND (SP), brown, trace silt, fine to medium sand, very dense, moist, hydrocarbon-like odor.
SB/S5	417	94/10"						
				25				23.5 - 36.5 feet: Interbedded SILTY SAND/SILT (SM/ML), beds 1 to 3 inches thick: Silty sand (SM), gray, few to little silt, fine to medium sand grading to coarse sand at depth, very dense, moist, hydrocarbon-like odor. Silt (ML), gray to brown, trace fine sand, hard, damp, saturated below 31 feet, laminated beds, hydrocarbon-like odor.
SB/S6	411	90/10"						
				30				
SB/S7	238	91/11"	▽ (ATD)					
				35				
SB/S8	159	84/11"						
				40				Boring terminated at 37.4 feet. Note: Native soils are interpreted as GLACIAL DEPOSITS.

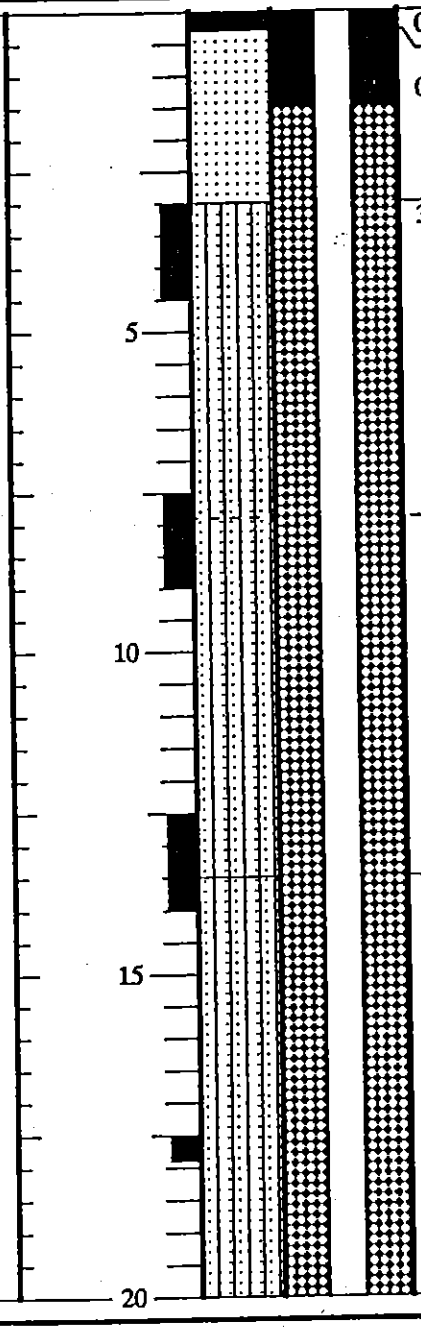
REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-2
LOCATION	Bellevue, Washington	PAGE	1 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	94.30' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/21/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	LITHOLOGIC DESCRIPTION
			0 - 0.15 feet: ASPHALT.
			0.15 - 3.0 feet: SAND with GRAVEL (SP), brown, trace silt, fine to medium sand, trace cobbles, loose, damp. (FILL)
SB/S1	<1	13	3.0 - 8.0 feet: SILTY SAND (SM), gray, some silt, fine to medium sand, trace gravel, medium dense, moist. (FILL)
SB/S2	14	11	8.0 - 13.5 feet: SILTY SAND (SM), gray, few to little silt, fine to coarse sand (becoming coarser at depth), trace gravel, loose, moist, hydrocarbon-like odor at depth. (FILL)
			--@ 9.0 feet: 2-inch diameter pieces of asphalt.
SB/S3	204	59	--@ 13.5 feet: 1-inch thick sandy silt layer.
			13.5 - 20.0 feet: SILTY SAND (SM), gray, some silt, fine sand, trace medium to coarse sand, very dense, damp.
SB/S4	164	50/5"	



REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB= 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

SWEET-EDWARDS/EMCON

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LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-2
LOCATION	Bellevue, Washington	PAGE	2 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	94.30' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/21/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								20.0 - 30.0 feet: SILTY SAND (SM), brown, little silt, fine to medium sand, trace gravel, trace cobbles, very dense, moist.
SB/S5	284	71/6"						
				25				
SB/S6	1287	100/10"						
				30				30.0 - 33.0 feet: Interbedded SILTY SAND/SILT (SM/ML). Silty sand (SM), gray, few to little silt, fine to medium sand, trace gravel, very dense, moist, hydrocarbon-like odor. Silt (ML), gray, trace, fine sand, hard, damp, hydrocarbon-like odor. --@ 32.5 to 33.0 feet: soils are discolored and have an iridescent sheen.
SB/S7	1577	86						33.0 - 33.5 feet: SAND (SP), gray, medium to coarse sand, very dense, moist, hydrocarbon-like odor.
				35				
SB/S8	113	87	▽ (ATD)					33.5 - 39.0 feet: Interbedded SILTY SAND/SILT (SM/ML) Silty sand (SM), brown, few to little silt, fine to medium sand, very dense, saturated. Silt (ML), gray to brown, trace fine sand, hard, saturated.
				40				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-2
LOCATION	Bellevue, Washington	PAGE	3 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	94.30' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/21/90

GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
	45				Boring terminated at 39.0 feet. Note: Native soils are interpreted as GLACIAL DEPOSITS.
	50				
	55				
	60				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-3
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	McDonald Holt	REFERENCE ELEV.	95.92' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	38.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/29/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	LITHOLOGIC DESCRIPTION
			0 - 0.15 feet: ASPHALT.
			0.15 - 4.5 feet: SAND with GRAVEL (SP), brown, trace silt, fine to coarse sand, trace cobbles, loose, damp. (FILL)
SB/S1	369	10	
			4.5 - 6.0 feet: SILTY SAND (SM), gray, some silt, fine to medium sand, trace gravel, medium dense, moist, hydrocarbon-like odor.
			6.0 - 12.5 feet: SAND with GRAVEL (SP), brown, trace silt, medium to coarse sand, some gravel, medium dense, moist.
SB/S2	<1	24	
SB/S3	111	63	12.5 - 20.0 feet: Interbedded SILTY SAND/SILT (SM/ML), stratified beds 1 to 3 inches thick: Silty sand (SM), brown, few to little silt, fine to medium sand, very dense, saturated. Silt (ML), gray/brown, trace fine sand, hard, saturated. @ 14.0 feet: hydrocarbon-like odors
SB/S4	36	80/9"	

