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REMEDIATION SYSTEM STATUS REPORT

BP Oil Company Service Station No. 11050
2535 S. 320th Street
Federal Way, Washington

Project No. 20-06-08-020

Prepared for:

BP Oil Company
Environmental Resources Management
295 SW 41st Street
Building 13, Suite N
Renton, Washington

Prepared by:

Alisto Engineering Group
1145 - 12th Avenue NW, Suite C-2
Issaquah, Washington

January 28, 2000

Bill Dougherty
Project Engineer

Dave Cooper, R.G.
Project Geologist

TRANSMITTAL SLIP Date 3/6/00

To Tim Johnson – Tosco Seattle

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REMEDIATION SYSTEM STATUS REPORT

BP Oil Company Service Station No. 11050
2535 S. 320th Street
Federal Way, Washington

Project No. 20-06-08-020

January 28, 2000

INTRODUCTION

This report presents the results of remediation system activities performed from December 1997 to December 1999, by Alisto Engineering Group at BP Oil Company Service Station No. 11050 at 2535 S 320th Street, Federal Way, Washington A site plan is shown on Figure 1.

BACKGROUND

After a reported release of petroleum hydrocarbons from a product line north of the dispenser island, five vapor extraction wells were installed in 1992. A vapor extraction system was subsequently installed in 1994 and operated for approximately 3 months In mid-1990, eight air sparging wells were installed and a catalytic oxidizer and compressor were added to the vapor extraction system On July 23, 1997, the Puget Sound Air Pollution Control Agency (PSAPCA) issued an order of approval for system operation.

During station remodeling, however, portions of the original remediation system piping were either damaged or blocked by construction activities At present only 6 of the 8 sparging wells and 4 of the original 7 vapor extraction wells are in operation

SYSTEM START-UP AND PERFORMANCE

System start-up involved an extended period of troubleshooting and repairs Several problems were encountered during system startup but have since been corrected In February 1999, the air sparging system was started, of which only 6 of the 8 sparging wells were found to be useful or operational One sparging well installed under the store has not been started due to lack of vacuum influence and the potential for accumulation of vapors in the occupied area

The system has operated properly from February 1999 through December 1999 with regular site visits for monitoring, system adjustments and routine maintenance. Power failures have occurred and have caused system shutdowns on a few occasions. The system compressor is currently under repair and is expected to be online in the near future An operation and maintenance plan is included in Appendix A

RESULTS AND FINDINGS

The results and findings of the remediation system operation and groundwater sampling are as follows.

Remediation System Operation

- The air sparging/soil vapor extraction (AS/SVE) system has operated for approximately 240 days since September 1998. The average vapor extraction rate is approximately 40 cubic feet per minute (cfm), which is the combined flow rate from the four extraction wells operating at 25 inches of water

- The catalytic oxidizer has operated between 500 F and 700 F as specified in the PSAPCA Permit No 18273 The relative organic vapor concentration in the stack exhaust has not exceeded 25 parts per million (ppm)

- Total petroleum hydrocarbon (TPH) concentrations in the extracted soil vapor have decreased from 334 ppm in October 1998 to 22 ppm in December 1999.

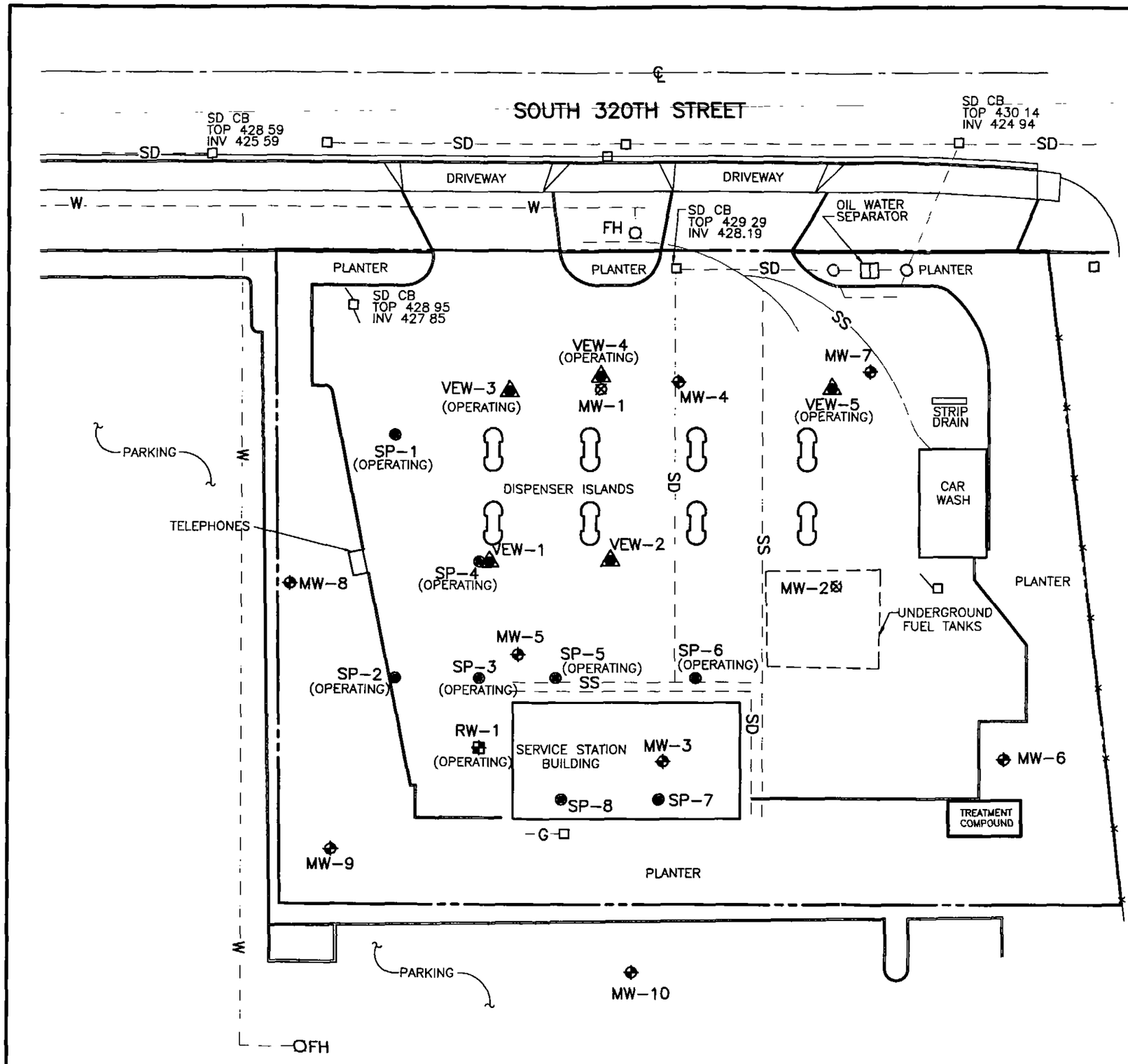
- Based on the operating cycles, and the TPH concentrations and flow rates measured during the September 1998 and December 1999 events, the estimated hydrocarbon recovery rate for the operating period was 0 5 pounds per day The estimated cumulative total TPH recovered by the AS/SVE system to date is approximately 117 pounds as calculated in Table 1.

