



Columbia Environmental Inc.

200 S. 333rd St. • Suite 120 • Federal Way, WA 98003 • Seattle 206/838-7261 Tacoma 206/927-1588 Fax 206/838-5744

January 13, 1997

Mr. Ray Foley
Shultz Distributing, Inc.
6851 East Marginal Way South
Seattle, WA 98124

RE: Monitoring Well Installation, Soil, and Groundwater Sampling
Port of Seattle, Terminal 115
Southwest Front Street &
West Marginal Way Southwest
Seattle, Washington
Project Number 96624-2

Dear Ray:

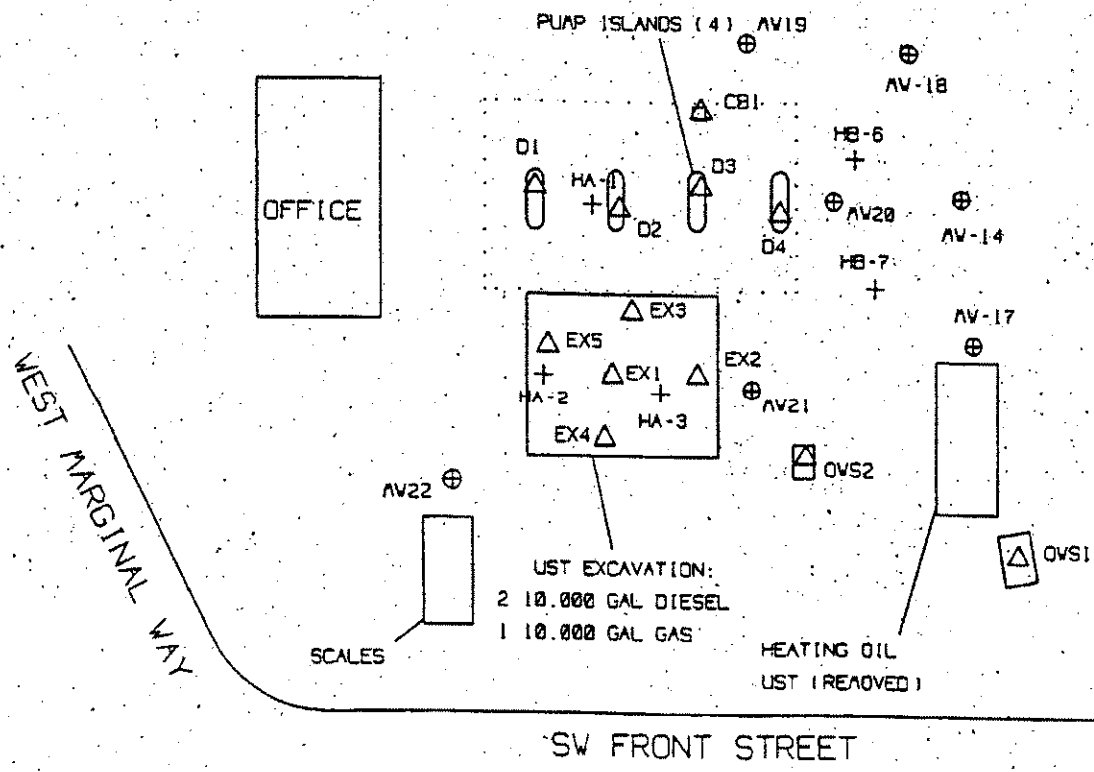
In response to your request, we have completed monitoring well installation, soil and groundwater sampling, and laboratory analysis at the Terminal 115 site in Seattle, Washington. The well installation and sampling was completed after construction, but prior to operation, of a cardlock petroleum dispensing facility on the property. The facility includes three underground storage tanks (USTs) and four pump islands. Two of the tanks will contain diesel fuel, and the third will contain unleaded gasoline.

The wells were installed in accordance with Port of Seattle requirements as stated in a letter to Shultz Distributing dated April 18, 1996. In addition to the three wells required by the Port, a monitoring well was installed to replace a well which was destroyed during construction. This fourth well was replaced at the expense of Lee Morse General Contractor, who constructed the facility.

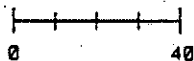
SCOPE OF WORK

The scope of work for this project was completed in accordance with our proposal dated April 26, 1996, as amended to include the fourth monitoring well, and included:

- The drilling of four test borings on the property, and the collection of soil samples from the borings.
- The installation of groundwater monitoring wells in the borings.
- The development and sampling of groundwater from three of the wells.
- Laboratory analysis of soil and groundwater samples.
- Preparation of this report.



