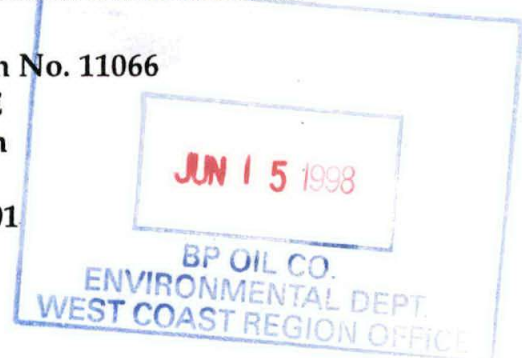


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GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11066
2421 148th Avenue NE
Bellevue, Washington

Project No. 20-08-07-001



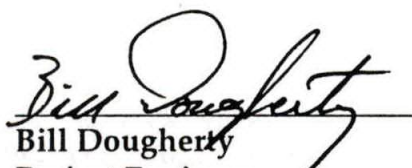
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Prepared by:

Alisto Engineering Group
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Issaquah, Washington

May 29, 1998


Bill Dougherty
Project Engineer


Dave Cooper, P.G.
Supervising Geologist



GROUNDWATER MONITORING AND SAMPLING REPORT

**BP Oil Company Service Station No. 11066
2421 148th Avenue NE
Bellevue, Washington**

Project No. 20-08-07-001

May 29, 1998

INTRODUCTION

This report presents the results and findings of the February 18, 1998 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11066, 2421 148th Avenue NE, Bellevue, Washington. A site vicinity map is shown on Figure 1.

FIELD PROCEDURES

Field activities were performed in accordance with the procedures and guidelines of the Washington State Department of Ecology.

Before purging and sampling, the groundwater level in each well was measured from a permanent mark on top of the casing to the nearest 0.01 foot using an electronic sounder. The depth to groundwater and top of casing elevation data were used to calculate the groundwater elevation in each well in reference to an arbitrary datum. The survey data and groundwater elevation measurements collected to date are presented in Table 1.

Before sample collection, each well was purged of 3 casing volumes while recording field readings of pH, temperature, electrical conductivity, and dissolved oxygen. Groundwater samples were collected for laboratory analysis by lowering a bottom-fill, decontaminated bailer to just below the water level in the well. The samples were transferred from the bailer into laboratory-supplied containers and immediately placed in a chilled cooler for transport. The field report and sampling data sheets are presented in Appendix A.

SAMPLING AND ANALYTICAL RESULTS

The results of monitoring and laboratory analysis of the groundwater samples for this and previous quarters are summarized in Table 1. The potentiometric groundwater elevations as calculated from the results of this monitoring event are shown on Figure 2. The results of groundwater analysis are shown on Figure 3. The laboratory report and chain of custody record are presented in Appendix B.

Table 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11066
2421 148TH AVE. NE, BELLEVUE, WA

ALISTO PROJECT NO. 20-008

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	PRODUCT THICKNESS (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	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)	
MW-1	3/2/92	313.08	0.03	23.42	289.684	Not sampled, LPH present											
MW-1	4/4/92		0.18	23.52	289.704	Not sampled, LPH present											
MW-1	5/12/92		0.23	23.49	289.774	Not sampled, LPH present											
MW-1	6/11/92		0.53	23.95	289.554	Not sampled, LPH present											
MW-1	5/26/93		0.07	24.62	288.516	Not sampled, LPH present											
MW-1	6/28/94		1.03	24.72	289.184	Not sampled, passive skimmer in place											
MW-1	9/29/94		0.68	25.08	288.544	Not sampled, passive skimmer in place											
MW-1	12/13/94		0.82	25.10	288.636	Not sampled, passive skimmer in place											
MW-1	3/3/95		0.47	23.27	290.186	Not sampled, passive skimmer in place											
MW-1	6/8/95		sheen	22.50	290.58	Not sampled, passive skimmer in place											
MW-1	8/30/95		0.17	23.40	289.816	Not sampled, passive skimmer in place											
MW-1	12/1/95		0.51	24.59	288.898	Not sampled, passive skimmer in place											
MW-1	3/4/96		312.94	0.01	21.06	291.888	Not sampled, passive skimmer in place										
MW-1	6/4/96			0.01	20.89	292.058	Not sampled, passive skimmer in place										
MW-1	9/6/96			0.03	22.14	290.824	Not sampled, passive skimmer in place										
MW-1	12/4/96			sheen	22.34	290.6	Not sampled, passive skimmer in place										
MW-1	3/6/97			0.01	18.72	294.23	Not sampled, passive skimmer in place										
MW-1	5/29/97			sheen	18.81	294.13	Not sampled, passive skimmer in place										
MW-1	8/28/97	sheen		20.23	292.71	Not sampled, passive skimmer in place											
MW-1	2/18/98	sheen		20.57	292.37	Not sampled, passive skimmer in place											
MW-2	3/2/92	312.13	1.55	24.35	289.02	Not sampled, LPH present											
MW-2	4/4/92		1.59	24.34	289.062	Not sampled, LPH present											
MW-2	5/12/92		1.61	24.26	289.158	Not sampled, LPH present											
MW-2	6/11/92		0.36	23.75	288.668	Not sampled, LPH present											
MW-2	5/26/93		0.43	24.45	288.024	Not sampled, LPH present											
MW-2	6/28/94		0.93	24.40	288.474	Not sampled, passive skimmer in place											
MW-2	9/29/94		0.92	25.02	287.846	Not sampled, passive skimmer in place											
MW-2	12/13/94		1.51	25.46	287.878	Not sampled, passive skimmer in place											
MW-2	3/3/95		0.18	23.95	288.324	Not sampled, passive skimmer in place											
MW-2	6/8/95		0.22	22.53	289.776	Not sampled, passive skimmer in place											
MW-2	8/30/95		0.14	23.25	288.992	Not sampled, passive skimmer in place											
MW-2	12/1/95		0.16	24.09	288.168	Not sampled, passive skimmer in place											
MW-2	3/4/96		0.01	21.11	291.028	Not sampled, passive skimmer in place											
MW-2	6/4/96		0.02	21.05	291.096	Not sampled, passive skimmer in place											
MW-2	9/6/96		0.05	22.16	290.01	Not sampled, passive skimmer in place											
MW-2	12/4/96		sheen	21.98	290.15	Not sampled, passive skimmer in place											
MW-2	3/6/97		sheen	18.85	Sorbent tube in place												
MW-2	5/29/97		sheen	-	Sorbent tube in place												
MW-2	8/28/97	sheen	20.34	Sorbent tube in place													
MW-2	2/18/98	sheen	20.75	Sorbent tube in place													
MW-3	3/2/92	313.7	0.04	23.50	290.232												
MW-3	4/4/92		0.2	23.50	290.36												
MW-3	5/12/92		0.21	23.43	290.438												
MW-3	6/11/92		1.47	24.39	290.486												
MW-3	5/26/93		0.19	24.50	289.352												
MW-3	6/28/94		0.45	23.95	290.11												
MW-3	9/29/94		0.43	24.79	289.254												
MW-3	12/13/94		0.36	24.67	289.318												
MW-3	3/3/95		0.41	23.07	290.958												
MW-3	6/8/95		0.15	22.42	291.4												
MW-3	8/30/95		0.22	23.52	290.356												
MW-3	12/1/95		0.09	24.21	289.562												
MW-3	3/4/96		<0.01	21.11	292.59												
MW-3	6/4/96		0.01	21.05	292.658												
MW-3	9/6/96		0.1	22.29	291.49												
MW-3	12/4/96		sheen	22.99	290.71												
MW-3	3/6/97		sheen	19.26	Sorbent tube in place												

