

Release # 471259
 Tosco # 6380
 DATE: May 10th, 2004
 Bellingham
 UST # 8394



GROUNDWATER MONITORING REPORT

Site No.: 6380 Address: 200 South 36th Street, Bellingham, Washington
 ConocoPhillips Site Manager: Timothy D. Johnson
 Consultant / Contact Person: SECOR International Inc. / Marc Sauze
 Primary Agency/Regulatory ID No.: Washington State Department of Ecology
 SECOR Project No.: 01CP.06380.04

WORK PERFORMED THIS QUARTER(S) [1st - 2004]:

- On 3/24/04, SECOR personnel monitored, purged, and sampled four of the existing network of four groundwater monitoring wells (MW-1 through MW-4). Samples were submitted to Severn Trent Laboratories, Inc. (STL) for analysis of gasoline-range hydrocarbons per NWTPH-Gx Method diesel and motor oil-range hydrocarbons per NWTPH-Dx Method, BTEX per USEPA Method 5030/8260B, and total lead per ICP-USEPA Method 6010.

WORK PROPOSED FOR NEXT QUARTER [2nd - 2004]:

- Measure depth to water, purge, and sample 4 groundwater monitoring wells (MW-1 through MW-4). Submit groundwater samples to STL for analysis for NWTPH-Gx, NWTPH-Dx, BTEX and total lead.

SUMMARY:

Frequency of Sampling Events:	<u>Quarterly</u>	(03/04,06/04,09/04,10/04)
Depth to Groundwater: ✓	<u>4.81 ft. (MW-3)</u>	(Measured Feet Below
	<u>to 8.13 ft. (MW-2)</u>	Top of Well Casing)
Groundwater Gradient:	<u>North-Northeast</u>	(Direction)
	<u>0.006 ft./ft.</u>	(Magnitude)
Maximum TPH-G Concentrations:	<u>163 µg/L / MW-1</u>	(ppb / well ID)
Maximum TPH-D Concentrations:	<u>None Detected</u>	(ppb / well ID)
Maximum TPH-O Concentrations:	<u>None Detected</u>	
Maximum Benzene Concentration:	<u>12.6 µg/L / MW-1</u>	(ppb / well ID)
Maximum Total Lead Concentration:	<u>21.3 µg/L / MW-2</u>	
Measurable Free Product Detected:	<u>No</u>	(Yes - ID well(s)/No)
Free Product Recovered This Quarter:	<u>None</u>	(Gallons)
Cumulative Free Product Recovered to Date:	<u>None</u>	(Gallons)
Water Wells or	<u>i.) One Water Well</u>	(Type)
Surface Waters w/in 2,000 ft:	<u>ii.) Connelly Creek</u>	
Radius and Respective	<u>i.) 1600 ft. West</u>	(Respective Distance
Direction From Site:	<u>ii.) 1000 ft. Southwest</u>	& Direction)
Current Remedial Action:	<u>MNA</u>	(SVE/AS/P&T/MNA etc.)
Permits for Discharge:	<u>None</u>	(NPDES, POTW, etc.)

DISCUSSION:

- Gasoline-range hydrocarbons were detected in MW-1 at a concentration (163 µg/L) below the MTCA Method A Cleanup Levels for Ground Water (MTCA A). None of the other wells sampled contained any gasoline-range hydrocarbons above the laboratory reporting limits (RLs).
- None of the wells sampled contained any diesel or motor oil-range hydrocarbons above the RLs.

6/8/04

- Benzene was detected in MW-1 at a concentration (12.6 µg/L) above MTCA A. None of the other wells sampled contained any Benzene, Toluene, Ethylbenzene or Total Xylenes above the RLs.
- Total lead was detected in MW-2 and MW-3 at concentrations (21.3 µg/L, and 20.0 µg/L respectively) above MTCA A. Total lead was detected in MW-1 at a concentration (14.6 µg/L) above the RLs but below MTCA A. Total Lead was not detected above the RLs in MW-4.
- No drums were left on site.

ATTACHMENTS:

Figure 1: Site Location Map

Figure 2: Site Plan with Groundwater Elevation Contours

Figure 3: Site Plan with and Analytical Results (6/10/03– 3/24/04)

Table 1: Summary of Cumulative Groundwater Elevations and Sample Analytical Results

Laboratory Analytical Report and Chain of Custody Record

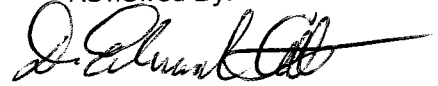
Groundwater Monitoring Field Data Records

Prepared By:



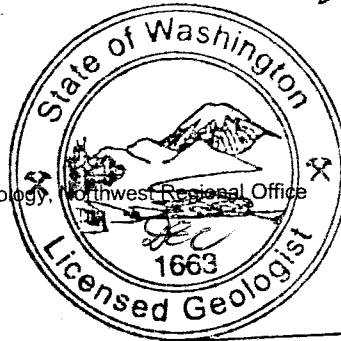
August Welch
Assistant Scientist

Reviewed By:



Doane E. Cafferty, L.G.
Project Geologist

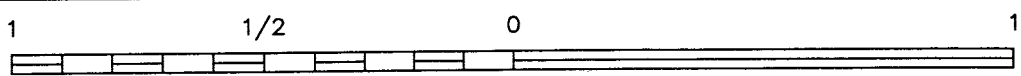
cc: LUST Coordinator, Washington State Department of Ecology, Northwest Regional Office
Mr. Frank Diehl, Keith Oil Corporation



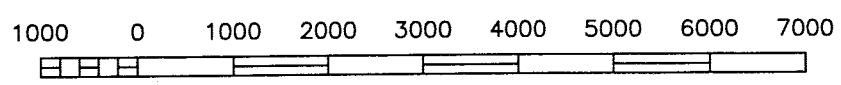
Doane E. Cafferty



WASHINGTON



SCALE (MILES)



SCALE (FEET)

REFERENCE: USGS 7.5 MINUTE QUADRANGLE; BELLINGHAM SOUTH, WASHINGTON; 1972



PREPARED FOR:
ConocoPhillips
 FACILITY NO 6380
 200 SOUTH 36th STREET
 BELLINGHAM, WASHINGTON

SITE LOCATION MAP

FIGURE:

1

12034 134th COURT, SUITE 102
 REDMOND, WASHINGTON
 PHONE: (425) 372-1600 FAX: (425) 372-1650

JOB NUMBER:
01CP.06380.04

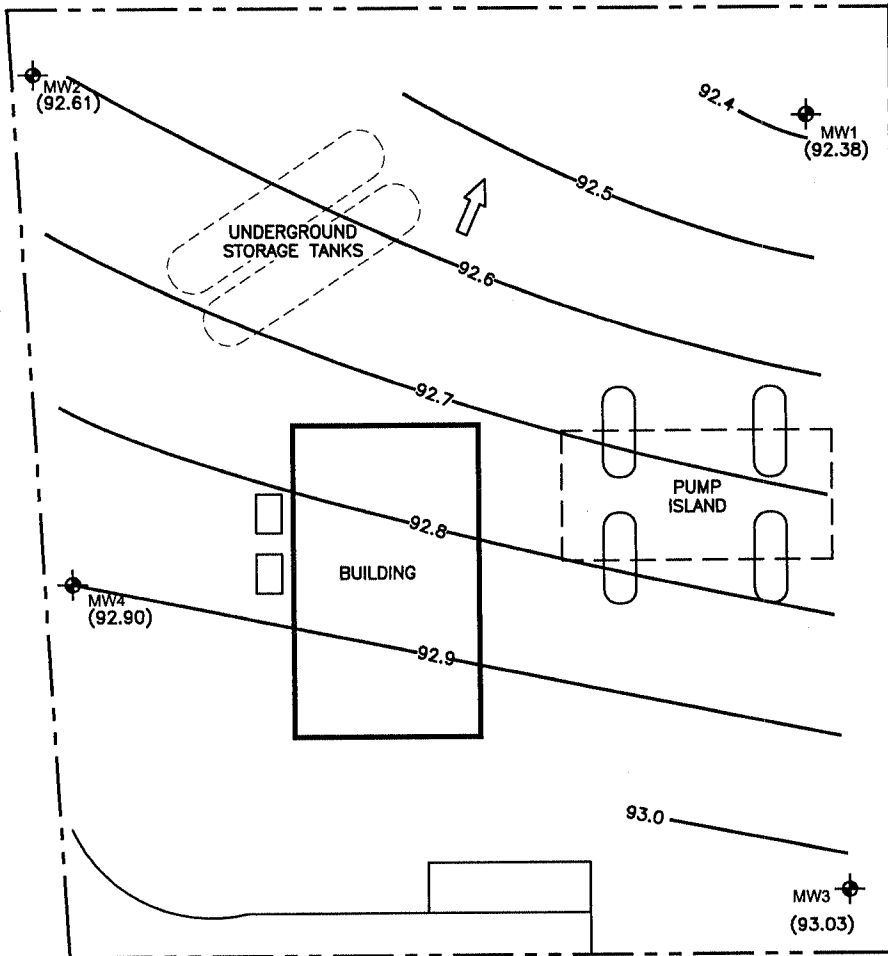
DRAWN BY:
S. SIMMONS

CHECKED BY:

APPROVED BY:
[Signature]

DATE:
2/5/04

BULL McDONALD PARKWAY



LEGEND

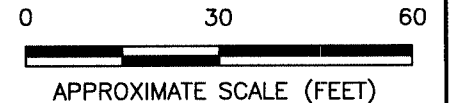
- SITE BOUNDARY
- ⊕ MONITORING WELL LOCATION
- GROUNDWATER**
- (120.00) GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION CONTOUR
- ← INDICATES APPARENT GROUNDWATER FLOW DIRECTION
- (NM) NOT MEASURED

NOTES:

- 1). ALL LOCATIONS ARE APPROXIMATE.
- 2). * = GROUNDWATER ELEVATION NOT USED IN CONTOURING.
- 3). CONTOUR INTERVAL = 0.1 FT.