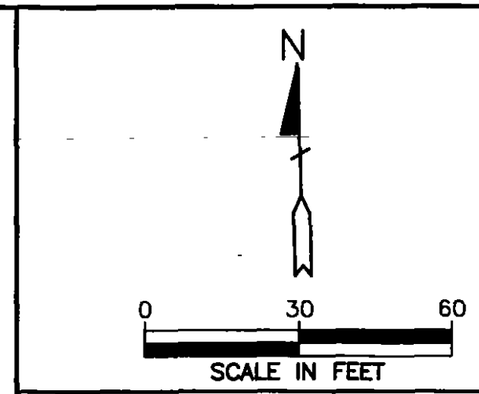
Groundwater Monitoring and Sampling

- The depth to water has historically ranged from a high of 9 65 feet to a low of 21 39 feet. The average annual water level fluctuation is approximately 4 feet The groundwater flow direction is generally to the south.

- In June 1998, prior to system start-up, the concentrations of TPH-G, benzene, toluene, ethyl-benzene, and xylenes (BTEX) detected in the sample from MW-5 were 75500 microgram per liter (µg/l), 9300 µg/l, 9600 µg/l, 3400 µg/l and 15300 µg/l, respectively. In January 2000, the concentrations of TPH-G and BTEX reported for the sample from MW-5 were 5800 µg/l, 1100 µg/l, 420 µg/l, 220 µg/l and 2400 µg/l, respectively This decreasing trend in hydrocarbon concentrations for the same period is also apparent in RW-1 and MW-9 as can be noted in Table 2.

- Liquid-phase petroleum hydrocarbon has historically been observed only in MW-10. The concentrations of dissolved TPH-G and BETX detected in all groundwater samples have either decreased or remained consistent with previous results





LEGEND

- GROUNDWATER MONITORING WELL
- GROUNDWATER RECOVERY WELL
- VAPOR EXTRACTION WELL
- AIR SPARGING POINT
- DESTROYED WELL (APPROXIMATE LOCATION)
- CATCH BASIN
- FIRE HYDRONT

- –W– WATER
- –SD– STORM DRAIN
- –SS– SANITARY SEWER
- –GAS– GAS

NOTE:
Utility elevations based on King County Datum

FIGURE 1

SITE PLAN

BP OIL SERVICE STATION NO. 11050
2535 SOUTH 320TH STREET
FEDERAL WAY, WASHINGTON

PROJECT NO. 20–006

ALISTO ENGINEERING GROUP
TUKWILA WASHINGTON

2000fig1.DWG 02-21-00 BKD 1=30

APPENDIX A

OPERATION AND MAINTENCE PLAN

BP OIL Company - SITE 11050
2535 S. 320th St.
Federal Way, Washington 98003

VAPOR EXTRACTION SYSTEM
100-CFM CATALYTIC OXIDIZER: MODEL H2-CO-100
Manufacturer: H2 OIL Recovery Equipment, Bend, Oregon

OPERATION AND MAINTENANCE PLAN

A. START UP

1. Propane system
   a Open all manual valves to burner.
   b. Check Propane tank volume

2. Power supply
   a. Turn on breakers in service panel.
   b. Turn unit panel switch to "ON", power light should come on.