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-3
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	McDonald Holt	REFERENCE ELEV.	95.92' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	38.30'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/29/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SB/S5	50	50/6"		25				20.0 - 33.0 feet: SAND (SM), brown, trace to little silt, fine to medium sand, trace gravel, very dense, damp.
SB/S6	318	50/3"		30				
SB/S7	972	82	▽ (ATD)					--@ 32.5 feet: Saturated, hydrocarbon-like odor.
				35				33.0 - 38.0 feet: GRAVEL with SAND (GP), brown, trace silt, some fine to coarse sand, very dense, saturated, hydrocarbon-like odor, soil discolored with iridescent sheen.
SB/S8	1834	85/10"						Boring terminated at 38.3 feet. Note: Native soils are interpreted as GLACIAL DEPOSITS.
				40				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-4
LOCATION	Bellevue, Washington	PAGE	1 OF 2
DRILLED BY	McDonald Holt	REFERENCE ELEV.	96.04' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	39.50'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/29/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.15 feet: ASPHALT.
								0.15 - 1.0 feet: SAND with GRAVEL (SP), brown, trace silt, fine to coarse sand, little to some gravel, trace cobbles, loose, damp. (FILL)
SB/S1	5	77		5				1.0 - 3.5 feet: SAND (SP), reddish-brown, trace silt, fine to coarse sand, trace to few gravel, loose, damp. (FILL)
								3.5 - 11.0 feet: SILTY SAND (SM), brown, few to little silt, fine to medium sand, trace to few gravel, very dense, damp.
SB/S2	8	88						--@ 7.5 feet: as above, gray-brown.
				10				
								11.0 - 25.0 feet: SAND (SP), brown, few silt to lenses of some silt, fine to medium sand, very dense, moist, poorly stratified bedding.
SB/S3	2	66						
				15				
SB/S4	<1	50/3"						--@ 18.0 feet: as above, trace coarse sand and gravel.
				20				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-4
LOCATION	Bellevue, Washington	PAGE	2 OF 2
DRILLED BY	McDonald Holt	REFERENCE ELEV.	96.04' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	39.50'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/29/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								Same unit as above
SB/S5	6	50/5"						
				25				25.0 - 39.5 feet: SILTY SAND (SM), brown, some silt, fine to coarse sand, trace gravel, very dense, damp, saturated below 33.0 feet.
SB/S6	<1	50/4"						
				30				
SB/S7	<1	50/3"	▽ (ATD)					
				35				
SB/S8	<1	50/5"						Note: Native soils are interpreted as GLACIAL DEPOSITS.
				40				Boring terminated at 39.5 feet.

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-5
LOCATION	Bellevue, Washington	PAGE	1 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	96.87' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	42.80'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/26/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.15 feet: ASPHALT.
								0.15 - 2.0 feet: SAND with GRAVEL (SP), brown, trace silt, fine to medium sand, few to little gravel, trace cobbles, scattered automobile parts, loose, damp. (FILL)
SB/S1	<1	16						2.0 - 4.5 feet: SILTY SAND (SM), brown, some silt, fine to medium sand, few to little gravel, medium dense, damp. (FILL)
				5				4.5 - 20.0 feet: SILTY SAND (SM), brown, little silt, fine to medium sand, trace fine gravel, very dense, moist.
SB/S2	35	93/11"						
				10				
SB/S3	NA	50/6"						
				15				
SB/S4	16	79						
				20				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB= 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-5
LOCATION	Bellevue, Washington	PAGE	2 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	96.87' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	42.80'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/26/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SB/S5	21	92/10"		25				20.0 - 29.0 feet: Interbedded SILTY SAND/SILT (SM/ML), stratified beds 3 to 6 inches thick: Silty sand (SM), gray, few to little silt, fine to medium sand, trace gravel, dense, moist. Silt (ML), gray to brown, trace fine sand, hard, laminated silt beds approximately 1/8 inch thick.
SB/S6	17	97/9"		30				29.0 - 42.8 feet: SILTY SAND (SM), brown, few to little silt, fine to medium sand, trace to little gravel, very dense, moist, discrete silt lense between 32.5 to 32.9 feet, saturated below 37.5 feet.
SB/S7	<1	50/4"		35				
SB/S8	16	50/5"	▽ (ATD)	40				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB= 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-5
LOCATION	Bellevue, Washington	PAGE	3 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	96.87' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	42.80'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/26/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								Same unit as above
SB/S9	<1	50/3"						Boring terminated at 42.8 feet.
				45				
				50				Note: Native soils are interpreted as GLACIAL DEPOSITS.
				55				
				60				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

SWEET-EDWARDS/EMCON

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LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW- 6*
LOCATION	Bellevue, Washington	PAGE	1 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	95.34' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/28/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 - 0.15 feet: ASPHALT.
								0.15 - 1.0 feet: SAND with GRAVEL (SP), gray brown, few to little silt, fine to coarse sand, some coarse gravel, medium dense, damp, faint hydrocarbon-like odor. (FILL)
SB/S1	127	23						1.0 - 7.0 feet: SILTY SAND (SM), olive gray, few to little silt, fine to medium sand, medium dense, moist.
				5				
								7.0 - 8.0 feet: SILT (ML), brown, hard, damp, hydrocarbon-like odor.
SB/S2	1284	47						8.0 - 15.0 feet: Interbedded SILTY SAND/SILT (SM/ML), stratified beds 3 to 6 inches thick: Silty sand (SM), gray, few to little silt, fine to medium sand, very dense, moist, hydrocarbon-like odor. Silt (ML), gray, trace sand, hard laminated beds, hydrocarbon-like odor.
				10				
SB/S3	254	62						
				15				15.0 - 39.0 feet: SILTY SAND (SM), brown, little silt, fine to medium sand, trace gravel, very dense, moist, saturated below 36 feet, hydrocarbon-like odor.
SB/S4	89	95/10"						
				20				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

SWEET-EDWARDS/EMCON

.U0587.19/sad:7.3/06/91

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW-6*
LOCATION	Bellevue, Washington	PAGE	2 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	95.34' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/28/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SB/S5	126	100/7"		25				Same unit as above
SB/S6	158	76		30				
SB/S7	2595+	81/9"	▽ (ATD)	35				--@ 32.5 feet: as above, strong hydrocarbon-like odor, soils discolored with iridescent sheen, saturated below 36 feet.
SB/S8	86	68		40				Notes: *Well name MW-6. Boring originally named SB-2 and changed when the boring was completed as a monitoring well. Samples from this boring are prefaced SB-2. +PID measurement out of instrument detection range. Eight gallons of water added to the boring during drilling. Native soils are interpreted as GLACIAL DEPOSITS.