SAMISH WAY

SOUTH 36th STREET



SOURCE:
 BASE MAP FROM; ENVIRONMENTAL RESOLUTIONS, INC.
 (ERI) TITLED GROUNDWATER SAMPLE ANALYSIS MAP--
 06/10/03, PLATE 1, DATED 07/08/03, PROJECT
 NO. 31065. CADD FILE 31065.13.DWG



SECOR
 12034 134th COURT, SUITE 102
 REDMOND, WASHINGTON
 PHONE: (425) 372-1800 FAX: (425) 372-1850

PREPARED FOR:
ConocoPhillips
 FACILITY NO 6380
 200 SOUTH 36th STREET
 BELLINGHAM, WASHINGTON


**SITE PLAN WITH
 GROUNDWATER ELEVATION
 CONTOURS (3/24/04)**

FIGURE:
2

JOB NUMBER:
 01CP.06380.04

DRAWN BY:
 S. SIMMONS

CHECKED BY:

APPROVED BY:


DATE:
 5/5/04

BULL McDONALD PARKWAY

LEGEND

- SITE BOUNDARY
- ⊕ MONITORING WELL LOCATION

ANALYTES

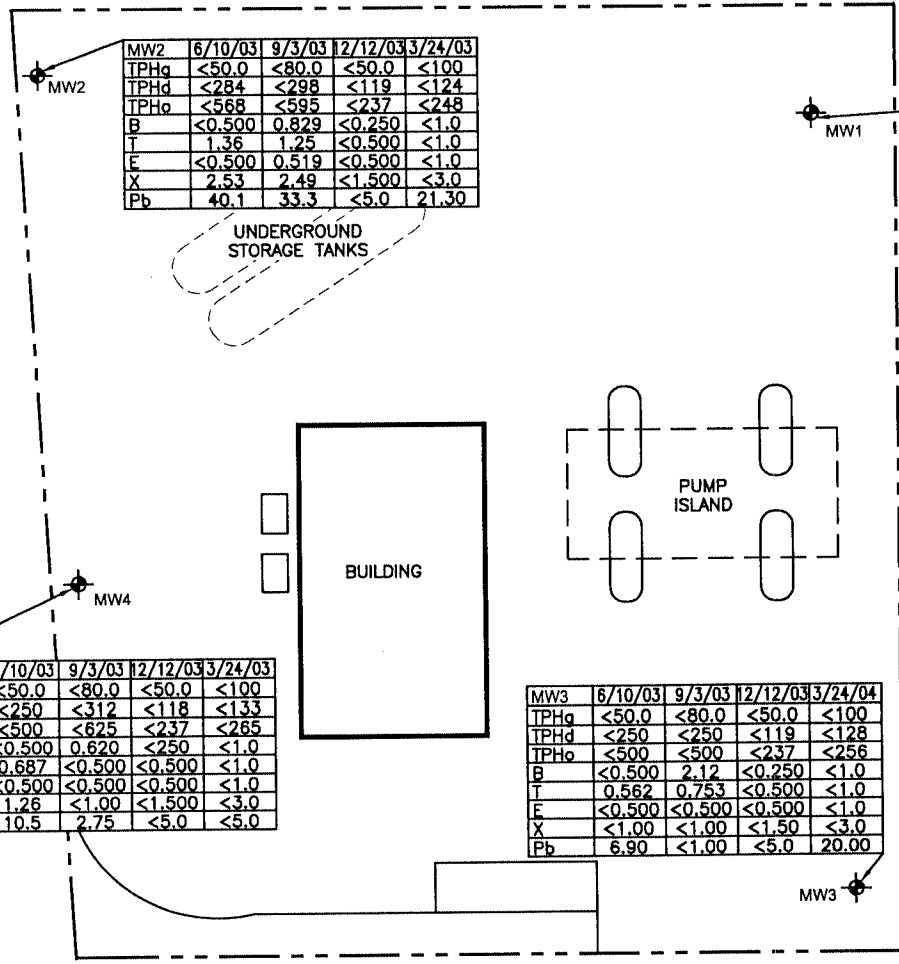
- TPHg TOTAL PETROLEUM HYDROCARBONS GASOLINE
- TPHd TOTAL PETROLEUM HYDROCARBONS DIESEL
- TPHo TOTAL PETROLEUM HYDROCARBONS OIL
- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X TOTAL XYLENES
- Pb TOTAL LEAD

(NA) NOT ANALYZED

(µg/L) MICROGRAMS PER LITER

NOTES:

- 1). ALL LOCATIONS ARE APPROXIMATE.
- 2). ALL RESULTS ARE IN (µg/L)
- 3). RESULTS IN RED ARE ABOVE MTCA METHOD A CLEAN UP LEVELS FOR GROUNDWATER.