Table 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11066
2421 148TH AVE. NE, BELLEVUE, WA

ALISTO PROJECT NO. 20-008

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	PRODUCT THICKNESS (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	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)
MW-3	5/29/97		sheen	-	Sorbent tube in place											
MW-3	8/28/97		sheen	20.39	Sorbent tube in place											
MW-3	2/18/98		sheen	20.77	Sorbent tube in place											
MW-4	5/23/93	314.21				<50	<50	0.9	<0.5	<0.5	<1	NT	6	NT	NT	
MW-4	5/26/93		0	24.63	289.58											
MW-4	6/28/94		0	23.88	290.33		<100	0.7	<0.5	<0.5	<0.5	NT	NT	NT	NT	14
MW-4	9/29/94		0	24.83	289.38	NT	<100	0.8	<0.5	<0.5	<0.5	NT	NT	NT	NT	4
MW-4	12/13/94		0	24.61	289.6	NT	<100	0.9	<0.5	<0.5	<0.5	NT	NT	NT	NT	14
MW-4	3/3/95		0	22.92	291.29	NT	<100	1.1	<0.5	<0.5	<0.5	NT	NT	NT	NT	8
MW-4	6/8/95		0	22.25	291.96	NT	<100	1.3	<0.5	<0.5	<0.5	NT	NT	NT	NT	5
MW-4	8/30/95		0	23.37	290.84	NT	<100	0.58	<0.5	<0.5	<0.5	NT	NT	NT	NT	8
MW-4	12/1/95		0	24.44	289.77	NT	<100	<0.5	<0.5	<0.5	<0.5	NT	NT	NT	NT	3
MW-4	3/4/96		0	22.22	291.99	NT	<100	1.5	<0.5	<0.5	<0.5	NT	NT	NT	NT	5
MW-4	6/4/96		0	21.20	293.01	NT	<100	2	<0.5	<0.5	<0.5	NT	NT	NT	NT	7
MW-4	9/6/96		0	22.56	291.65	NT	<100	<0.5	<0.5	<0.5	<0.5	<1.0	NT	NT	NT	6
MW-4	12/4/96		0	22.56	291.65	NT	<100	<0.5	<0.5	<0.5	<0.5	<1.0	NT	NT	NT	7
MW-4	3/6/97		0	19.32	294.89	NT	<100	2.3	<0.5	<0.5	<1.5	<10	NT	NT	NT	3
MW-4	5/29/97		0	18.97	295.24	NT	<100	2.3	<0.5	<0.5	<1.5	<5	NT	NT	NT	4
MW-4	8/28/97		0	20.53	293.68	NT	<100	0.9	<0.5	<0.5	<1.5	<5	NT	NT	NT	7%
MW-4	2/18/98		0	20.72	293.49	NT	<100	<0.5	<0.5	<0.5	<1.5	<5	NT	NT	NT	0.3ppm
MW-5	5/23/93	315.62				<50	110	2	0.9	4.9	10		28	NT	NT	
MW-5	5/26/93		0	25.27	290.35											
MW-5	6/28/94		0	24.52	291.1		<100	<0.5	<0.5	<0.5	<0.5		NT	NT	NT	1
MW-5	9/29/94		0	25.51	290.11	NT	<100	<0.5	<0.5	<0.5	<0.5		NT	NT	NT	33
MW-5	12/13/94		0	25.34	290.28	NT	<100	0.9	<0.5	<0.5	<0.5		NT	NT	NT	40
MW-5	3/3/95		0	23.57	292.05	NT	<100	<0.5	<0.5	<0.5	<0.5		NT	NT	NT	37
MW-5	6/8/95		0	22.96	292.66	NT	<100	<0.5	<0.5	<0.5	<0.5		NT	NT	NT	6
MW-5	8/30/95		0	24.14	291.48	NT	<100	<0.5	<0.5	<0.5	<0.5		NT	NT	NT	16
MW-5	12/1/95		0	25.13	290.49	NT	<100	<0.5	<0.5	<0.5	<0.5		NT	NT	NT	37
MW-5	3/4/96		0	21.81	293.81	NT	<100	<0.5	<0.5	<0.5	<0.5		NT	NT	NT	25
MW-5	6/4/96		0	21.89	293.73	NT	<100	<0.5	<0.5	<0.5	<0.5		NT	NT	NT	5
MW-5	9/6/96		0	23.29	292.33	NT	<100	<0.5	<0.5	<0.5	<0.5	<1.0	NT	NT	NT	7
MW-5	12/4/96		0	23.33	292.29	NT	<100	<0.5	<0.5	<0.5	<0.5	<1.0	NT	NT	NT	32
MW-5	3/6/97		0	20.14	295.48	NT	<100	0.8	<0.5	<0.5	<1.5	<10	NT	NT	NT	2
MW-5	5/29/97		0	19.88	295.74	NT	<100	0.8	<0.5	<0.5	<1.5	<5	NT	NT	NT	4
MW-5	8/28/97		0	21.48	294.14	NT	<100	0.8	<0.5	<0.5	<1.5	<5	NT	NT	NT	7%
MW-5	2/18/98		0	21.63	293.99	NT	<100	<0.5	<0.5	<0.5	<1.5	<5	NT	NT	NT	0.7ppm
MW-6	5/23/93	314.82				2100	70000	6600	12000	880	6800		31	NT	NT	
MW-6	5/26/93		0	25.21	289.61											
MW-6	6/28/94		0.12	24.76	290.156	Not sampled due to presence of LPH.										
MW-6	9/29/94		0.43	25.80	289.364	Not sampled due to presence of LPH.										
MW-6	12/13/94		0.33	25.83	289.254	Not sampled. LPH present.										
MW-6	3/3/95		0.09	24.02	290.872	Not sampled. LPH present.										
MW-6	6/8/95		0.1	23.30	291.6	Not sampled. LPH present.										
MW-6	8/30/95		0.36	24.51	290.598	Not sampled. LPH present.										
MW-6	12/1/95		0.38	25.55	289.574	Not sampled. LPH present.										
MW-6	3/4/96		<0.01	22.23	292.59	Not sampled. LPH present.										
MW-6	6/4/96		0.02	22.00	292.836	Not sampled. LPH present.										
MW-6	9/6/96		0.23	23.25	291.754	Not sampled. LPH present.										
MW-6	12/4/96		0.01	23.31	291.518	Not sampled. LPH present.										
MW-6	3/6/97		sheen	20.06	294.76	Sorbent tube installed										
MW-6	5/29/97		sheen	19.83	294.99	Sorbent tube in place										
MW-6	8/28/97		sheen	21.26	293.56	Sorbent tube in place										
MW-6	2/18/98		sheen	21.75	293.07	Sorbent tube in place										
MW-7	5/26/93	311.95	3.91	27.16	287.92	Not sampled due to presence of LPH.										