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL	BORING NO.	MW- 6*
LOCATION	Bellevue, Washington	PAGE	3 OF 3
DRILLED BY	McDonald Holt	REFERENCE ELEV.	95.34' (a)
DRILL METHOD	H.S.Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jeff Kirtland	DATE COMPLETED	11/28/90

SAMPLE METHOD AND NUMBER	PID READING (ppm)	BLOWS PER FOOT	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				45				Boring terminated at 39.0 feet.
				50				
				55				
				60				

REMARKS

Drilled with a mobile drill B-61 equipped with a 4-inch ID hollow stem auger. SB = 2.5-inch O.D. split barrel sampler advanced with a 140 lb hammer, free falling 30-inch. Flush mount security monuments with pentagonal tamper-resistant bolts. PID = photoionization detector, background reading = <1 ppm. (a) For datum location, see Table 1 and Appendix C. ATD = at time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-7
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	1 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	95.57'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	50.00'
LOGGED BY	John North	DATE COMPLETED	03/25/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 0.25 foot: ASPHALT.
								0.25 to 8.5 feet: SILT (ML), gray with orange mottling, medium plasticity, some fine to medium sand, moist, very stiff.
SB/S-1	<1	6-6-20		5				
SB/S-2	<1	14-28-36		10				8.5 to 23.5 feet: SILTY SAND (SM), gray, fine to medium, little fines, trace fine gravel, moist, dense.
SB/S-3	<1	38-45-50/4"		15				@ 13.5 feet: increased medium gravels.
--	<1	100/0"						@ 18.5 feet: no recovery.
				20				

REMARKS
(1) SB = 3-inch outside diameter split-barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) – = not recorded. (4) Blow counts do not represent SPT results.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-7
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	2 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	95.57'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	50.00'
LOGGED BY	John North	DATE COMPLETED	03/25/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								@ 21.5 feet: gravels.
SB/S-4	<1	100/4"		25				23.5 to 45.0 feet: SANDY SILT (ML), gray, little fine to medium sand, trace fine to medium gravel, moist, hard.
SB/S-5	<1	100/5"		30				@ 29.0 feet: increasing fine sand.
SB/S-6	<1	100/7.5"		35				
SB/S-7	<1	--		40				

REMARKS
(1) SB = 3-inch outside diameter split-barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) -- = not recorded. (4) Blow counts do not represent SPT results.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-7
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	3 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	95.57'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	50.00'
LOGGED BY	John North	DATE COMPLETED	03/25/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SB/S-8	<1	42-50/ 4.5"		45				**45.0 to 50.0 feet: SAND (SP)**, brown, fine, few fines, wet, dense.
SB/S-9	<1	17-45-50/3.5"		50				Total depth sampled: 50.0 feet. Total depth drilled: 48.5 feet. **WELL COMPLETION DETAILS:** 0 to 39.0 feet: 2-inch-diameter schedule 40 PVC blank riser pipe. 39.0 to 49.0 feet: 2-inch-diameter flush threaded schedule 40 PVC well screen with 0.010-inch machined slots and a 2-inch-diameter threaded end cap. 0 to 2.0 feet: Concrete. 2.0 to 36.5 feet: Bentonite chips hydrated with potable water. 36.5 to 50.0 feet: 10 - 20 Colorado Silica Sand.
				55				
				60				

REMARKS
(1) SB = 3-inch outside diameter split-barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) – = not recorded. (4) Blow counts do not represent SPT results.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW- 8
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	1 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.58'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jim Jakubiak	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 0.75 foot: ASPHALT.
								0.75 to 4.5 feet: SILT (ML), rust brown, little sand grading to SAND (SP), fine to medium, damp, loose. (FILL)
SB/S-1	NR	9-4-4						@ 3.5 feet: no recovery.
				5				4.5 to 7.5 feet: SILT (ML), beige brown, slightly plastic, trace sand, moist, soft to firm.
SB/S-2	48	14-15-28						7.5 to 11.0 feet: SILTY SAND (SM), beige, little fines, dry to moist, medium dense, no noticeable odor.
				10				
								11.0 to 18.0 feet: SAND (SP), light brown, fine to medium, trace silt, dry to moist, medium dense, no noticeable odor.
SB/S-3*	50	6-5-17						
				15				
SB/S-4	65	13-50						18.0 to 23.0 feet: SILTY SAND (SM), light brown, fine to medium, little fines, dry to moist, very dense, no odor.
				20				

REMARKS
(1) SB = 3-inch outside diameter split-barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) NR = no recovery. (4) Blow counts do not represent SPT results. (5) * = sample submitted to lab for analysis. (6) ATD = at the time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW- 8
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	2 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.58'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jim Jakubiak	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SB/S-5*	36	20-50/5"		25				23.0 to 28.0 feet: SAND (SP), very fine to medium, trace silt, dry to moist, very dense, slight odor.
SB/S-6	139	21-43-40	▽ ATD	30				28.0 to 38.0 feet: SILTY SAND (SM), fine to medium, little fines, some coarse rounded gravel, wet, very dense. Moderate hydrocarbon-like odor at 28.0 feet.
SB/S-7	44	10-37-37		35				@ 33.0 feet: slight odor.
SB/S-8	30	19-50/5"		40				@ 38.0 feet: trace coarse rounded gravel.
								Total depth sampled: 39.0 feet. Total depth drilled: 38.0 feet.