MW2	6/10/03	9/3/03	12/12/03	3/24/03
TPHg	<50.0	<80.0	<50.0	<100
TPHd	<284	<298	<119	<124
TPHo	<568	<595	<237	<248
B	<0.500	0.829	<0.250	<1.0
T	1.36	1.25	<0.500	<1.0
E	<0.500	0.519	<0.500	<1.0
X	2.53	2.49	<1.500	<3.0
Pb	40.1	33.3	<5.0	21.30

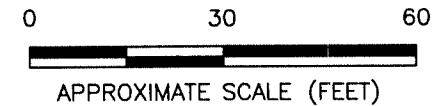
MW1	6/10/03	9/3/03	12/12/03	3/24/04
TPHg	400	258	204	163
TPHd	<250	301	700	<126
TPHo	<500	<588	304	<251
B	36.9	1.91	2.45	12.6
T	2.43	3.22	<0.500	<1.0
E	30.5	4.30	<0.500	<1.0
X	6.97	5.25	<1.500	<3.0
Pb	17.1	8.72	<5.00	14.60

MW4	6/10/03	9/3/03	12/12/03	3/24/03
TPHg	<50.0	<80.0	<50.0	<100
TPHd	<250	<312	<118	<133
TPHo	<500	<625	<237	<285
B	<0.500	0.620	<250	<1.0
T	0.687	<0.500	<0.500	<1.0
E	<0.500	<0.500	<0.500	<1.0
X	1.26	<1.00	<1.500	<3.0
Pb	10.5	2.75	<5.0	<5.0

MW3	6/10/03	9/3/03	12/12/03	3/24/04
TPHg	<50.0	<80.0	<50.0	<100
TPHd	<250	<250	<119	<128
TPHo	<500	<500	<237	<256
B	<0.500	2.12	<0.250	<1.0
T	0.562	0.753	<0.500	<1.0
E	<0.500	<0.500	<0.500	<1.0
X	<1.00	<1.00	<1.50	<3.0
Pb	6.90	<1.00	<5.0	20.00

SOUTH 36th STREET

North



SOURCE:
 BASE MAP FROM; ENVIRONMENTAL RESOLUTIONS, INC.
 (ER) TITLED GROUNDWATER SAMPLE ANALYSIS MAP--
 06/10/03, PLATE 1, DATED 07/08/03, PROJECT
 NO. 31065. CADD FILE 31065.13.DWG

 12034 134th COURT, SUITE 102 REDMOND, WASHINGTON PHONE: (425) 372-1600 FAX: (425) 372-1650	PREPARED FOR: FACILITY NO 6380 200 SOUTH 36th STREET BELLINGHAM, WASHINGTON		SITE PLAN WITH ANALYTICAL RESULTS (6/10/03 - 3/24/03)		FIGURE: 3
	JOB NUMBER: 01CP.06380.04.8521	DRAWN BY: ARA	CHECKED BY:	APPROVED BY: 	DATE: 4/16/04

TABLE 1
SUMMARY OF CUMMULATIVE GROUNDWATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS
 ConocoPhillips Site No. 6380
 200 South 36th Street
 Bellingham, Washington
 Page 1 of 2