SCALE



KEY

- ⊕ MONITORING WELL
- AV-12
- HA-1
- +
- △ GRAB SAMPLE
- EX1



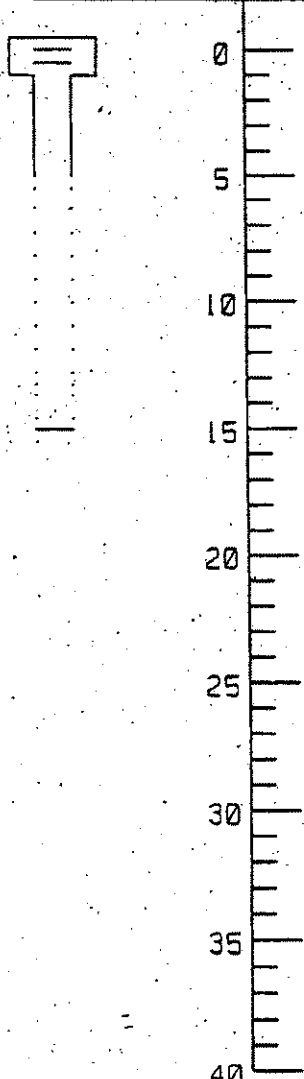
Reference: Site Plan by David Evans and Associates, 1/28/96.

<p>SITE PLAN Terminal 115 Seattle, Washington</p>	<p>Columbia Environmental, Inc. Project Number 96624-2 January 1997</p>
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MONITORING WELL MW19

MONITORING WELL DEPTH (FT.) SAMPLE BLOWS/FOOT GROUNDWATER USCS SOIL DESCRIPTION FIELD SCREENING

	0				CONCRETE SURFACE	
	5	1	2	▽	FILL LIGHT BROWN GRAVELLY SAND FILL. MOIST. LOOSE	HS - ND
	10	2	16	AH	LIGHT BROWN PLASTIC SILT. MOIST TO SATURATED. SOFT TO MEDIUM STIFF - NO RECOVERY 10" SAMPLE - BECOMES GRAY AT 7" - 3" FINE GRAINED SAND LENSE AT 15 FEET	HS - ND
15	3	10				
20						
25						
30						
35						
40						


- NOTES:**
- Sample numbering includes prefix indicating monitoring well or boring (e.g.: sample MW1-1 is sample 1 from monitoring well MW1).
 - Some silt soils encountered may be fill material native to general area.
 - HS = results of head space screening. Results in parts per million (ppm). ND denotes none detected.

SOIL/MONITORING WELL LOG Terminal 115 Seattle, Washington	Columbia Environmental, Inc. Project Number 96624-2 January 1997
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MONITORING WELL MW20

MONITORING WELL DEPTH (FT) SAMPLE BLOWS/FOOT GROUNDWATER USCS SOIL DESCRIPTION FIELD SCREENING


	0				DIRT SURFACE	
	5	1	6	▽	FILL	LIGHT BROWN GRAVELLY SAND FILL. MOIST. LOOSE
	10	2	6	AH	LIGHT BROWN PLASTIC SILT. MOIST TO SATURATED. SOFT TO MEDIUM STIFF	- NO RECOVERY 5' SAMPLE - BECOMES GRAY AT 7'
15	3	12			- BECOMES BROWN WITH WOOD FIBERS AT 16 FEET	HS • ND
20						
25						
30						
35						
40						

NOTES: - Sample numbering includes prefix indicating monitoring well or boring (e.g.: sample MW1-1 is sample 1 from monitoring well MW1).
 - Some silt soils encountered may be fill material native to general area.
 - HS = results of head space screening. Results in parts per million (ppm). ND denotes none detected.

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MONITORING WELL MW21

MONITORING WELL	DEPTH (FT)	SAMPLE	BLOWS/FOOT	GROUNDWATER LSCS	SOIL DESCRIPTION	FIELD SCREENING
	0				CONCRETE SURFACE	
	5	1	2	▽	FILL LIGHT BROWN, GRAVELLY SAND FILL, MOIST, LOOSE	HS • 10
	10	2	2		AH GRAY PLASTIC SILT, MOIST TO SATURATED, SOFT - DIESEL OOR IN 5' AND 10' SAMPLES	HS • 10
	15	3	21		- BECOMES BROWN WITH WOOD FIBERS AT 16 FEET	HS • ND
	20					
	25					
	30					
	35					
	40					

- NOTES:**
- Sample numbering includes prefix indicating monitoring well or boring (e.g.: sample MW1-1 is sample 1 from monitoring well MW1).
 - Some silt soils encountered may be fill material native to general area.
 - HS = results of head space screening. Results in parts per million (ppm). ND denotes none detected.