3. Knock out
   a Drain knock out if necessary.
   b. Fully open dilution valve at knockout.

4. Signals
   a. Check pressure transmitter flow tubes for proper connection.

5. Unit Panel
   a. Reset switch on panel door.
   b. Reset Fire Eye, led light should be on.
   c. Blower should start immediately, if not turn system off and check blower starter overload.
   d. After 60 sec., the Fire Eye will fire burner (listen for clicks)
   e. Flame light on Fire Eye should come on.

6. Temperature
   a. Watch Omron Temperature rise and stabilize, gas MOV (Belimo) should partially close

7. VES well valves
   a. Crack open valves 2,3,4, (6), &7.
   b Slowly close dilution valve to increase vacuum on wells
   c. Try 10" ...20" 30" on wells and allow to stabilize
   b. If it does not stabilize press autotune on Texmate (hold enter key for 4 sec., look for red dot to light up)
   d Increase well vacuum until over temp becomes a problem

B. SYSTEM SHUTDOWN

1. Turn all switches on Unit panel to "OFF".

2. Turn all breakers in service panel to "OFF".

3. Close manual valves on propane supply piping.

4. Automatic shut down occurs when there is a flow failure or if the temperature goes outside the allowable range.

C. VES NORMAL OPERATION - Bi weekly visits

1. Verify operating temperature is between 500 - 700 F.

2. Sample well influent concentration and stack exhaust levels. Destruction efficiency should be least 90% and stack concentration should be less than 50 ppm

3. If system is operating below 500 F, decrease flow through dilution valve.

4. Check propane tank volume, call for delivery if necessary. Ferril Gas (800) 828-9450.

5. If system is shutdown go through start up procedure.

6. Check each well for vacuum, flow, and concentration.
   a. Vacuum: 10-40"
   b. Flow: >50 fpm
   c. Maximize well vacuum as system will allow (w/o overtemping)
   d Clear lines as necessary, pop cap on well to blow down line.

7. As adjustments are made allow system temperature to stabilize.

8. Inspect all equipment for general condition and proper performance.

9. Shutdown system if safety or emission performance is in question.

10 Any defective equipment shall be repaired immediately

11. Record all site activities in system log.

12. Review system performance on a quarterly basis.

Note As dilution valve airflow is reduced VES well air is increased. This supplies more "fuel" to the burner and increases temperature. As concentrations drop so does temperature, or propane consumption goes up.

AIR SPARGING SYSTEM

~~Palatek 20 ACFM compressor, Model # 5BE-1230~~
AEG Modicon PLC

A. START UP

1 Check oil level in side panel with system off and verify maintenance is current as explained in manual.

2 Close all needle valves on flow meters.

3. Turn on power to PLC and compressor The compressor has a 3-position switch, turn to intermittent.

4. Adjust regulator to 20psi and crack open needle valves to supply air to the wells.

B. SYSTEM SHUTDOWN

1. Turn 3-position switch on compressor to OFF.

C. AS NORMAL OPERATION - Bi weekly visits

1 Record air pressure and flow on wells. Note: PLC cycles 2 wells on a half-hour basis.
   a. Air pressure range: 12-30 psi
   b. Flow range: 1-5 CFM

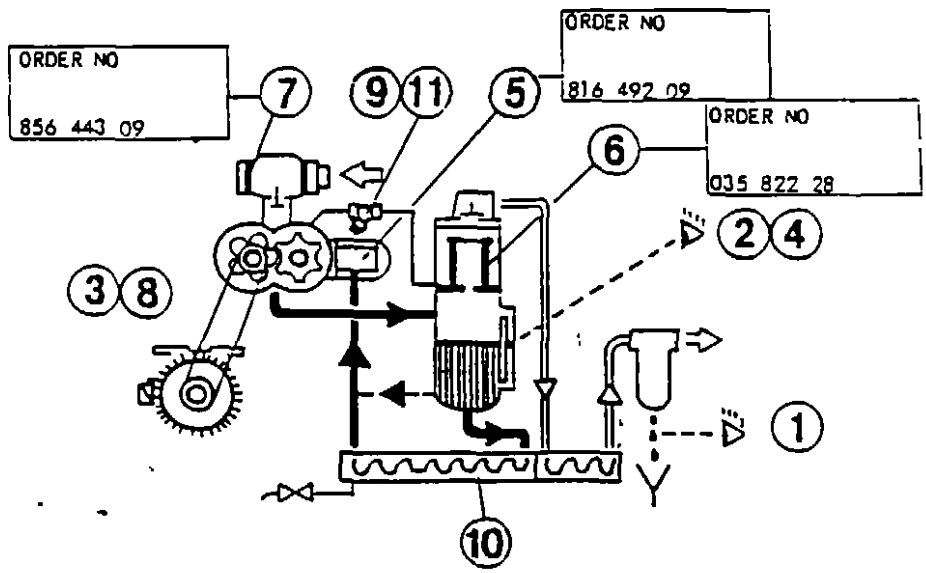
2. Adjust needle valves and pressure regulator as necessary to optimize airflow.