Table 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11066
2421 148TH AVE. NE, BELLEVUE, WA

ALISTO PROJECT NO. 20-008

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	PRODUCT THICKNESS (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	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)
MW-7	6/28/94		Not measured due to installed pump.			Not sampled due to presence of LPH.										
MW-7	9/29/94		"			Not sampled due to presence of LPH.										
MW-7	12/13/94		"			Not sampled due to presence of LPH.										
MW-7	6/8/95		"			Not sampled due to presence of LPH.										
MW-7	8/30/95		"			Not sampled due to presence of LPH.										
MW-7	12/1/95		"			Not sampled due to presence of LPH.										
MW-7	3/4/96		"			Not sampled due to presence of LPH.										
MW-7	6/4/96		"			Not sampled due to presence of LPH.										
MW-7	9/6/96		"			Not sampled due to presence of LPH.										
MW-7	12/4/96		0.01	22.29		Not sampled, passive skimmer in place										
MW-7	3/6/97		<0.01	19.15		Not sampled, passive skimmer in place										
MW-7	5/29/97		sheen	19.03		Not sampled, passive skimmer in place										
MW-7	8/28/97		sheen	20.39		Sorbent tube in place										
MW-7	2/18/98		<0.01	20.81	291.14	Sorbent tube in place										
MW-8	5/26/93	310.82	0	23.03	287.79	Not sampled, LPH present										
MW-8	6/28/94		0.48	23.33	287.874	Not sampled, passive skimmer in place										
MW-8	9/29/94		0.36	23.75	287.358	Not sampled, passive skimmer in place										
MW-8	12/13/94		2.56	25.46	287.408	Not sampled, passive skimmer in place										
MW-8	3/3/95		2.32	23.72	288.956	Not sampled, passive skimmer in place										
MW-8	6/8/95		0.65	22.06	289.28	Not sampled, passive skimmer in place										
MW-8	8/30/95		0.4	22.58	288.56	Not sampled, passive skimmer in place										
MW-8	12/1/95		0.27	23.35	287.686	Not sampled, passive skimmer in place										
MW-8	3/4/96		0.01	20.17	290.658	Not sampled, passive skimmer in place										
MW-8	6/4/96		0.01	20.21	290.618	Not sampled, passive skimmer in place										
MW-8	9/6/96		0.02	21.27	289.566	Not sampled, passive skimmer in place										
MW-8	12/4/96		sheen	20.91	289.91	Not sampled, passive skimmer in place										
MW-8	3/6/97		sheen	17.70	293.12	Not sampled, passive skimmer in place										
MW-8	5/29/97		sheen	17.96	292.86	Not sampled, passive skimmer in place										
MW-8	8/28/97		sheen	19.34	291.48	Not sampled, G22										
MW-8	2/18/98		sheen	19.66	291.16	Not sampled, passive skimmer in place										
MW-9	6/8/95	314.9	0	22.81	292.09	NT	<100	8	<0.5	0.58	1.1		NT	NT	NT	9
MW-9	8/30/95		0	23.90	291	NT	<100	26	<0.5	1.9	2.3		NT	NT	NT	4
MW-9	12/1/95		0	24.92	289.98	NT	<100	18	<0.5	<0.5	<0.5		NT	NT	NT	6
MW-9	3/4/96		0	21.67	293.23	NT	<100	17	0.5	0.9	1		NT	NT	NT	4
MW-9	6/4/96		0	21.53	293.37	NT	200	44	<0.5	0.6	5.4		NT	NT	NT	5
MW-9	9/6/96		0	22.89	292.01	NT	100	31	<0.5	<0.5	2.9	7.8	NT	NT	NT	4
MW-9	12/4/96		0	22.93	291.97	NT	<100	14	<0.5	<0.5	<0.5	1.3	NT	NT	NT	7
MW-9	3/6/97		0	19.67	295.23	NT	<100	14	<0.5	0.7	<1.5	<10	NT	NT	NT	3
MW-9	5/29/97		0	19.36	295.54	NT	<100	23	0.7	1.5	<1.5	<5	NT	NT	NT	3
MW-9	8/28/97		0	20.93	293.97	NT	<100	6.9	0.7	1.1	1.4	<5	NT	NT	NT	9%
MW-9	2/18/98		0	21.23	293.67	NT	<100	0.98	<0.5	<0.5	<1.5	<5	NT	NT	NT	0.2ppm

Notes:

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.