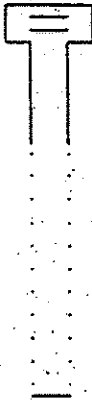
SOIL/MONITORING WELL LOG
 Terminal 115
 Seattle, Washington

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 January 1997



MONITORING WELL MW22

MONITORING WELL DEPTH (FT.) SAMPLE BLOWS/FOOT GROUNDWATER USCS SOIL DESCRIPTION FIELD SCREENING

	0				CONCRETE SURFACE	
	5	1	6	▽	FILL LIGHT BROWN, GRAVELLY SAND FILL: MOIST, LOOSE	HS - NO
	10	2	11	AH	GRAY PLASTIC SILT, MOIST TO SATURATED, SOFT TO STIFF - BECOMES BROWN WITH WOOD FIBERS AT 11 FEET	HS - NO
15	3	7			- DRILLED TO 17' PER POS REQUEST, 15' TO 17' - FILLED W/ BENTONITE	HS - NO
20						
25						
30						
35						
40						

NOTES: - Sample numbering includes prefix indicating monitoring well or boring (e.g.: sample MW1-1 is sample 1 from monitoring well MW1).
 - Some silt soils encountered may be fill material native to general area.
 - HS = results of head space screening. Results in parts per million (ppm). ND denotes none detected.

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TABLE A: SURVEY RESULTS
Project Number 96624-2

Monitoring Well	Coordinates	Casing Elevation	Depth to Groundwater*	Groundwater Elevation*
MW14	N:1057.81+ E:30482.72+	19.58+	NM	NM
MW17	N:1025.97+ E:30488.72+	19.81+	NM	NM
MW18	N:1089.78+ E:30466.39+	19.91+	NM	NM
MW19	N:1109.31# E:30445.61#	19.82#	NM	NM
MW20	N:1053.94# E:30449.57#	19.56#	5.47	14.09#
MW21	N:1009.64# E:30435.67#	20.06#	5.08	14.98#
MW22	N:968.83# E:30371.44#	19.75#	4.79	14.96#

Notes:

- * Measured on 12/19/96
- + Data provided by Port of Seattle.
- # Calculated using survey information and Port of Seattle data.
- All measurements in feet.
- Elevation measurements accurate to nearest 0.01 foot.
- Lateral (coordinate) measurements accurate to nearest 0.1 foot.
- NM indicates not measured.
- Measurements relative to Seattle Tide Lands Grid and Mean Low Low Water elevation.



Appendix B

Laboratory Results

TABLE B: SUMMARY OF ANALYTICAL RESULTS
Project Number 96624-2

Sample Number	Location	Analysis	Analyte	Results (ppm)	Cleanup Level (ppm)
Comp-1	Composite of soil from MW22	WTPH-Dext	Diesel/Oils	41	200
MW21-1	Soil from MW21, 6 feet	WTPH-Dext	Diesel/Oils	9,600	200
Comp-2	Composite of soil from MW20	WTPH-Dext	Diesel/Oils	77	200
Comp-3	Composite of soil from MW19	WTPH-Dext	Diesel/Oils	27	200
MW22	Groundwater from MW22	WTPH-G EPA 8020	Gasoline	ND	1
			Benzene	ND	0.005
			Toluene	ND	0.040
			EBenzene	ND	0.030
			Xylenes	ND	0.020
		WTPH-Dext	Diesel/Oils	ND	1
MW21	Groundwater from MW21	WTPH-G EPA 8020	Gasoline	ND	1
			Benzene	ND	0.005
			Toluene	ND	0.040
			EBenzene	ND	0.030
			Xylenes	ND	0.020
		WTPH-Dext	Diesel/Oils	0.97	1
MW20	Groundwater from MW20	WTPH-G EPA 8020	Gasoline	ND	1
			Benzene	ND	0.005
			Toluene	ND	0.040
			EBenzene	ND	0.030
			Xylenes	ND	0.020
		WTPH-Dext	Diesel/Oils	ND	1

Notes:

- 1) ppm denotes parts per million.
- 2) Cleanup levels are Method A cleanup levels as specified in the Model Toxics Control Act, WAC 173-340.
- 3) ND denotes none detected. Refer to laboratory report for analytical detection limits.