Well Name	Sample Date	DTW	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X	Total Pb	Diss Pb
MW1	03/11/99	4.96	93.53	<50	<250	<750	<0.500	<0.500	<0.500	<1.00	2.41	--
TOC Elevation	05/25/99	5.33	93.16	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	--	--
98.49	08/12/99	6.66	91.83	<50.0	--	--	<0.500	<0.500	<0.500	<1.00	--	--
	12/07/99	6.10	92.39	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	6.18	--
	02/10/00	6.10	92.39	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	1.75	--
	02/02/01	5.17	93.32	<50.0	588	<750	12.4	1.02	1.10	2.77	--	<1.00
	02/08/02	5.77	92.72	838	1,600	<500	128	2.15	85.4	6.55	7.70	<1.00
	09/20/02	6.27	92.22	197	1,320	<588	1.82	<0.500	33.0	<1.00	<1.00	--
	12/04/02	7.05	91.44	373	511	<568	106	1.32	1.39	5.41	4.65	--
	03/05/03	5.70	92.79	168	<250	<500	28.3	1.70	3.55	5.87	4.90	--
	06/10/03	5.92	92.57	400	<250	<500	36.9	2.43	30.5	6.97	17.1	--
	09/03/03	6.30	92.19	258	301	<588	1.91	3.22	4.30	5.25	8.72	--
	12/12/03	5.530	92.960	204	700	304	2.45	<0.500	<0.500	<1.500	<5.0	--
	03/24/04	6.11	92.38	163	<126	<251	12.6	<1.00	<1.00	<3.00	14.6	--
MW2	03/11/99	7.93	92.81	<50	<250	<750	<0.500	<0.500	<0.500	<1.00	162	--
TOC Elevation	05/25/99	8.18	92.56	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	--	--
100.74	08/12/99	8.94	91.80	<50.0	281	<750	<0.500	<0.500	<0.500	<1.00	--	--
	12/07/99	8.04	92.70	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	17.0	--
	02/10/00	8.32	92.42	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	49.1	--
	02/02/01	6.40	94.34	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	--	<1.00
	02/08/02	7.77	92.97	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	40.6	<1.00
	09/20/02	9.23	91.51	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	<1.00	--
	12/04/02	9.15	91.59	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	2.89	--
	03/05/03	8.28	92.46	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	19.8	--
	06/10/03	8.56	92.18	<50.0	<284	<568	<0.500	1.36	<0.500	2.53	40.1	--
	09/03/03	9.13	91.61	<80.0	<298	<595	0.829	1.25	0.519	2.49	33.3	--
	12/12/03	8.120	92.620	<50.0	<119	<237	<0.250	<0.500	<0.500	<1.500	<5.0	--
	03/24/04	8.13	92.61	<100	<124	<248	<1.00	<1.00	<1.00	<3.00	21.3	--
MW3	03/11/99	4.93	92.91	<50	<250	<750	<0.500	<0.500	<0.500	<1.00	6.35	--
TOC Elevation	05/25/99	5.19	92.65	210	383	<750	<0.500	<0.500	3.04	3.93	--	--
97.84	08/12/99	5.70	92.14	56.3	<250	<750	<0.500	<0.500	0.732	1.84	--	--
	12/07/99	5.03	92.81	94.7	<250	<750	<0.500	0.598	<0.500	<1.00	4.40	--
	02/10/00	4.92	92.92	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	17.6	--
	02/02/01	4.76	93.08	63.0	413	<750	<0.500	<0.500	0.503	<1.00	--	<1.00
	02/08/02	4.59	93.25	91.5	410	<500	<0.500	<0.500	<0.500	<1.00	22.3	<1.00
	09/20/02	5.88	91.96	129	372	<500	<0.500	<0.500	<0.500	<1.00	<1.00	--
	12/04/02	5.26	92.58	147	371	<500	<0.500	<0.500	<0.500	<1.00	4.60	--
	03/05/03	4.70	93.14	62.2	<250	<500	<0.500	<0.500	<0.500	<1.00	12.5	--
	06/10/03	5.31	92.53	<50.0	<250	<500	<0.500	0.562	<0.500	<1.00	6.90	--
	09/03/03	5.66	92.18	<80.0	<250	<500	2.12	0.753	<0.500	<1.00	<1.00	--
	12/12/03	4.785	93.055	<50.0	<119	<237	<0.250	<0.500	<0.500	<1.500	<5.0	--
	03/24/04	4.81	93.03	<100	<128	<256	<1.00	<1.00	<1.00	<3.00	20.0	--
MTCA Method A Cleanup Levels				1000/800 ^a	500	500	5	1000	700	1000	15	15

**TABLE 1
SUMMARY OF CUMMULATIVE GROUNDWATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS**

ConocoPhillips Site No. 6380
200 South 36th Street
Bellingham, Washington
Page 2 of 2

Well Name	Sample Date	DTW	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X	Total Pb	Diss Pb
MW4	03/11/99	6.39	93.05	<50	<250	<750	<0.500	<0.500	<0.500	<1.00	29.0	--
TOC Elevation	05/25/99	6.62	92.82	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	--	--
99.44	08/12/99	7.31	92.13	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	--	--
	12/07/99	6.37	93.07	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	10.2	--
	02/10/00	6.48	92.96	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	23.6	--
	02/02/01	6.37	93.07	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00	--	<1.00
	02/08/02	6.03	93.41	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	3.30	<1.00
	09/20/02	7.37	92.07	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	<1.00	--
	12/04/02	7.03	92.41	<50.0	<250	<500	<0.500	<0.500	<0.500	<1.00	<1.00	--
	03/05/03	6.33	93.11	<50.0	<284	<568	<0.500	<0.500	<0.500	<1.00	6.81	--
	06/10/03	6.99	92.45	<50.0	<250	<500	<0.500	0.687	<0.500	1.26	10.5	--
	09/03/03	7.60	91.84	<80.0	<312	<625	0.620	<0.500	<0.500	<1.00	2.75	--
	12/12/03	6.485	92.955	<50.0	<118	<237	<0.250	<0.500	<0.500	<1.500	<5.0	--
	03/24/04	6.54	92.90	<100	<133	<265	<1.00	<1.00	<1.00	<3.00	<5.0	--

Waste Water	12/12/03	--	--	<50.0	--	--	<0.250	<0.500	<0.500	<1.500	--	--
Effluent	03/24/04	--	--	<50.0	--	--	<0.500	<0.500	<0.500	<1.500	--	--

MTCA Method A Cleanup Levels

1000/800 ^a	500	500	5	1000	700	1000	15	15
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EXPLANATION:

TOC = Top of Casing

All concentrations are in ug/L (ppb).