REMARKS
(1) SB = 3-inch outside diameter split-barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) NR = no recovery. (4) Blow counts do not represent SPT results. (5) * = sample submitted to lab for analysis. (6) ATD = at the time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-8
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	3 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.58'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	39.00'
LOGGED BY	Jim Jakubiak	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				45				WELL COMPLETION DETAILS: 0 to 18.0 feet: 2-inch-diameter schedule 40 PVC blank riser pipe. 18.0 to 33.0 feet: 2-inch-diameter flush threaded schedule 40 PVC well screen with 0.010-inch machined slots and a 2-inch-diameter threaded end cap. 0 to 1.0 foot: Concrete. 1.0 to 16.25 feet: Bentonite chips hydrated with potable water. 16.25 to 35.0 feet: 10 - 20 Colorado Silica Sand. 35.0 to 39.0 feet: Caved material.
				50				
				55				
				60				

REMARKS

(1) SB = 3-inch outside diameter split-barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) NR = no recovery. (4) Blow counts do not represent SPT results. (5) * = sample submitted to lab for analysis. (6) ATD = at the time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-9
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	1 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.92'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	34.50'
LOGGED BY	Jim Jakubiak	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 0.5 foot: CONCRETE.
								0.5 to 6.5 feet: SILTY SAND (SM), rust brown, little silt, trace gravel, loose, dry to moist. (FILL)
SB/S-1	<1	2		5				
								6.5 to 12.0 feet: SILT (ML), beige, slightly plastic, dry to moist, stiff.
SB/S-2	<1	8-6-8		10				
								12.0 to 28.0 feet: SAND (SP), light brown, fine to medium, trace silt, trace gravel, dry, medium dense.
SB/S-3*	20	5-13-26		15				
SB/S-4	94	7-13-14		20				

REMARKS
(1) SB = 3-inch outside diamter split barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) Blow counts do not represent SPT results. (4) * = sample submitted to lab for analysis. (5) ATD = at the time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-9
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	2 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.92'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	34.50'
LOGGED BY	Jim Jakubiak	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SB/S-5	105	13-24-32		25				@ 23.0 feet: dense to very dense. Slight hydrocarbon-like odor.
SB/S-6	889	12-24-47	▽ ATD	30				28.0 to 33.0 feet: SAND (SP), gray, fine to coarse, trace silt, trace rounded gravel, wet, dense. Dense stratified lenses of coarse sand over fine to medium sand. Strong hydrocarbon-like odor.
SB/S-7	100	17-50-50		35				33.0 to 34.5 feet: SAND (SP), brown, fine to coarse, wet, dense over brown SILT, moist, very dense. Slight hydrocarbon-like odor.
				40				Total depth sampled: 34.5 feet. Total depth drilled: 33.0 feet.

(See page 3 for Well Completion Details)

REMARKS
(1) SB = 3-inch outside diamter split barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) Blow counts do not represent SPT results. (4) * = sample submitted to lab for analysis. (5) ATD = at the time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-9
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	3 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.92'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	34.50'
LOGGED BY	Jim Jakubiak	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				45				**WELL COMPLETION DETAILS:** 0 to 18.0 feet: 2-inch-diameter schedule 40 PVC blank riser pipe. 18.0 to 33.0 feet: 2-inch-diameter flush threaded schedule 40 PVC well screen with 0.010-inch machined slots and a 2-inch-diameter threaded end cap. 0 to 1.0 foot: Concrete. 1.0 to 16.0 feet: Bentonite chips hydrated with potable water. 16.0 to 34.5 feet: 10 - 20 Colorado Silica Sand.
				50				
				55				
				60				

REMARKS
(1) SB = 3-inch outside diamter split barrel sampler driven with a 300-pound hammer. (2) PID = photoionization detector results in parts per million. (3) Blow counts do not represent SPT results. (4) * = sample submitted to lab for analysis. (5) ATD = at the time of drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-10
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	1 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.42'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	40.00'
LOGGED BY	John North	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 0.25 foot: BRICK.
								0.25 to 3.5 feet: SANDY SILT AND SAND (SP-SM), fine to medium, light brown. (FILL)
SB/S-1	--	3-4-18		5				3.5 to 8.5 feet: SILTY SAND (SM), brown, fine to medium, trace fine gravel, scattered organics, moist, medium dense.
SB/S-2	--	4-7-6		10				8.5 to 13.5 feet: CLAYEY SILT (ML-CL), gray with mottling, moist, firm, thin layering.
								@ 11.0 feet: increasing sand.
SB/S-3	--	31-50/3"		15				13.5 to 18.5 feet: SANDY SILT (ML), brown, trace gravel, moist, hard.
								@ 16.0 feet: gravel lense.
SB/S-4	--	17-33-33		20				18.5 to 23.5 feet: SILTY SAND (SM), gray, fine to medium, trace fine to medium

REMARKS

(1) SB = 3-inch outside diameter split barrel sampler driven with a 300-pound hammer. (2) PID = Photoionization detector results in parts per million. (3) -- = not recorded. (4) Blow counts do not represent SPT results. (5) * = sample submitted to the lab for analysis.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-10
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	2 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.42'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	40.00'
LOGGED BY	John North	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								gravel, moist, medium dense.
SB/S-5*	--	9-42-46		25				23.5 to 28.5 feet: SAND (SP), gray, trace silt and gravel, moist, dense. Moderate hydrocarbon-like odor.
SB/S-6	--	13-47-50/1"		30				28.5 to 33.5 feet: SILTY SAND (SM), gray, little fines, trace fine gravel, wet, very dense.
SB/S-7	--	11-28-50/4"		35				33.5 to 38.5 feet: SILTY SAND/SANDY SILT (SM/ML), gray, thinly interbedded, fine to medium, wet, very dense.
SB/S-8	--	2-15-46		40				38.5 to 40.0 feet: SAND (SP), gray, medium, with silt, wet, medium dense.