3 Check oil level and follow maintenance plan as specified.

4. Clear water trap.

Maintenance instruction

PROCEDURE	DAILY	WEEKLY	AFTER FIRST 100H	EVERY 1500H	EVERY 3000H	WHEN NEEDED
1. Check water drap	*					
2. Check oil level		*				
3. Check belt tightness			*		*	
4. Change oil			*	*		
5. Change oil filter			*	*		
6. Change oil reclaimer					*	
7. Change air inlet filter					*	
8. Change belts						*
9. Clean strainer					*	*
10. Clean cooler surfaces				*		*
11. Clean restrictor hole in oil return pipe						*



APPENDIX B

SUMMARY TABLES

TABLE 1 - SUMMARY OF RESULTS OF SOIL VAPOR EXTRACTION
BP OIL COMPANY SERVICE STATION NO 11050
2535 SOUTH 320th STREET, FEDERAL WAY, WASHINGTON

ALISTO PROJECT NO 20-006

DATE	WELL FLOW RATE (cfm)	PID READING (ppm)	CAT OX TEMP (F)	NUMBER OF OPERATING DAYS	Relative TPH RECOVERY RATE (pounds/day)	Relative TPH CUMULATIVE RECOVERY (pounds)
9/2/98				start-up		
9/10/98	---	(a)	560	8		
9/30/98	---	(a)	518	20		
10/8/98	25	334	535	8	3 18	25
11/4/98	---	(a)	500	27		
11/23/98	---	(a)	508	7 (b)		
12/4/98	---	(a)	553	7 (b)		
12/14/98	45	(a)	620	10		57
12/28/98	34	(a)	552	7 (b)		
1/6/99	27	(a)	577	9		
2/11/99	26	(a)	520	14 (b)		
2/12/99	17	72	525	1	0 47	60
2/26/99	17	72	527	14	0 47	
3/5/99	15	127	535	7	0 73	64
3/9/99	---	(a)	516	2 (b)		
3/19/99	26	114	523	10	1 13	71
3/24/99	40	(a)	520	5		
4/1/99	40	(a)	515	8		
4/12/99	41	104	525	11	1 62	83
4/29/99	46	(a)	558	8 (b)		
5/11/99	46	32	545	12	0 56	103
6/4/99	---	(a)	590	24		
7/18/99	---	(a)	500	14 (b)		
8/3/99	---	(a)	567	16		
8/19/99	47	(a)	570	8 (b)		
8/26/99	44	17	551	7	0 28	107
9/3/99	---	(a)	567	8		
12/3/99	43	22	525	28	0 36	115
12/9/99	---	(a)	505	6		117
Total operating days				239		

ABBREVIATIONS

PID	Photoionization detector
TPH	Total Petroleum Hydrocarbons
cfm	Cubic feet per minute
ppm	Parts per million
µg/l	Micrograms per liter
---	Not analyzed/measured/applicable

NOTES

(a) No reading taken due to system fluctuation

(b) Estimated days before automatic shutdown

(c) Recovery rates are based on relative PID readings

TABLE 2 SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO 11050
2535 SOUTH 320th STREET FEDERAL WAY WASHINGTON