Wellhead elevations were taken from prior consultants reports.

DTW = Depth to water in feet below top of casing

GW Elev. = Groundwater elevation relative to top of casing elevation

TPH-G = Total Petroleum Hydrocarbons as Gasoline by Ecology Method NWTPH-Gx

TPH-D and TPH-O = Total Petroleum Hydrocarbons as Diesel and Oil, respectively, by Ecology Method NWTPH-Dx

B = Benzene; T = Toluene; E = Ethylbenzene; X = Total Xylenes

Prior to 12/12/03 BTEX = Aromatic compounds by EPA Method 8020 and 8021B, refer to laboratory reports.

After 9/03/03 BTEX = Aromatic compounds by EPA Method 5030/8260B, refer to laboratory reports.

Prior to 12/12/03 Total Pb by EPA Method 6020; Diss Pb = Dissolved lead by EPA Method 6020

After 9/03/03 Total Pb = Total lead by ICP-USEPA Method 6010.

-- = Not Analyzed or Sampled

< = Less than the stated laboratory reporting limit

Shaded values equal or exceed MTCA Method A Cleanup Levels.

^a Concentration levels stated by MTCA Method A for TPH-G are 1000 ug/L when no benzene is present and 800 ug/L when benzene is present.

Data collected before 12/12/03 are taken from prior consultants.



STL

STL Seattle
5755 8th Street East
Tacoma, WA 98424

Tel: 253 922 2310
Fax: 253 922 5047
www.stl-inc.com

TRANSMITTAL MEMORANDUM

DATE: April 13, 2004

TO: Marc Sauze
SECOR International Inc.
12034 134th Ct. NE, Suite 102
Redmond, WA 98052

PROJECT: Bellingham -6380

REPORT NUMBER: 120214

TOTAL NUMBER OF PAGES: _____

Enclosed are the test results for five samples received at STL Seattle on March 25, 2004.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Tom Coyner
Project Manager

STL Seattle is a part of Severn Trent Laboratories, Inc.

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender immediately at 253-922-2310 and destroy this report immediately.

00001

STL Seattle

Sample Identification:

<u>Lab. No.</u>	<u>Client ID</u>	<u>Date/Time Sampled</u>	<u>Matrix</u>
120214-1	MW 1	03-24-04 14:10	Liquid
120214-2	MW 2	03-24-04 13:00	Liquid
120214-3	MW 3	03-24-04 13:30	Liquid
120214-4	MW 4	03-24-04 12:35	Liquid
120214-5	disc-6380	03-24-04 14:50	Liquid

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00002

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 1
Lab ID:	120214-01
Date Received:	3/25/04
Date Prepared:	3/30/04
Date Analyzed:	3/30/04
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	Flags
Lead	0.0146	0.01	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 2
Lab ID:	120214-02
Date Received:	3/25/04
Date Prepared:	3/30/04
Date Analyzed:	3/30/04
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	Flags
Lead	0.0213	0.01	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 3
Lab ID:	120214-03
Date Received:	3/25/04
Date Prepared:	3/30/04
Date Analyzed:	3/30/04
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	Flags
Lead	0.02	0.01	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 4
Lab ID:	120214-04
Date Received:	3/25/04
Date Prepared:	3/30/04
Date Analyzed:	3/30/04
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	Flags
Lead	ND	0.01	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 1
Lab ID:	120214-01
Date Received:	3/25/2004
Date Prepared:	3/26/2004
Date Analyzed:	3/30/2004
% Solids	-
Dilution Factor	1

Diesel and Motor Oil by NWTPH-Dx Modified with Silica Gel Cleanup

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
o-terphenyl	108		50	150

Analyte	Result (mg/L)	PQL	MRL	Flags
#2 Diesel	ND	0.251	0.126	
Motor Oil	ND	0.502	0.251	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 2
Lab ID:	120214-02
Date Received:	3/25/2004
Date Prepared:	3/26/2004
Date Analyzed:	3/30/2004
% Solids	-
Dilution Factor	1

Diesel and Motor Oil by NWTPH-Dx Modified with Silica Gel Cleanup

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
o-terphenyl	99.4		50	150

Analyte	Result (mg/L)	PQL	MRL	Flags
#2 Diesel	ND	0.248	0.124	
Motor Oil	ND	0.495	0.248	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 3
Lab ID:	120214-03
Date Received:	3/25/2004
Date Prepared:	3/26/2004
Date Analyzed:	3/30/2004
% Solids	-
Dilution Factor	1