** = Groundwater elevation was not measured on this date.

WTPH-G = total petroleum hydrocarbons - gasoline, by Ecology Method WTPH-G.

MTBE (Methyl-tert-butyl-ether) by EPA Method 8015M

Benzene, Toluene, Ethyl Benzene and Total Xylenes (BTEX) were analyzed by EPA Method 8020.

Total and dissolved lead by EPA Method 7421.

NT = Not tested.

All concentrations are expressed in ug/l.

Concentrations preceded by a "<" are laboratory method detection limits. The method detection limit may vary depending on the laboratory used and sample characteristics.

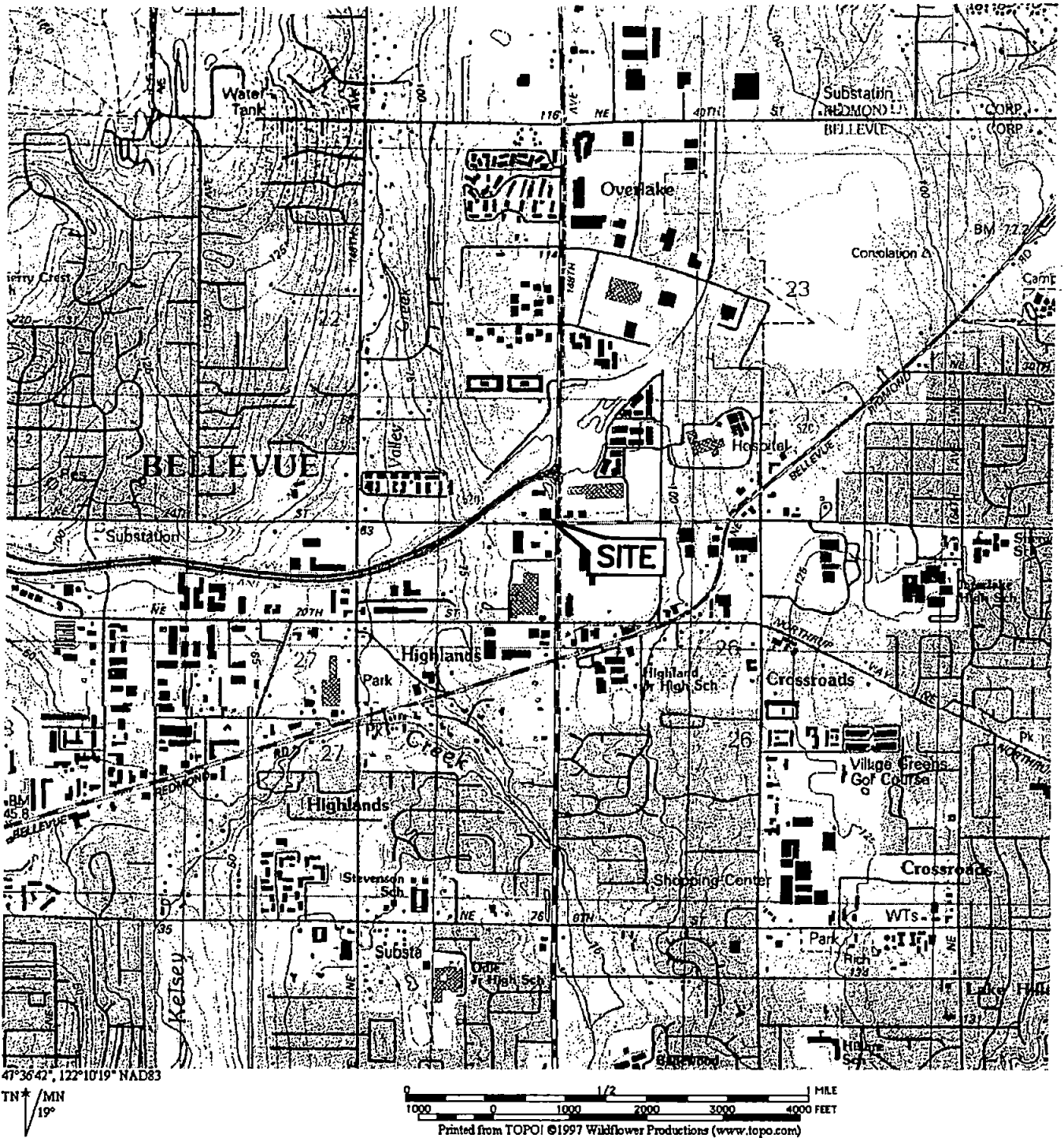


FIGURE 1

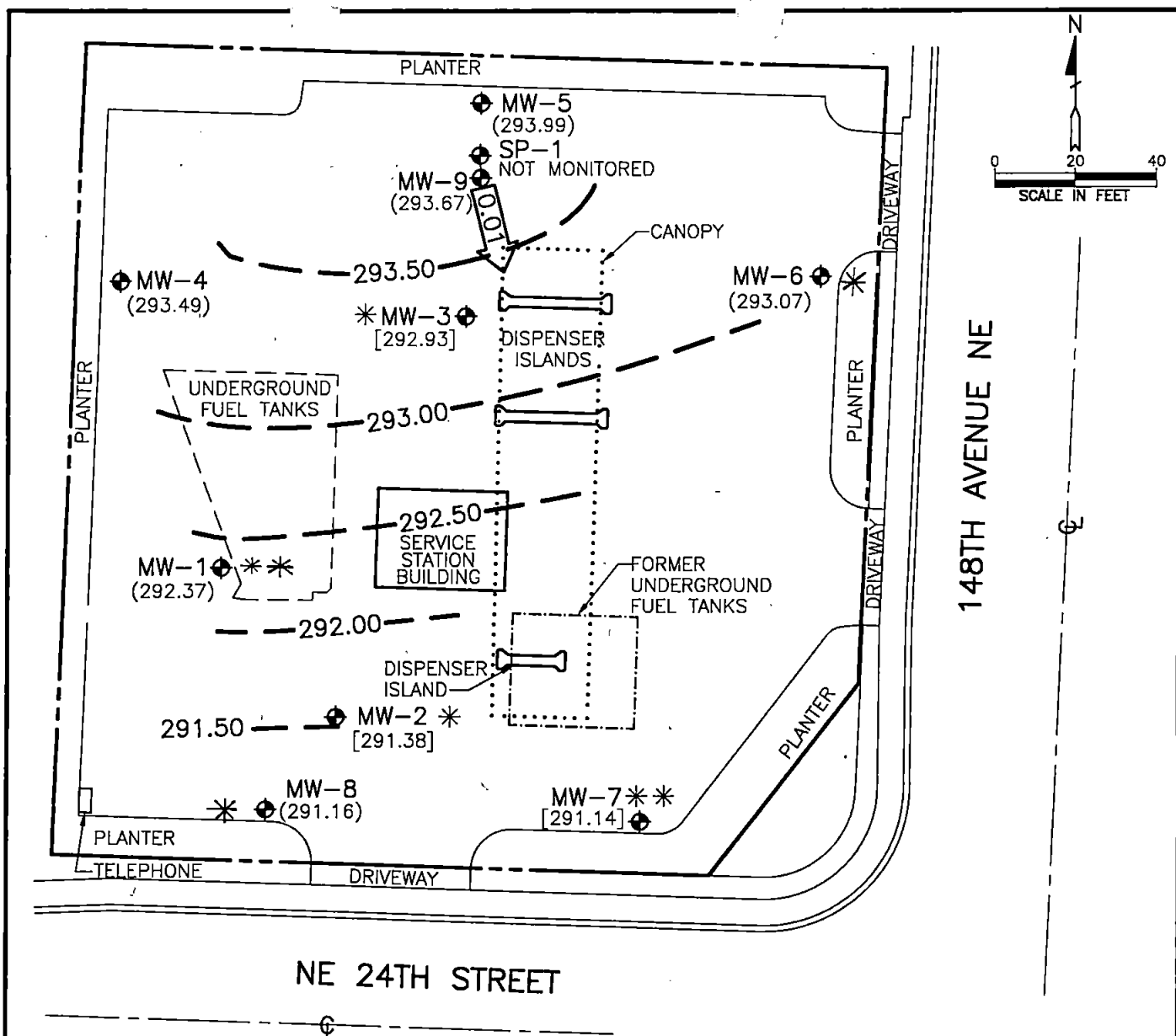
SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11066
2421 148TH AVENUE NE
BELLEVUE, WASHINGTON

PROJECT NO. 20-008



ALISTO ENGINEERING GROUP
TUKWILA, WASHINGTON



LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (291.16) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 291.50 - GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL=0.50 FOOT)
- ← 0.01 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT
- [292.93] GROUNDWATER ELEVATION NOT USED IN PREPARING CONTOURS
- * SORBENT TUBE IN PLACE
- ** PASSIVE SKIMMER IN PLACE

NOTE:

Potentiometric groundwater elevation contours were generated with Quicksurf using the Kriging method with a spherical variogram on a triangulated grid surface.

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

FEBRUARY 18, 1998

BP OIL SERVICE STATION NO. 11066
2421 148TH AVENUE NE
BELLEVUE, WASHINGTON

PROJECT NO. 20-008



ALISTO ENGINEERING GROUP
TUKWILA, WASHINGTON



ALISTO

ENGINEERING

GROUP

1145 - 12th AVENUE NW, SUITE C-4A

ISSAQUAH, WA 98027, (425) 837-3944, fax 837-8543