ALISTO PROJECT NO 20-006

WELL ID		DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	PRODUCT THICKNESS (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	(a)	WTPH-D (ug/l)	WTPH-G (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)	Total Lead (ug/l)	Dissolved Lead (ug/l)	Turbidity (NTU)	Dissolved Oxygen (%-ppm)	Lab
MW 3		9/18/91	100 51	0	15 21	85 30		—	—	—	—	—			-	-		—	
MW 3		9/20/91		0	18 72	81 79		—	—	—	—	—	—	—	"	"	"	—	—
MW 3		10/18/91		0	19 67	80 84		—	—	—	"	—	-	—	-	"	—	—	—
MW 3		3/11/92		0	16 10	84 41		1 700	150,000	15 000	29 000	4 100	12 000	—	20	—	150	—	"
MW 3		3/7/94		0	15 99	84 52		2 600	100 000	13 000	26 000	3 300	17 000	—	19	18	82	—	-
MW 3		7/22/94		0	17 50	83 01		1700	130000	10000	17000	3800	11000	—	-	—	-	3	"
MW 3		10/20/94		0	19 47	81 04		1100	29000	4800	720	1600	4100	—	—	—	-	1	"
MW 3	(b)	12/29/94		0	15 82	84 69		-	—	—	"	"	—	—	-	—	"	—	"
MW 3	(b)	3/20/95		slight sheen	15 67	84 84		"	—	—	—	—	"	—	"	—	—	—	"
MW 3	(c)	7/14/95		-	—	—		—	—	—	—	—	"	-	—	—	—	—	-
MW-4		9/18/91	98 74	0	17 38	81 36		—	—	—	"	—	—	—	—	—	-	—	—
MW-4		9/20/91		0	15 93	82 81		—	—	—	—	—	—	—	—	—	—	—	—
MW-4		10/18/91		0	17 65	81 09		—	—	—	—	—	—	—	—	—	—	—	—
MW-4		3/11/92		0	12 05	86 69		<500	<100	<0 5	<0 5	<0 5	<0 5	-	<3	-	57	—	—
MW-4		3/7/94		0	11 77	86 97		<250	<100	<0 5	<0 5	<0 5	<0 5	—	<3	<3	48	—	—
MW-4		7/22/94		0	14 16	84 58		<250	<100	<0 5	<0 5	<0 5	<0 5	-	—	-	—	42	—
MW-4		10/20/94		0	15 92	82 82		—	<100	0 7	0 M	<0 5	1 0	—	—	—	—	35	"
MW 4		12/29/94		0	11 13	87 61		—	<100	<0 5	<0 5	<0 5	—	—	-	—	—	11	—
MW-4		3/20/95		0	11 23	87 51		—	<100	0 92	<0 5	<0 5	<0 5	-	—	—	—	5	-
MW-4		7/14/95		0	12 51	86 23		—	<100	<0 5	<0 5	<0 5	<0 5	"	-	—	—	3	—
MW-4		9/20/95		0	12 29	86 45		—	<100	<0 5	<0 5	<0 5	<0 5	-	-	—	—	2	—
MW-4		12/19/95		0	9 86	88 88		—	<100	<0 5	<0 5	<0 5	<0 5	—	—	—	—	3	—
MW 4		3/18/96		0	11 01	87 73		—	<100	0 5	1 0	<0 5	<0 5	-	—	—	—	5	—
MW 4		6/25/96		0	11 70	87 04		—	<100	<0 5	<0 5	<0 5	<0 5	"	—	—	—	8	—
MW-4		9/13/96		0	11 84	86 90		—	<100	<0 5	<0 5	<0 5	<0 5	<1 0	—	—	—	6	—
MW 4		12/13/96		0	10 05	88 69		—	<100	0 9	<0 5	<0 5	<1 5	<10	"	—	—	11	-
MW-4		3/21/97		0	9 65	89 09		—	<100	<0 5	<0 5	<0 5	<1 5	<5	—	—	—	6	—
MW-4		6/15/97		0	10 96	87 78		—	<100	<0 5	<0 5	<0 5	<1 5	<5	—	—	—	4	—
MW-4		9/12/97		0	12 11	86 63		—	<100	<0 5	<0 5	<0 5	<1 5	<5	—	—	—	14%	-
MW-4		3/4/98		0	10 46	88 28		—	<100	0.6	<0 5	<0 5	<1 5	<5	—	—	—	0 4ppm	—