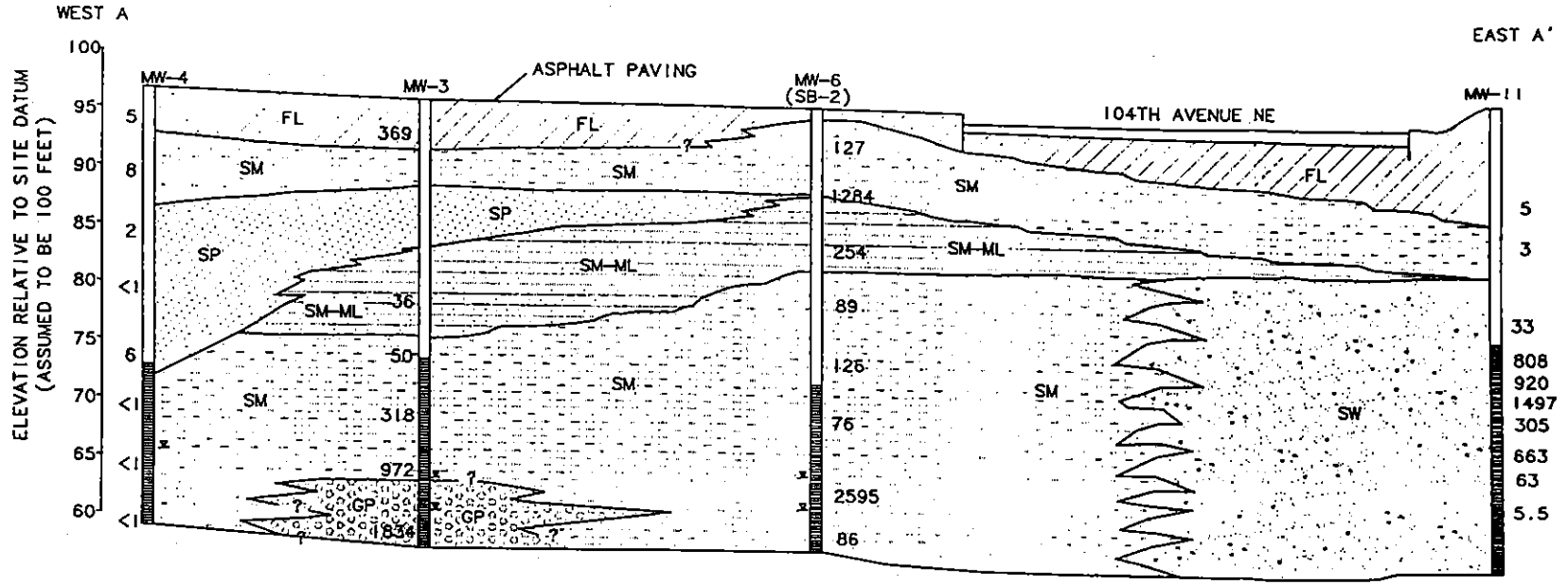
REMARKS
(1) SB = 3-inch outside diameter split barrel sampler driven with a 300-pound hammer. (2) PID = Photoionization detector results in parts per million. (3) -- = not recorded. (4) Blow counts do not represent SPT results. (5) * = sample submitted to the lab for analysis.

LOG OF EXPLORATORY BORING

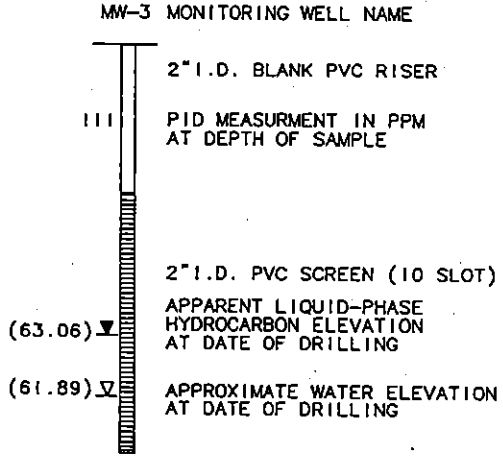
PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	MW-10
LOCATION	5 Bellevue Way, Bellevue, WA	PAGE	3 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	93.42'
DRILL METHOD	H.S. Auger	TOTAL DEPTH	40.00'
LOGGED BY	John North	DATE COMPLETED	03/27/91

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6-INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				45				Total depth sampled: 40.0 feet. Total depth drilled: 38.5 feet. **WELL COMPLETION DETAILS:** 0 to 24.0 feet: 2-inch-diameter schedule 40 PVC blank riser pipe. 24.0 to 49.0 feet: 2-inch-diameter flush threaded schedule 40 PVC well screen with 0.010-inch machined slots and a 2-inch-diameter threaded end cap. 0 to 1.0 foot: Concrete. 1.0 to 22.0 feet: Bentonite chips hydrated with potable water. 22.0 to 40.0 feet: 10 - 20 Colorado Silica Sand.
				50				
				55				
				60				

REMARKS
(1) SB = 3-inch outside diameter split barrel sampler driven with a 300-pound hammer. (2) PID = Photoionization detector results in parts per million. (3) -- = not recorded. (4) Blow counts do not represent SPT results. (5) * = sample submitted to the lab for analysis.



MONITORING WELL DETAIL:



LEGEND:

- FL FILL
- SM SILTY SAND
- SP SAND WITH TRACES OF SILT
- SM-ML INTERBEDDED SAND & SILT
- GP SANDY GRAVEL
- SW GRAVELLY SAND

HORIZONTAL SCALE:

0 20 40

SCALE (ft)

VERTICAL SCALE 1"=10'

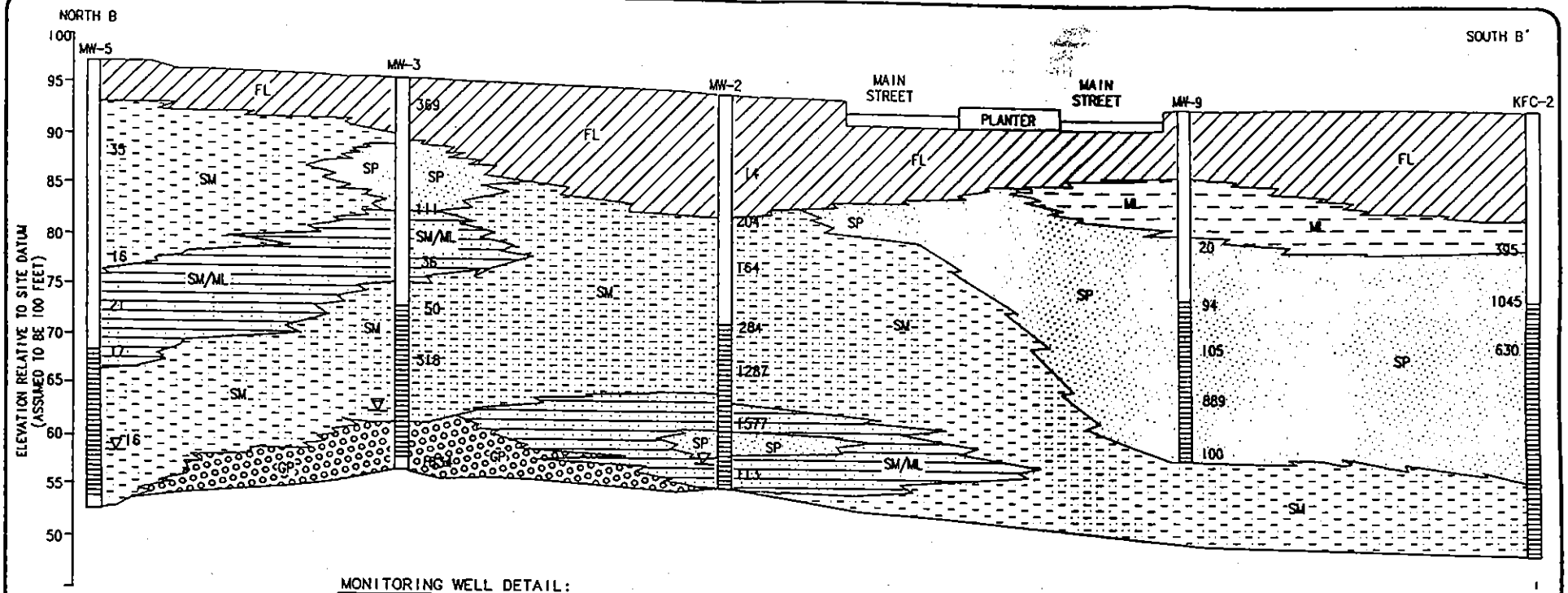
NOTE: ALL LITHOLOGIC CONTACTS ARE INFERRED. LIQUID PHASE HYDROCARBON AND WATER ELEVATIONS RELATIVE TO ARBITRARY SITE DATUM OF 100 FEET