Field Report / Sampling Data Sheet

Station No: 11066

Date: 2/18/98

Project No.: 20-08-07-001

Day: SMTWTH FSA

Address: NE 24th

City: Belleue

Contract No.: H328865

Sampler: Bill Dougherty

DEPTH TO GROUNDWATER SUMMARY

WELL ID	DEPTH TO WATER	PRODUCT THICKNESS	LEVEL TIME	WELL ID	DEPTH TO WATER	PRODUCT THICKNESS	LEVEL TIME	WELL ID	DEPTH TO WATER	PRODUCT THICKNESS	LEVEL TIME
MW5	21.63			MW2	8	sheen					
MW4	20.72			MW8	19.66						
MW9	21.23			MW7	20.81	<0.01					
MW6	21.75	sheen									
MW1	20.57	sheen									
MW3		sheen									

Well ID	Depth to Water	Diam	Cap/Lock	Product	Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.	
MW5	21.63	2	✓	-	Y	(N)			57.0	6.83	239	0.7	
Tot. Depth - Water Level= x Well Vol. Factor= x#vol. to Purge= PurgeVol.													
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port													
Comments:													

- ☒ TPH-G/BTEX____
☒ MTBE____
☐ TPH Diesel____
☐ _____

TIME/SAMPLE ID

14:00

Well ID	Depth to Water	Diam	Cap/Lock	Product	Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.	
MW4	20.72	2	✓	-	Y	(N)			56.3	6.33	467	0.3	
Tot. Depth - Water Level= x Well Vol. Factor= x#vol. to Purge= PurgeVol.													
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port													
Comments:													

- ☒ TPH-G/BTEX____
☒ MTBE____
☐ TPH Diesel____
☐ _____

TIME/SAMPLE ID

14:40

Well ID	Depth to Water	Diam	Cap/Lock	Product	Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.	
MW9	21.23	2	✓	-	Y	(N)			57.6	6.79	391	0.2	
Tot. Depth - Water Level= x Well Vol. Factor= x#vol. to Purge= PurgeVol.													
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port													
Comments: <u>Bailed dry</u>													