MW 4		6/10/98		0	11 45	87.29		—	<100	<0 5	<0 5	<0 5	<1 5	<5 0	—	—	—	0 7ppm	AEN
MW 4		9/30/98		0	15 21	83 53		—	—	—	—	—	—	"	—	—	—	—	-
MW 4		12/14/98		0	9 81	88 93		—	—	—	—	—	—	"	—	—	—	—	-
MW 4		3/23/99		0	9 79	88 95		—	—	—	—	—	—	"	"	—	—	—	—
MW 4		6/23/99		0	12 37	86 37		—	—	—	—	—	—	-	-	-	-	—	—
MW-4		10/4/99		0	11 81	86 93		—	—	—	—	—	—	-	-	-		—	—
MW-4		1/11/00		0	9 71	89 03		—	—	-	—	—	—	—	—	—	-	—	"
MW 5		9/18/91	99 64	0	21 33	78 31		—	—	—	—	—	—	-	"	—	—	—	—
MW 5		9/20/91		0	20 66	78 98		—	—	—	—	—	—	—	—	—	"	—	-
MW 5		10/18/91		0	22 30	77 34		—	—	—	—	—	—	—	—	—	-	—	—
MW 5		3/11/92		0	17 04	82 60		1 600	46 000	14 000	5,400	1 800	4 700	-	<3	—	33	—	-
MW 5		3/7/94		0	16 61	83.03		1 800	72 000	15 000	9 100	1 400	6 700	-	3	<3	35	—	-
MW 5		7/22/94		0	19 20	80 44		2 100	60000	18000	13000	1900	8500	-	—	—	-	4	—
MW 5		10/20/94		0	21 39	78 25		2 000	97000	17000	11000	2700	7300	-	—	—	—	4	-
MW 5		12/29/94		0	15 89	80 75		—	90000	14000	11000	2600	12000	—	—	—	—	1	—
MW 5		3/20/95		0	15 80	83 84		—	81000	16000	11000	1700	7800	-	—	—	—	7	—
MW 5		7/14/95		0	18 35	81 29		—	34000	12000	8600	1000	4800	"	—	—	—	6	—
MW 5		9/20/95		0	18 72	80 92		—	54000	14000	10000	1500	7100	-	—	—	—	2	—
MW 5		12/19/95		0	15 58	84 06		—	91000	15000	16000	2500	13000	—	—	—	—	3	—
MW 5		3/18/96		0	16 31	83 33		—	91000	16000	15000	2400	12000	-	—	—	—	4	—
MW 5		6/25/96		0	16 95	82 69		—	60000	14000	10000	2100	9500	"	—	—	—	7	"
MW 5		9/13/96		0	17 17	82 47		—	70000	13000	9400	2300	10000	55	—	—	—	9	—
MW 5		12/13/96		0	15 36	84 28		—	61000	10300	7200	1300	6200	18	—	—	—	4	—
MW 5		3/21/97		0	15 11	84 53		—	120000	10000	11000	2500	13000	<5	—	—	—	5	—
MW 5		6/15/97		0	16 30	83 34		—	80000	9800	9500	2100	10000	<50	—	—	—	6	—
MW 5		9/12/97		0	17 46	82 18		—	43000	12000	7800	2400	10000	<50	—	—	—	9%	—
MW 5		3/4/98		0	15 56	84 09		—	370000	29100	24300	12200	24300	<2500	—	—	—	0 3ppm	—
MW 5		6/10/98		0	16 40	83 24		—	75500	9300	9500	3400	15300	<2500	—	—	-	0 8ppm	AEN
MW 5		9/30/98		0	19 02	80 62		—	70000	6800	5600	2400	11000	<100	—	-	-	0 1ppm	SPL
MW 5		12/14/98		0	14 98	84 66		—	70000	5400	6400	2300	12000	<25	—	—	—	4 9ppm	SPL
MW 5		3/23/99		0	13 28	86 36		—	290	22	3 8	9 2	43	<1 0	—	—	—	—	SPL
MW 5		6/23/99		0	20 41	—		—	29000	2200	2500	800	5300	<5 0	—	—	—	—	SPL
MW 5		10/4/99		0	14 00	85 64		—	<100	<1 0	<1 0	<1 0	1	<1 0	—	—	-	—	SPL
MW 5		1/11/00		0	15 04	84 60		—	5800	1100	420	220	2400	18	—	—	-	—	PACE