EMCON Northwest, Inc.

DATE 6-93
DWN. JG
REV.
APPR.
PROJECT NO. 0324-015.93

Figure 3
UNOCAL SERVICE STATION #0587
BELLEVUE, WASHINGTON
GEOLOGIC CROSS SECTION A - A'

09-02-93 J:\DATA\DWG\0324\015\93C09



MONITORING WELL DETAIL:

MW-3 MONITORING WELL NAME

2"I.D. BLANK PVC RISER

111 PID MEASURMENT IN PPM AT DEPTH OF SAMPLE

2"I.D. PVC SCREEN (10 SLOT)

(63.06) APPARENT LIQUID-PHASE HYDROCARBON ELEVATION AT DATE OF DRILLING

(61.89) APPROXIMATE WATER ELEVATION AT DATE OF DRILLING

LEGEND:

FL	FILL
SM	SILTY SAND
SP	SAND WITH TRACES OF SILT
ML	SILT
SM-ML	INTERBEDDED SAND & SILT
GP	SANDY GRAVEL

HORIZONTAL SCALE:

0 20 40

SCALE (ft)

VERTICAL SCALE 1"=10'

NOTE: ALL LITHOLOGIC CONTACTS ARE INFERRED. LIQUID PHASE HYDROCARBON AND WATER ELEVATIONS RELATIVE TO ARBITRARY SITE DATUM OF 100 FEET

EMCON Northwest, Inc.

DATE 6-93
DWN. SDS
REV.
APPR.
PROJECT NO. 0324-015.93

Figure 4
UNOCAL SERVICE STATION #0587
BELLEVUE, WASHINGTON
GEOLOGIC CROSS SECTION B-B'

1= 20 08-04-93 J:\DATA\DWG\0324\015\93C10

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587	BORING NO.	MW- 7B
LOCATION	Bellevue, Washington	PAGE	1 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	Hollow-Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/28/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	LITHOLOGIC DESCRIPTION
			0 to 2-inches: ASPHALT.
			2.0 inches to 3.5 feet: SILTY SAND (SM), brown, fine sand, little to some silt, medium dense, damp. (FILL)
SS-1	1.3	7-10-16	3.5 to 35.0 feet: SAND with SILT and GRAVEL (SP-SM), brown, fine sand, little gravel, few silt, medium dense, damp. (GLACIAL TILL)
SS-2	1.3	17-50/ 5.5"	
SS-3		30-50/ 1.5"	@ 13.5 feet: no recovery.
SS-4	14	25-50/4"	@ 18.5 feet: gray, dense, trace silt, 4-inch of recovery.

GROUND WATER LEVELS | DEPTH IN FT. | SAMPLES | LITHOLOGIC COLUMN | WELL DETAILS

5 10 15 20

REMARKS

(1) PID = photoionization detector readings in parts per million. (2) SS = 2-inch O.D. split-spoon sampler. (3) * = submitted for analyses. (4) ATD = Depth to groundwater At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587 –	BORING NO.	MW- 7B
LOCATION	Bellevue, Washington	PAGE	2 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	Hollow-Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/28/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS-5		35-50/2"		25				
*SS-6	1.9	50/6" 50/2"		30				@ 28.5 feet: gravel to 2.5 inches diameter.
SS-7		100/3"	ATD	35				@ 33.5 feet: no recovery.
								35.0 to 40.0 feet: SAND WITH GRAVEL (SP), brown, fine sand, little to some gravel, very dense damp. (GLACIAL TILL)
SS-8		36-50/2"		40				@ 38.5 feet: color change to gray brown, wet.

REMARKS

(1) PID = photoionization detector readings in parts per million. (2) SS = 2-inch O.D. split-spoon sampler. (3) * = submitted for analyses. (4) ATD = Depth to groundwater At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587	BORING NO.	MW-7B
LOCATION	Bellevue, Washington	PAGE	3 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	Hollow-Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/28/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				45				Total depth drilled: 40.0 feet. Total depth sampled: 40.0 feet. WELL COMPLETION DETAILS: 0 to 20.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 20.0 to 40.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.010-inch machined slots and a 2-inch-diameter, flush-threaded end cap. 0 to 2.0 feet: Concrete. 2.0 to 18.0 feet: Bentonite chips hydrated with potable water. 18.0 to 40.0 feet: 10 - 20 Colorado silica sand.
				50				
				55				
				60				

REMARKS

(1) PID = photoionization detector readings in parts per million. (2) SS = 2-inch O.D. split-spoon sampler. (3) * = submitted for analyses. (4) ATD = Depth to groundwater At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587	BORING NO.	MW-11
LOCATION	Bellevue, Washington-	PAGE	1 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	8" Hollow Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/18/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 2.0 inches: ASPHALT
								2.0 inches to 11.5 feet: SAND with GRAVEL (SP), brown, fine sand, little to some fine to coarse gravel, medium dense, damp. (FILL)
				5				
SS-1	5	1-2-3						
				10				
SS-2	3	5-10-11						11.5 to 14.5 feet: SAND WITH SILT AND GRAVEL (SP-SM), brown, fine sand, little to some gravel, few fines, medium dense, damp.
SS-3	177	12-20-22						
				15				14.5 to 40.0 feet: SAND with GRAVEL (SP), brown, fine sand, little to some gravel, dense, damp, hydrocarbon-like odor. (GLACIAL TILL)
SS-4	33	22-31-50						@ 16.5 feet: color change to gray, very dense.
*SS-5	920	22-50						
				20				