- ☒ TPH-G/BTEX____
☒ MTBE____
☐ TPH Diesel____
☐ _____

TIME/SAMPLE ID

15:15

FIELD INSTRUMENT CALIBRATION DATA

pH METER ✓ 4.00 _____ 7.00 _____ 10.00 _____ TEMPERATURE COMPENSATED (Y) N

TIME _____

D.O. METER ✓ ZERO d.O. SOLUTION _____ BAROMETRIC PRESSURE _____ TEMP 55

WEATHER Rain

CONDUCTIVITY METER _____ 10,000 _____ TURBIDITY METER _____ 5.0 NTU _____

OTHER _____

LEAK DETECTOR : _____ ALARM MODE _____ NON ALARM MODE

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING
GROUP

1145 - 12th AVENUE NW, SUITE C-4A

ISSAQUAH, WA 98027, (425) 837-3944, fax 837-8543

Station No: 11066

Project No.: 20-08-07-001

Address: NE 24th

Contract No.: #328865

Date: 2/18/98

Day: SMTWTFSA

City: Belleve

Sampler: Bill Dougherty

Well ID	Depth to Water	Diam	Cap/Lock	Product	Depth	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW6	21.25	2	✓	-	(Y) N								☐ TPH-G/BTEX____ ☐ MTBE____ ☐ TPH Diesel____ ☐ _____ TIME/SAMPLE ID <u>N/T</u>
Tot. Depth - Water Level= x Well Vol. Factor= x#vol. to Purge= PurgeVol.													
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port													
Comments: <u>Replaced sorbent tube</u>													
MW1	20.57	4	✓	-	(Y) N								☐ TPH-G/BTEX____ ☐ MTBE____ ☐ TPH Diesel____ ☐ _____ TIME/SAMPLE ID <u>N/T</u>
Tot. Depth - Water Level= x Well Vol. Factor= x#vol. to Purge= PurgeVol.													
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port													
Comments: <u>Skimmer empty</u>													
MW23	20.77	4	✓	-	(Y) N								☐ TPH-G/BTEX____ ☐ MTBE____ ☐ TPH Diesel____ ☐ _____ TIME/SAMPLE ID <u>N/T</u>
Tot. Depth - Water Level= x Well Vol. Factor= x#vol. to Purge= PurgeVol.													
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port													
Comments: <u>Sorbent tube in place</u>													
MW2	30.75	4	✓	-	(Y) N								☐ TPH-G/BTEX____ ☐ MTBE____ ☐ TPH Diesel____ ☐ _____ TIME/SAMPLE ID <u>N/T</u>
Tot. Depth - Water Level= x Well Vol. Factor= x#vol. to Purge= PurgeVol.													
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port													
Comments: <u>Replaced sorbent tube</u>													
MW8	19.66	4	✓	-	(Y) N								☐ TPH-G/BTEX____ ☐ MTBE____ ☐ TPH Diesel____ ☐ _____ TIME/SAMPLE ID <u>N/T</u>
Tot. Depth - Water Level= x Well Vol. Factor= x#vol. to Purge= PurgeVol.													
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port													
Comments: <u>Sorbent tube in place</u>													

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING
GROUP

1145- 12th AVENUE NW, SUITE C-4A

ISSAQUAH, WA 98027, (425) 837-3944, fax 837-8543

Station No: 11066

Project No.: 20-08-07-001

Address: NE 24th

Contract No.: H328865

Date: 2/18/98

Day: SMTWTH FSA

City: Belleve

Sampler: Bill Dougherty

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW7	20.81	4	✓	20.01	(Y) N							
Total Depth - Water Level=						x Well Vol. Factor=		x#vol. to Purge=		PurgeVol.		
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments: <u>Skimmer empty</u>												
												☐ TPH-G/BTEX ☐ MTBE ☐ TPH Diesel ☐ TIME/SAMPLE ID <u>N/T</u>
					Y N							
Tot. Depth - Water Level=						x Well Vol. Factor=		x#vol. to Purge=		PurgeVol.		
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments:												
					Y N							
Tot. Depth - Water Level=						x Well Vol. Factor=		x#vol. to Purge=		PurgeVol.		
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments:												
					Y N							
Tot. Depth - Water Level=						x Well Vol. Factor=		x#vol. to Purge=		PurgeVol.		
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments:												
					Y N							
Tot. Depth - Water Level=						x Well Vol. Factor=		x#vol. to Purge=		PurgeVol.		
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments:												
					Y N							
Tot. Depth - Water Level=						x Well Vol. Factor=		x#vol. to Purge=		PurgeVol.		
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments:												

Adjusted all

Allowed MW6, MW1, MW8, + MW7 to stabilize 1 1/2 hours before taking DTW.

Treatment system on site (Retox 600) but not operating

Old treatment compound gone

5 bbls

BP EXPLORATION & OIL, INC.
ENVIRONMENTAL REMEDIATION MANAGEMENT
DATA REVIEW CHECKLIST

BP Site Number: 11066
 ERM Contact: J. HOSSEN
 Sampling Date: 2/18/98
 Matrix Description: WATER
 Date Final Report Received: 2/25/98
 Laboratory & Location: AEI BOSTON

	Yes	No	NA
1. Is BP contract release number consistent with analytical report?	☒	☐	☐
2. Was report submitted within the specified timeframe?	☒	☐	☐
3. Does report agree with the COC?	☒	☐	☐
4. Are units consistent with the given matrix?	☒	☐	☐
5. Were any target analytes/compounds detected in blanks (ie. trip or equipment)?	☐	☒	☐
6. Are duplicate water samples within __%?	☒	☐	☐
7. Are holding times met?	☒	☐	☐
8. Are surrogates within limits using laboratory criteria?	☒	☐	☐
9. Are MS/MSD acceptable using laboratory criteria?	☒	☐	☐
10. Are LCS results acceptable using laboratory criteria?	☒	☐	☐

Notes/Comments: _____

Data Validation Completed by (print): DC Cooper
 (signature): DC Cooper
 Date: 2/25/98

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

American Environmental Network, Inc.