TABLE 2 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO 11050
2535 SOUTH 320th STREET FEDERAL WAY WASHINGTON

ALISTO PROJECT NO 20-006

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	PRODUCT THICKNESS (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	(a)	WTPH-D (ug/l)	WTPH-G (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)	Total Lead (ug/l)	Dissolved Lead (ug/l)	Turbidity (NTU)	Dissolved Oxygen (%-ppm)	Lab
MW 8	3/11/92	95 76	0	10 62	86 14		<500	<100	1 4	<0 5	<0 5	0 8	—	<3	—	150	—	—
MW 8	3/7/94		0	10 12	86 64		<250	540	0.5	<0 5	0 7	5 1	—	<3	<3	85	—	—
MW 8	7/22/94		0	11 62	85 14		<250	780	57	90	29	90	—	—	—	—	4	—
MW-8	10/20/94		0	12 20	84 56		—	120	0 9	0 7	0 8	2 9	—	—	—	—	59	—
MW-8	12/29/94		0	9 93	86 83		—	<100	<0 5	<0 5	<0 5	<0 5	—	—	—	—	38	—
MW-8	3/20/95		0	10 14	86 62		—	<100	<0 5	<0 5	<0 5	<0 5	—	—	—	—	1	—
MW-8	7/14/95		0	11 24	85 52		—	<100	2 4	<0 5	5 4	5 8	—	—	—	—	4	—
MW-8	9/20/95		0	10 59	86 17		—	<100	<0 5	<0 5	<0 5	<0 5	—	—	—	—	3	—
MW 8	12/19/95		0	9 99	86 77		—	<100	<0 5	<0 5	<0 5	<0 5	—	—	—	—	4	—
MW-8	3/18/96		0	10 60	86 16		—	<100	3 1	<0 5	<0 5	<0 5	—	—	—	—	6	—
MW-8	6/25/96		0	10 73	86 03		—	500	25	92	21	99	—	—	—	—	4	—
MW-8	9/13/96		0	10 58	86 18		—	<100	<0 5	<0 5	2 7	2 1	<1 0	—	—	—	7	—
MW-8	12/13/96		0	10 22	86 54		—	<100	3 4	2 3	0 6	2 6	<10 0	—	—	—	6	—
MW 8	3/21/97		0	10 02	86 74		—	<100	<0 5	1 0	0 5	2 5	<5	—	—	—	7	—
MW 8	6/15/97		0	10 64	86 12		—	<100	<0 5	<0 5	<0 5	<1 5	<5	—	—	—	4	—
MW 8	9/12/97		0	11 17	85 59		—	<100	0 8	<0 5	9 1	25	<5	—	—	—	11%	—
MW 8	3/4/98		0	10 46	86 30		—	<100	<0 5	<0 5	<0 5	<1 5	<5	—	—	—	0 5ppm	—
MW 8	6/10/98		0	10.86	85 90		—	250	4.2	<0 5	25	26	<5 0	—	—	—	0 8ppm	AEN
MW 8	9/30/98		0	12 41	84 35		—	—	—	—	—	—	—	—	—	—	—	—
MW 8	12/14/98		0	10 02	86 74		—	—	—	—	—	—	—	—	—	—	—	—
MW 8	3/23/99		0	9.90	86 86		—	—	—	—	—	—	—	—	—	—	—	—
MW 8	6/23/99		0	11 41	85 35		—	2400	6 2	<1 0	93	200	<1 0	—	—	—	—	SPL
MW 8	10/4/99		0	11 02	85 74		—	—	—	—	—	—	—	—	—	—	—	—
MW 8	1/11/00		0	9 44	87 32		—	—	—	—	—	—	—	—	—	—	—	—
MW-9	3/11/92	95 13	0	12 15	82 98		<500	3 700	770	19	220	750	—	<3	—	150	—	—
MW-9	3/7/94		0	11 06	84 07		<250	<100	0 6	<0 5	<0 5	1 6	—	56	<3	1 100	—	—
MW 9	7/22/94		0	13 57	81 56		290	4800	320	53	190	670	—	NT			2	—
MW-9	10/20/94		0	14 45	80 88		—	2900	120	4 3	47	220	—	NT	—	—	28	—
MW-9	12/29/94		0	10 61	84 52		—	<100	4 1	0 7	1 7	7 3	—	NT	—	—	1	—
MW-9	3/20/95		0	11 45	83 68		—	2200	290	5 7	89	400	—	NT	—	—	1	—
MW 9	7/14/95		0	13 60	81 53		—	7700	680	11	290	1 100	—	NT	—	—	4	—
MW-9	9/20/95		0	11 69	83 44		—	210	27	<0 5	6 4	35	—	NT	—	—	1	—
MW-9	12/19/95		0	11 45	83 68		—	380	55	0 6	17	77	—	NT	—	—	3	—
MW-9	3/18/96		0	12 33	82 80		—	8300	1200	86	290	1200	—	NT	—	—	4	—
MW-9	6/25/96		0	12 62	82 51		—	7500	1900	450	460	1800	—	NT	—	—	8	—
MW 9	9/13/96		0	12 02	83 11		—	200	39	0 7	3 6	29	5 5	NT	—	—	5	—
MW-9	12/13/96		0	11 44	83 69		—	220	41	9 5	6 7	38	<10	NT	—	—	5	—
MW-9	3/21/97		0	10 95	84 18		—	600	190	20 0	33 0	89	<5	NT	—	—	6	—
MW 9	6/15/97		0	12 26	82 87		—	1500	380	8 5	94 0	350	<50	NT	—	—	6	—
MW 9	9/12/97		0	13 02	82 11		—	5200	1 300	19 0	420 0	1 200	<100	NT	—	—	11%	—
MW 9	3/4/98		0	12 17	82 96		—	560	130	12 0	38 0	85	<100	NT	—	—	0 4ppm	—
MW 9	6/10/98		0	12 57	82 56		—	2800	400	<10	230	430	190	NT	—	—	0 8ppm	AEN
MW 9	9/30/98		0	13 55	81 58		—	—	—	—	—	—	—	—	—	—	—	—
MW 9	12/14/98		0	11 30	83 83		—	<100	5 8	<1 0	2 4	4 0	<1 0	—	—	—	0 5ppm	SPL
MW 9	3/23/99		0	10 30	84 83		—	—	—	—	—	—	—	—	—	—	—	—
MW 9	6/23/99		0	13.27	81 86		—	2300	620	<5 0	130	160	<5.0	—	—	—	—	SPL
MW 9	10/4/99		0	12 91	82 22		—	—	—	—	—	—	—	—	—	—	—	—
MW 9	1/11/00		0	10 91	84 22		—	250	79	1 0	29	20	2 0	—	—	—	—	PACE