Diesel and Motor Oil by NWTPH-Dx Modified with Silica Gel Cleanup

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
o-terphenyl	96.8		50	150

Analyte	Result (mg/L)	PQL	MRL	Flags
#2 Diesel	ND	0.256	0.128	
Motor Oil	ND	0.512	0.256	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 4
Lab ID:	120214-04
Date Received:	3/25/2004
Date Prepared:	3/26/2004
Date Analyzed:	3/30/2004
% Solids	-
Dilution Factor	1

Diesel and Motor Oil by NWTPH-Dx Modified with Silica Gel Cleanup

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
o-terphenyl	107		50	150

Analyte	Result (mg/L)	PQL	MRL	Flags
#2 Diesel	ND	0.265	0.133	
Motor Oil	ND	0.53	0.265	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 1
Lab ID:	120214-01
Date Received:	3/25/2004
Date Prepared:	3/31/2004
Date Analyzed:	3/31/2004
% Solids	-
Dilution Factor	1

GRO by NWTPH-Gx / Volatile Aromatics by 5030/8260B

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
a,a,a-Trifluorotoluene	105		50	150
1-Chloro-3-fluorobenzene	101		87	115
Bromofluorobenzene	98.4		87	118
Pentafluorobenzene	101		81	126

Analyte	Result (mg/L)	RL	Flags
Gasoline By NWTPH-G	0.163	0.1	
Benzene	0.0126	0.001	
Toluene	ND	0.001	
Ethylbenzene	ND	0.001	
m&p-Xylene	ND	0.002	
o-Xylene	ND	0.001	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 2
Lab ID:	120214-02
Date Received:	3/25/2004
Date Prepared:	3/31/2004
Date Analyzed:	3/31/2004
% Solids	-
Dilution Factor	1

GRO by NWTPH-Gx / Volatile Aromatics by 5030/8260B

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
a,a,a-Trifluorotoluene	103		50	150
1-Chloro-3-fluorobenzene	96.4		87	115
Bromofluorobenzene	95.1		87	118
Pentafluorobenzene	95.3		81	126

Analyte	Result (mg/L)	RL	Flags
Gasoline By NWTPH-G	ND	0.1	
Benzene	ND	0.001	
Toluene	ND	0.001	
Ethylbenzene	ND	0.001	
m&p-Xylene	ND	0.002	
o-Xylene	ND	0.001	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 3
Lab ID:	120214-03
Date Received:	3/25/2004
Date Prepared:	3/31/2004
Date Analyzed:	3/31/2004
% Solids	-
Dilution Factor	1

GRO by NWTPH-Gx / Volatile Aromatics by 5030/8260B

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
a,a,a-Trifluorotoluene	106		50	150
1-Chloro-3-fluorobenzene	106		87	115
Bromofluorobenzene	104		87	118
Pentafluorobenzene	108		81	126

Analyte	Result (mg/L)	RL	Flags
Gasoline By NWTPH-G	ND	0.1	
Benzene	ND	0.001	
Toluene	ND	0.001	
Ethylbenzene	ND	0.001	
m&p-Xylene	ND	0.002	
o-Xylene	ND	0.001	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	MW 4
Lab ID:	120214-04
Date Received:	3/25/2004
Date Prepared:	3/31/2004
Date Analyzed:	3/31/2004
% Solids	-
Dilution Factor	1

GRO by NWTPH-Gx / Volatile Aromatics by 5030/8260B

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
a,a,a-Trifluorotoluene	106		50	150
1-Chloro-3-fluorobenzene	99		87	115
Bromofluorobenzene	96.5		87	118
Pentafluorobenzene	99.5		81	126

Analyte	Result (mg/L)	RL	Flags
Gasoline By NWTPH-G	ND	0.1	
Benzene	ND	0.001	
Toluene	ND	0.001	
Ethylbenzene	ND	0.001	
m&p-Xylene	ND	0.002	
o-Xylene	ND	0.001	

STL Seattle

Client Name	SECOR International Inc.
Client ID:	DISC-6380
Lab ID:	120214-05
Date Received:	3/25/2004
Date Prepared:	3/31/2004
Date Analyzed:	3/31/2004
% Solids	-
Dilution Factor	1

GRO by NWTPH-Gx / Volatile Aromatics by 5030/8260B

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
a,a,a-Trifluorotoluene	107		50	150
1-Chloro-3-fluorobenzene	96.6		87	115
Bromofluorobenzene	91.8		87	118
Pentafluorobenzene	101		81	126

Analyte	Result (mg/L)	RL	Flags
Gasoline By NWTPH-G	ND	0.1	
Benzene	ND	0.001	
Toluene	ND	0.001	
Ethylbenzene	ND	0.001	
m&p-Xylene	ND	0.002	
o-Xylene	ND	0.001	

STL Seattle

Lab ID:	Method Blank - TP800
Date Received:	-
Date Prepared:	3/30/04
Date Analyzed:	3/30/04
Dilution Factor:	1