REMARKS

(1) SS = 2-inch O.D. split-spoon sampler. (3) PID = photoionizatin detector readings in parts per million. (3) * = submitted for analyses.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587	BORING NO.	MW-11
LOCATION	Bellevue, Washington	PAGE	2 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	8" Hollow Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/18/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
SS-6	808	15-50/5"						
SS-7	1497	12-50/4"		25				
SS-8	305	29-50/6"						@ 26.5 feet: olive-brown fine sand, gravel to 2 inches diameter.
SS-9	663	19-50/6"		30				
SS-10	63	19-50/6"						@ 32.0 feet: moist.
SS-11	5.5	20-50/6"		35				@ 35.0 feet: wet.
SS-12	16	50/6" 50/2"						
				40				

REMARKS

(1) SS = 2-inch O.D. split-spoon sampler. (3) PID = photoionizatin detector readings in parts per million. (3) * = submitted for analyses.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587	BORING NO.	MW-11
LOCATION	Bellevue, Washington	PAGE	3 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	8" Hollow Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/18/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				45				Total depth drilled: 40.0 feet. Total depth sampled: 39.0 feet. **WELL COMPLETION DETAILS:** 0 to 20.0 feet: 4-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 20.0 to 40.0 feet: 4-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.020-inch-machined slots. 0 to 2.0 feet: Concrete. 2.0 to 18.0 feet: Bentonite chips hydrated with potable water. 18.0 to 40.0 feet: 10 - 20 Colorado silica sand.
				50				
				55				
				60				

REMARKS

(1) SS = 2-inch O.D. split-spoon sampler. (3) PID = photoionizatin detector readings in parts per million. (3) * = submitted for analyses.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587	BORING NO.	MW-12
LOCATION	Bellevue, Washington	PAGE	1 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	6" Hollow Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/18/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOLOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 2.0 inches: ASPHALT.
								2-inches to 13.5 feet: SAND (SP), brown, fine sand, trace fines, medium dense, damp. (FILL)
SS-1	2.7	9-9-10						
				5				
SS-2	<1	3-4-3						
SS-3		3-2-2						
				10				
SS-4		4-2-3						
SS-5		3-2-2						13.5 to 21.0 feet: CLAYEY SAND (SC), blue-gray, fine to coarse sand, little to some fines, medium plasticity, soft, damp, hydrocarbon-like odor.
				15				
*22-6	++OR	6-13-15						
SS-7	1733	2-12-18						@ 18.5 feet: color changes to gray.
				20				

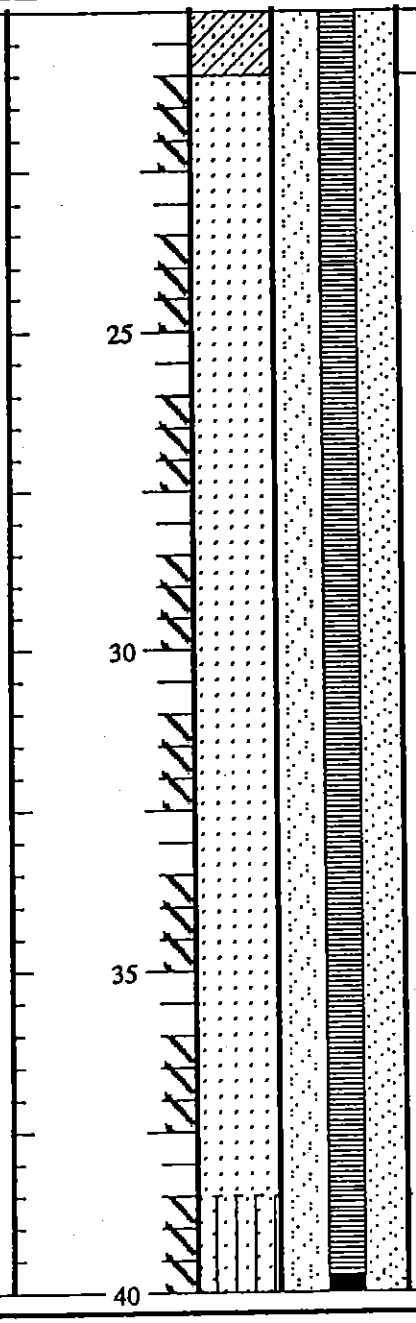
REMARKS

(1) PID = photoionization detector readings in parts per million. (2) SS = 2-inch-O.D. split-spoon sampler. (3) * = sample submitted for analyses. (4) ++ = overrange reading. (5) -- = PID reading not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587	BORING NO.	MW-12
LOCATION	Bellevue, Washington	PAGE	2 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	6" Hollow Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/18/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	LITHOLOGIC DESCRIPTION
SS-8	80	33-30-34	21.0 to 38.5 feet: SAND WITH GRAVEL (SP), blue-green, fine to medium sand, little to some gravel, very dense, damp.
SS-9	907	17-50/ 4.5"	@ 23.5 feet: increasing gravels, hydrocarbon-like odor.
SS-10	797	50-50/4"	@ 26.0 feet: light brown, increasing fine sand, trace medium sand, hydrocarbon-like odor, 2-inches of recovery.
SS-11	*2068	25-50/ 3.5"	@ 28.0 feet: mottled gray and brown.
SS-12	++OR	18-50/5"	@ 31.0 feet: no recovery.
SS-13	907	100/6"	@ 33.5 feet: gray, medium sand, wet.
SS-14	–	8-37- 50/5"	@ 36.0 feet: gray-brown, fine sand, damp.
SS-15	27	19-50/ 5.5"	38.5 to 40.0 feet: SILTY SAND (SM), brown, fine sand, little to some silt, dense, damp.