TABLE 2 SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO 11050
2535 SOUTH 320th STREET FEDERAL WAY WASHINGTON

ALISTO PROJECT NO 20-006

WELL ID		DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	PRODUCT THICKNESS (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	(a)	WTPH-D (ug/l)	WTPH-G (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)	Total Lead (ug/l)	Dissolved Lead (ug/l)	Turbidity (NTU)	Dissolved Oxygen (%-ppm)	Lab
MW 10		3/11/92	95 70	0	12 84	82 86		2 200	72 000	4 100	5 900	2 400	12 000	—	10	-	250	—	—
MW 10		3/7/94		0	12 92	82 78		3 600	56 000	4 100	500	1 600	6 500	—	5 1	<3	220	—	—
MW 10		7/22/94		0	14 12	81 58		1800	71000	6200	1500	2900	13000	—	--	—	—	4	—
MW 10		10/20/94		0	15.48	80 22		3800	81000	5600	770	3100	7800	—	—	—	—	6	—
MW 10	(b)	12/29/94		0	12 71	82 99		—	—	—	—	—	—	—	—	—	—	—	—
MW 10	(b)	3/20/95		sheen	12 36	83 34		—	—	—	—	—	—	—	—	—	—	—	—
MW 10	(b)	7/14/95		sheen	14 27	81 43		—	—	—	—	—	—	—	—	—	—	—	—
MW 10	(b)	9/20/95		sheen	13 23	82 47		—	—	—	—	—	—	—	—	—	—	—	—
MW 10		12/19/95		sheen	12 36	83 34		—	57000	4400	180	2600	11000	—	--	--	—	4	—
MW 10		3/18/96		0	12 83	82 87		—	56000	4200	77	2000	8100	—	--	--	—	6	—
MW 10	(b)	6/25/96		sheen	13 37	82 33		—	—	—	—	—	—	—	—	—	—	—	—
MW 10	(b)	9/13/96		0	13 31	82 39		—	—	—	—	—	—	—	—	—	—	—	—
MW 10	(b)	12/13/96		sheen	12 67	83 03		—	—	—	—	—	—	—	—	—	—	—	—
MW 10	(b)(d)	3/21/97		sheen	—	—		—	—	—	—	—	—	—	—	—	—	—	—
MW 10	(b)(d)	6/15/97		sheen	—	—		—	—	—	—	—	—	—	—	—	—	—	—
MW 10	(d)	9/12/97		sheen	13.81	81.89		—	8200	3300	46	810	590	<250	—	—	—	6%	—
MW 10	(d)	3/4/98		sheen	13 14	82 56		—	10000	3200	110	1000	630	<250	—	—	—	0 4ppm	—
MW 10	(d)	6/10/98		sheen	13 60	—		—	9800	2700	37	1000	590	330	—	—	—	—	AEN
MW 10	(d)	9/30/98		spotty sheen	14 45	—		—	15000	2800	60	1100	950	<25	—	—	—	0 1ppm	SPL
MW 10	(d)	12/14/98		sheen	12 75	—		—	50000	3200	2500	2100	6000	<50	—	—	—	—	SPL
MW 10	(d)	3/23/99		spotty sheen	12 21	—		—	22000	3500	71	1700	2300	<10	—	—	—	—	SPL
MW 10	(d)	6/23/99		sheen	13 45	—		—	16000	3100	32	1500	1400	24	—	—	—	—	SPL
MW 10	(d)	10/4/99		—	—	—		—	—	—	—	—	—	—	—	—	—	—	—
MW 10		1/11/00		sheen	11 48	84 22		—	14000	960	450	610	1900	6 0	—	—	—	—	PACE
RW 1		9/20/95	99 75	—	—	—		—	40000	16000	6900	1000	5200	-	—	—	—	1	--
RW 1		12/19/95		—	—	—		—	44000	15000	8200	1400	6200	—	—	—	—	3	--
RW 1		3/18/96		0	16 03	83 72		-	68000	19000	10000	1700	7200	—	—	—	—	5	—
RW 1		6/25/96		0	16 44	83 31		—	55000	18000	9400	1300	5900	--	—	—	—	6	—
RW 1		9/13/96		0	16 25	83.50		—	50000	20000	14000	2100	9700	56	—	—	—	14	—
RW 1		12/13/96		0	15 50	84 25		—	41000	11400	6900	530	2800	11	—	—	—	5	—
RW 1		3/21/97		0	15 00	84 75		—	38000	14000	9700	1700	7900	<5	—	—	—	4	—
RW 1		6/15/97		0	15 98	83 77		—	57000	14000	11000	1800	7500	<50	—	—	—	6	—
RW 1		9/12/97		0	16 74	83 01		—	53000	17000	11000	1800	9000	<500	—	—	—	7%	—
RW 1		3/4/98		0	15 85	83 90		—	62300	16500	8700	2100	11400	<2500	—	—	—	0 3ppm	-
RW 1		6/10/98		0	16 18	83 57		—	65500	14900	10500	2400	12200	<2500	—	—	—	0 8ppm	AEN
RW 1		9/30/98		0	17 00	82 75		—	58000	11000	6300	1700	8500	<100	—	—	—	—	SPL
RW 1		12/14/98		0	9 35	--		—	<100	21	<1 0	2 2	6 8	<1 0	—	—	—	—	SPL
HW 1		3/23/99		0	12 78	—		—	<100	1 9	<1 0	<1 0	1 2	<1.0	—	—	—	—	SPL
RW 1		6/23/99		0	17 55	--		—	16000	4700	840	780	2800	<5 0	—	—	—	—	SPL
RW 1		10/4/99		0	16.06	83 69		—	600	99	32	15	81	<1.0	—	—	—	—	SPL
RW 1		1/11/00		0	14 54	85 21		—	1700	930	52	39	320	<0 5	—	—	—	—	PACE
TB	(e)	6/10/98		—	—	—		—	<100	<0 5	<0 5	<0 5	<1 5	<5.0	—	—	—	—	AEN
TB	(e)	9/30/98		—	—	—		—	<100	<1.0	<1 0	<1 0	<1 0	<1.0	—	—	—	—	SPL
TB	(e)	12/14/98		—	—	—		—	<100	<1.0	<1 0	<1 0	<1 0	<1.0	—	—	—	—	SPL
TB	(e)	3/2 1/99		—	—	—		—	<100	<1.0	<1 0	<1 0	<1 0	<1.0	—	—	—	—	SPL
TB	(e)	6/23/99		—	—	—		—	<100	<1 0	<1 0	<1 0	<1 0	<1.0	—	—	—	—	SPL
TB	(e)	1/11/00		—	—	—		—	<50	<0.5	<0 5	<0 5	<0 5	<0 5	—	—	—	—	PACE

ABBREVIATIONS

WTPH G	Washington Total Petroleum Hydrocarbons as Gasoline Ecology Method
WTPH D	Washington Total Petroleum Hydrocarbons as Diesel Ecology Method
BTEX	Benzene Toluene Ethyl-benzene total Xylenes by EPA Method 8020
MTBE	Methyl Tert-Butyl Ether by EPA Method 8015M
ug/l	Micrograms per liter
ppm	Parts per million
–	Not applicable/analyzed/measured
<	Concentrations preceded by a '<' are laboratory method detection limits The method detention limit may very depending on the laboratory used and sample characteristics
AEN	American Environmental Network Inc
SPL	Southern Petroleum Laboratories
PACE	Pace Analytical Services Inc

NOTES

(a) Groundwater elevation established relative to an arbitrary datum of 100.00 feet. Groundwater elevation is corrected for the effects of LPH using the following formula TOC [DTW (PT)(0 80)] were TOC=Top of Casing, DTW=Depth to Water PT=Product Thickness and 0 80=Typical Specific Gravity for Gasoline
(b) Not sampled product present
(c) Well inaccessible
(d) Sorbent tube in place
(e) Trip blank