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 02/25/1998
AEN Account No.: 90054
AEN Job Number: 98.00406

Project: BP 11066 / H328865
Location: 20-08-07-001

Sample analysis in support of the project referenced above has been completed and results are presented on the following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Sample Number	Sample Description	Matrix Type	Date Taken	Date Received
90714	MW5 BP 11066	Water	02/18/1998	02/20/1998
90715	MW4 BP 11066	Water	02/18/1998	02/20/1998
90716	MW9 BP 11066	Water	02/18/1998	02/20/1998
90717	Trip Blank	Water	02/18/1998	02/20/1998

Approved by:


Andi Hoevet
Project Manager
AEN, INC.


Technical Review
AEN, INC.

The results from these samples relate only to the items tested. This report shall not be reproduced, except in full, without the written approval of the laboratory.

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

02/25/1998
Job No.: 98.00406

Page: 2

Project Name: BP 11066 / H328865
Date Received: 02/20/1998

Sample Number Sample Description
90714 MW5 BP 11066

<u>PARAMETERS</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>REPORT LIMIT</u>	<u>UNITS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
BTEX/MTBE/WTPH-G						
Dilution Factor		1			02/24/1998	
Benzene	8020	ND	0.5	ug/L	02/24/1998	
Toluene	8020	ND	0.5	ug/L	02/24/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	02/24/1998	
Xylenes	8020	ND	1.5	ug/L	02/24/1998	
MTBE	8015 M	ND	5.0	ug/L	02/24/1998	
WTPH-G	WTPH-G	ND	100	ug/L	02/24/1998	

Sample Number Sample Description
90715 MW4 BP 11066

<u>PARAMETERS</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>REPORT LIMIT</u>	<u>UNITS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
BTEX/MTBE/WTPH-G						
Dilution Factor		1			02/24/1998	
Benzene	8020	ND	0.5	ug/L	02/24/1998	
Toluene	8020	ND	0.5	ug/L	02/24/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	02/24/1998	
Xylenes	8020	ND	1.5	ug/L	02/24/1998	
MTBE	8015 M	ND	5.0	ug/L	02/24/1998	
WTPH-G	WTPH-G	ND	100	ug/L	02/24/1998	

Sample Number Sample Description
90716 MW9 BP 11066

<u>PARAMETERS</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>REPORT LIMIT</u>	<u>UNITS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
BTEX/MTBE/WTPH-G						
Dilution Factor		1			02/24/1998	
Benzene	8020	0.98	0.5	ug/L	02/24/1998	
Toluene	8020	ND	0.5	ug/L	02/24/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	02/24/1998	
Xylenes	8020	ND	1.5	ug/L	02/24/1998	

A sample result of ND indicates the parameter was Not Detected at the reporting limit.

ANALYTICAL REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

02/25/1998
Job No.: 98.00406

Page: 3

Project Name: BP 11066 / H328865
Date Received: 02/20/1998

Sample Number Sample Description
90716 MW9 BP 11066

<u>PARAMETERS</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>REPORT LIMIT</u>	<u>UNITS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
MTBE	8015 M	ND	5.0	ug/L	02/24/1998	
WTPH-G	WTPH-G	ND	100	ug/L	02/24/1998	

Sample Number Sample Description
90717 Trip Blank

<u>PARAMETERS</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>REPORT LIMIT</u>	<u>UNITS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
BTEX/MTBE/WTPH-G						
Dilution Factor		1			02/24/1998	
Benzene	8020	ND	0.5	ug/L	02/24/1998	
Toluene	8020	ND	0.5	ug/L	02/24/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	02/24/1998	
Xylenes	8020	ND	1.5	ug/L	02/24/1998	
MTBE	8015 M	ND	5.0	ug/L	02/24/1998	
WTPH-G	WTPH-G	ND	100	ug/L	02/24/1998	

A sample result of ND indicates the parameter was Not Detected at the reporting limit.

American Environmental Network, Inc. (503) 684-0447 (503) 620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland, OR 97224

SURROGATE REPORT

Dave Cooper
Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

02/25/1998
Job No.: 98.00406

Page: 4

Project Name: BP 11066 / H328865
Date Received: 02/20/1998

<u>SURROGATES</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
Sample Number 90714	Sample Description MW5 BP 11066			
TFT (Surr.)		102 %	02/24/1998	
Sample Number 90715	Sample Description MW4 BP 11066			
TFT (Surr.)		99 %	02/24/1998	
Sample Number 90716	Sample Description MW9 BP 11066			
TFT (Surr.)		102 %	02/24/1998	
Sample Number 90717	Sample Description Trip Blank			
TFT (Surr.)		103 %	02/24/1998	

QUALITY CONTROL REPORT CONTINUING CALIBRATION VERIFICATION

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 02/25/1998

Job Number: 98.00406

Contact: Dave Cooper
Project: BP 11066 / H328865

Analyte	CCV		Percent Recovery	Date Analyzed
	True Concentration	Concentration Found		
BTEX/MTBE/WTPH-G				
Benzene	40.0	38.6	96.5	02/24/1998
Toluene	40.0	36.8	92.0	02/24/1998
Ethyl Benzene	40.0	35.2	88.0	02/24/1998
Xylenes	120	109	90.8	02/24/1998
WTPH-G	1000	966	96.6	02/24/1998
MTBE	40.0	34.6	86.5	02/24/1998
TFT (Surr.)	100	102	102.0	02/24/1998

CCV - Continuing Calibration Verification

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland, OR 97224

QUALITY CONTROL REPORT MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 02/25/1998

Job Number: 98.00406

Contact: Dave Cooper
Project: BP 11066 / H328865

Analyte	Matrix	Sample	Spike	Units	Percent	MSD	MSD		Percent	MS/MSD		Flags
	Spike						Spike	Amount		Recovery	RPD	
Result	Result	Amount	Recovery	Result	Amount	Units	Recovery	RPD	Flags			
BTEX/MTBE/WTPH-G												
Benzene	39.6	ND	40.0	ug/L	99.0	40.8	40.0	ug/L	102.0	2.9		
Toluene	37.6	ND	40.0	ug/L	94.0	39.5	40.0	ug/L	98.8	5.0		
Ethyl Benzene	36.4	ND	40.0	ug/L	91.0	38.4	40.0	ug/L	96.0	5.3		
Xylenes	112	ND	120	ug/L	93.3	119	120	ug/L	99.2	6.1		
MTBE		ND		ug/L				ug/L				

QC Sample:

NOTE: Matrix Spike Samples may not be samples from this job.