REMARKS
(1) PID = photoionization detector readings in parts per million. (2) SS = 2-inch-O.D. split-spoon sampler. (3) * = sample submitted for analyses. (4) ++ = overrange reading. (5) – = PID reading not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL SS 0587	BORING NO.	MW-12
LOCATION	Bellevue, Washington	PAGE	3 OF 3
DRILLED BY	Hayes Drilling	REFERENCE ELEV.	
DRILL METHOD	6" Hollow Stem Auger	TOTAL DEPTH	40.00'
LOGGED BY	Brian Carl	DATE COMPLETED	05/18/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
				45				Depth of well drilled = 40.0 feet. Depth of well sampled = 40.0 feet. WELL COMPLETION DETAILS: 0 to 20.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe. 20.0 to 40.0 feet: 2-inch-diameter, flush-threaded, schedule 40 PVC well screen, with 0.010-inch machined slots and a 2-inch-diameter, flush- threaded end cap. 0 to 2.0 feet: Concrete. 2.0 to 18.0 feet: Bentonite chips hydrated with potable water. 18.0 to 40.0 feet: 10 - 20 Colorado silica sand.
				50				
				55				
				60				

REMARKS

(1) PID = photoionization detector readings in parts per million. (2) SS = 2-inch-O.D. split-spoon sampler. (3) * = sample submitted for analyses. (4) ++ = overrange reading. (5) – = PID reading not recorded.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	KFC-3
LOCATION	Bellevue, Washington	PAGE	1 OF 3
DRILLED BY	Environmental West	REFERENCE ELEV.	
DRILL METHOD	Hollow-Stem Auger	TOTAL DEPTH	45.00'
LOGGED BY	Brian Carl	DATE COMPLETED	10/16/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								0 to 3-inches: ASPHALT.
								3-inches to 6.0 feet: SAND WITH GRAVEL (SP), brown, medium sand, little to some fine to medium gravel, dense, damp. (FILL)
				5				
								6.0 to 10.0 feet: SILTY SAND (SM), brown to gray, fine sand, little fines, dense, damp. (FILL)
				10				10.0 to 20.0 feet: SAND WITH GRAVEL (SP), brown, fine to medium sand, little to some fine to medium gravel, trace silt, dense, damp. (GLACIAL TILL)
SS-1	3.7	4-9-9		15				
SS-2	>1000	12-25-40		20				

REMARKS

(1) * = boring heaved from 45.0 to 44.0 feet. (2) PID = photoionization detector readings in parts per million. (3) SS = 2-inch O.D. split-spoon sampler. (4) ATD = depth to groundwater At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	EC-3
LOCATION	Bellevue, Washington	PAGE	F 3
DRILLED BY	Environmental West	REFERENCE E	
DRILL METHOD	Hollow-Stem Auger	TOTAL DEPTI	
LOGGED BY	Brian Carl	DATE COMPLETED	

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION
								20.0 to 24.0 feet: SAND WITH SILT AND GRAVEL (SP-SM), brown, fine to medium sand, little to some fine to medium gravel, few fines, very dense, damp, strong hydrocarbon-like odor. (GLACIAL TILL)
SS-3	288	20-27-50		25				24.0 to 35.0 feet: SAND (SP), gray, medium sand, very dense, damp. (GLACIAL TILL) @ 25.0 to 25.2 feet: interbed of fine sand with trace silt.
			ATD	30				
				35				35.0 to 45.0 feet: SILTY SAND (SM), gray, fine to medium sand, little to some silt, semi-plastic, very dense, wet. (GLACIAL TILL)
				40				

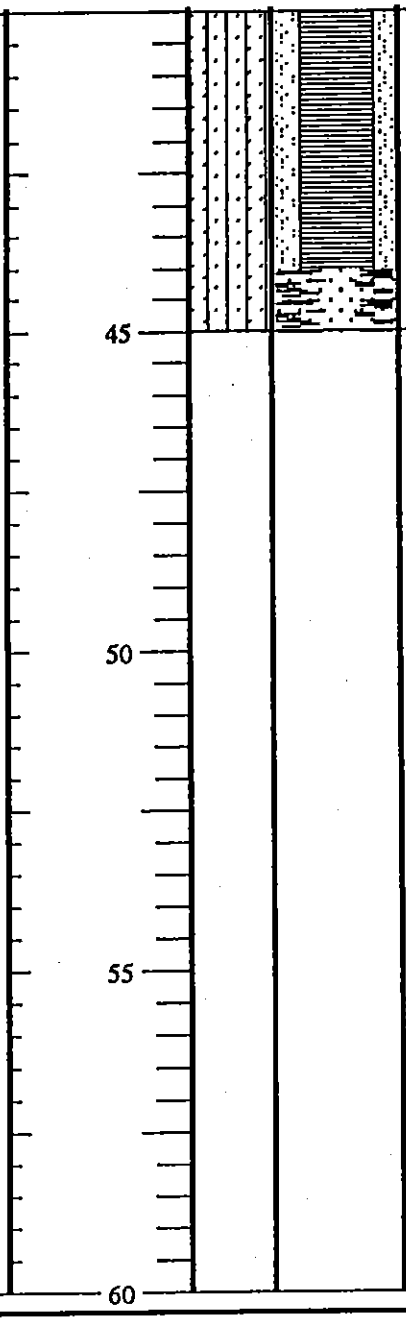
REMARKS

(1) * = boring heaved from 45.0 to 44.0 feet. (2) PID = photoionization detector readings in parts per million. (3) SS = 2-inch O.D. split-spoon sampler. (4) ATD = depth to groundwater At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME	UNOCAL Service Station 0587	BORING NO.	KFC-3
LOCATION	Bellevue, Washington	PAGE	3 OF 3
DRILLED BY	Environmental West	REFERENCE ELEV.	
DRILL METHOD	Hollow-Stem Auger	TOTAL DEPTH	45.00'
LOGGED BY	Brian Carl	DATE COMPLETED	10/16/92

SAMPLING METHOD AND NUMBER	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-LOGIC COLUMN	WELL DETAILS	LITHOLOGIC DESCRIPTION



Total depth drilled = 45.0 feet.
Total depth sampled = 26.0 feet.

WELL COMPLETION DETAILS:

0 to 19.0 feet: 4-inch-diameter, flush-threaded, schedule 40 PVC blank riser pipe.

*19.0 to 44.0 feet: 4-inch-diameter, flush-threaded, schedule 40 PVC well screen with 0.010-inch machined slots and a 4-inch-diameter flush- threaded end cap.

0 to 2.0 feet: Concrete.

2.0 to 16.5 feet: Bentonite chips hydrated with potable water.

16.5 to 44.0 feet: 10 - 20 Colorado Silica Sand.

44.0 to 45.0 feet: Slough.

REMARKS

(1) * = boring heaved from 45.0 to 44.0 feet. (2) PID = photoionization detector readings in parts per million. (3) SS = 2-inch O.D. split-spoon sampler. (4) ATD = depth to groundwater At Time of Drilling.