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
dil.= Diluted Out

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX
17400 SW Upper Boones Ferry Rd., Portland, OR 97224

QUALITY CONTROL REPORT BLANKS

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 02/25/1998

Job Number: 98.00406

Contact: Dave Cooper
Project: BP 11066 / H328865
Location: 20-08-07-001

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
BTEX/MTBE/WTPH-G				
Dilution Factor	1			02/24/1998
Benzene,	ND	0.5	ug/L	02/24/1998
Toluene	ND	0.5	ug/L	02/24/1998
Ethyl Benzene	ND	0.5	ug/L	02/24/1998
Xylenes	ND	1.5	ug/L	02/24/1998
WTPH-G	ND	100	ug/L	02/24/1998
MTBE	ND	10	ug/L	02/24/1998
TFT (Surr.)	105		%	02/24/1998

QUALITY CONTROL REPORT DUPLICATES

Alisto Engineering Group
1145 12th Ave. NW
C-4A
Issaquah, WA 98027

Date: 02/25/1998

Job Number: 98.00406

Contact: Dave Cooper
Project: BP 11066 / H328865

Analyte	Original Analysis	Duplicate Analysis	Units	RPD	Date Analyzed	Flag
BTEX/MTBE/WTPH-G						
WTPH-G	ND	ND	ug/L		02/24/1998	
BTEX/MTBE/WTPH-G						
WTPH-G	ND	ND	ug/L		02/24/1998	

NOTE: Duplicates may not be samples from this job.

RPD - Relative Percent Difference

FLAG GLOSSARY

A	This sample does not have a typical gasoline pattern.
B1	This sample does not have a typical diesel pattern.
B	Analyte found in the associated blank as well as the sample.
C	The sample contains a lighter hydrocarbon than gasoline.
CN	See case narrative
CS	Outside control limits or unusual matrix; see case narrative.
D	The sample extends to a heavier hydrocarbon range than gasoline.
d	Results on a dry weight basis
DIL	Result was calculated from dilution.
E	The sample extends to a lighter hydrocarbon range than diesel.
F	The sample extends to a heavier hydrocarbon range than diesel.
G	The positive result for gasoline is due to single component contamination.
I	The oil pattern for this sample is not typical.
J	The result for this compound is an estimated concentration.
L	The LCS recovery exceeded control limits. See the LCS page of this report.
LM	The LCS recovery exceeded control limits; the MS/MSD were in control validating the batch.
M	MS and/or MSD percent recovery exceeds control limits.
MD	Unable to calculate MS/MSD recovery due to high amount of analyte; greater than 4 times spike level.
MR	The MS/MSD RPD is greater than method criteria. The sample was re-extracted and re-analyzed with similar results indicating a non-homogeneous sample.
MM	The Matrix Spike exceeded control limits; LCS/LCS-D were in control validating the batch.
MI	Outside control limits due to matrix interference.
N	Manual integration performed on sample for quantification.
N/A	Not Applicable.
NC	Not calculable.
NO	Not Analyzed.
P	A post digestion spike was analyzed, and recoveries were within control limits.
Q	Detection limits elevated due to sample matrix.
Q1	Detection limits elevated due to high levels of non-target compounds. Sample(s) run at a dilution.
R	The duplicate RPD was greater than 20%. The sample was re-extracted and re-analyzed with similar results. This indicates a matrix interference in the sample, likely a non-homogeneity of the sample.
RD	RPD not applicable for results less than five times the reporting limit.
RP	MS/MSD RPD is greater than 20%
SR	Surrogate recovery outside control limits. See the surrogate page of the report.
SD	Unable to quantitate surrogate due to sample dilution.
SC	Sample not provided to laboratory in proper sampling container.
V	Volatile analysis was requested, sample container received with headspace.
X1	The duplicate RPD was greater than 20%. Due to insufficient sample, re-analysis was not possible.
X	Sample was analyzed outside recommended holding times.
Y	The result for this parameter was greater than the TCLP regulatory limit.
Z	The pattern seen for the parameter being analyzed is not typical.



CHAIN OF CUSTODY

No.090742

Page 1 of 1

CONSULTANTS NAME Alisto Engineering Group		CONSULTANTS ADDRESS 1145 - 12th Ave NW, C-41A, Issaquah, WA 98027	
BP SITE NUMBER 11066	BP SITE / FACILITY ADDRESS NE 24th & 148th, Bellevue		CONSULTANT PROJECT NUMBER 20-08-07-001
CONSULTANT PROJECT MANGER Dave Cooper	PHONE NUMBER 425 837-3944	FAX NUMBER 837-8543	CONSULTANT CONTRACT NUMBER H328865
BP CONTACT Pete DeSantis	BP ADDRESS SW 41st / Renton, WA	PHONE NUMBER 425-251-8209	FAX NO. 251-0736
LAB CONTACT Andi Horveth	LABORATORY ADDRESS Durham, OR	PHONE NUMBER 503 684-0447	FAX NO. 620-0393
BP CONTACT REQUESTING RUSH TAT (Print BP Contact Name)	RUSH REQUESTED OF (Print Consultant Contact Name)	DATE/TIME 2/19/98	SHIPMENT DATE 2/19/98
			SHIPMENT METHOD UPS

TAT: ☐ 24 Hours ☐ 48 Hours ☐ 72 Hours ☒ Standard 7 or 14 Days

ANALYSIS REQUIRED

AIRBILL NUMBER	
----------------	--

N198671 839 9

[illegible]

SAMPLED BY (Please Print Name)			SAMPLED BY (Signature)			ADDITIONAL COMMENTS
Bill Dougherty			Bill Dougherty			
RELINQUISHED BY / AFFILIATION (Print Name / Signature)	DATE	TIME	ACCEPTED BY / AFFILIATION (Print Name / Signature)	DATE	TIME	
Bill Dougherty	2/19/28	16:20	[Signature]	2/21/28	1030	