Metals by ICP - USEPA Method 6010

Analyte	Result (mg/L)	PQL	Flags
Lead	ND	0.01	

STL Seattle

Matrix Spike Report

Client Sample ID: MW-3D
Lab ID: 120190-01
Date Prepared: 3/30/04
Date Analyzed: 3/30/04
QC Batch ID: TP800

Metals by ICP - USEPA Method 6010

Parameter Name	Sample Result (mg/L)	Spike Amount (mg/L)	MS Result (mg/L)	MS % Rec.	Flag
Lead	0	1	1.01	101	

STL Seattle

Duplicate Report

Client Sample ID: MW-3D
Lab ID: 120190-01
Date Prepared: 3/30/04
Date Analyzed: 3/30/04
QC Batch ID: TP800

Metals by ICP - USEPA Method 6010

Parameter Name	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD %	Flag
Lead	0	0	NC	

STL Seattle

Lab ID: Method Blank - DW0594
Date Received: -
Date Prepared: 3/26/2004
Date Analyzed: 3/29/2004
% Solids: -
Dilution Factor: 1

Diesel and Motor Oil by NWTPH-Dx Modified with Silica Gel Cleanup

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
o-terphenyl	119		50	150

Analyte	Result (mg/L)	PQL	MRL	Flags
#2 Diesel	ND	0.25	0.125	
Motor Oil	ND	0.5	0.25	

STL Seattle

Blank Spike/Blank Spike Duplicate Report

Lab ID: DW0594
Date Prepared: 3/26/2004
Date Analyzed: 3/29/2004
QC Batch ID: DW0594

Diesel and Motor Oil by NWTPH-Dx Modified with Silica Gel Cleanup

Compound Name	Blank Result (mg/L)	Spike Amount (mg/L)	BS Result (mg/L)	BS % Rec.	BSD Result (mg/L)	BSD % Rec.	RPD	Flag
#2 Diesel	0	5	4.57	91.4	5.5	110	18	
Motor Oil	0	5	4.69	93.8	5.34	107	13	

STL Seattle

Lab ID:	Method Blank - GB3764
Date Received:	-
Date Prepared:	3/31/2004
Date Analyzed:	3/31/2004
% Solids	-
Dilution Factor	1

GRO by NWTPH-Gx / Volatile Aromatics by 5030/8260B

Surrogate	% Recovery	Flags	Recovery Limits	
			Low	High
a,a,a-Trifluorotoluene	109		50	150
1-Chloro-3-fluorobenzene	100		87	115
Bromofluorobenzene	97.2		87	118
Pentafluorobenzene	102		81	126

Analyte	Result (mg/L)	RL	Flags
Gasoline By NWTPH-G	ND	0.1	
Benzene	ND	0.001	
Toluene	ND	0.001	
Ethylbenzene	ND	0.001	
m&p-Xylene	ND	0.002	
o-Xylene	ND	0.001	

STL Seattle

Duplicate Report

Client Sample ID: MW 4
Lab ID: 120214-04
Date Prepared: 3/31/2004
Date Analyzed: 3/31/2004
QC Batch ID: GB3764

GRO by NWTPH-Gx / Volatile Aromatics by 5030/8260B

Parameter Name	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD %	Flag
Gasoline By NWTPH-G	0	0	NC	
Benzene	0	0	NC	
Toluene	0	0	NC	
Ethylbenzene	0	0	NC	
m&p-Xylene	0	0	NC	
o-Xylene	0	0	NC	

DATA QUALIFIERS AND ABBREVIATIONS

- B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.
- C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.
- C3: Second analysis confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be ≤ 30%.
- C4: Second analysis confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 30%. The presence of this analyte was not verified per WAC 246-290-010. The original analysis was reported unless anomalies were noted.
- M: GC/MS confirmation was performed. The result derived from the original analysis was reported.
- D: The reported result for this analyte was calculated based on a secondary dilution factor.
- E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- MCL: Maximum Contaminant Level
- MDL: Method Detection Limit
- MRL: Method Reporting Limit
- N: See analytical narrative
- ND: Not Detected
- PQL: Practical Quantitation Limit
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product.
- X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.
- X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.
- X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike recovery was not determined due to the required dilution.
- X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.
- X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.
- X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.
- X8: Surrogate recovery was not determined due to the required dilution.
- X9: Surrogate recovery outside advisory QC limits due to matrix interference.

Chain of Custody Record

STL Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.stl-inc.com

**SEVERN
TRENT**

STL 00024

4.1

Client Secor	Project Manager Mark Sauer	Date 032404	Chain of Custody Number 09155
Address 12034 134th CT NE # 102	Telephone Number (Area Code)/Fax Number 425-372-1600 425-372-1650	Lab Number 120214	Page 1 of 2

City Redmond	State WA	Zip Code 98052	Site Contact	Lab Contact	Analysis (Attach list if more space is needed)
Project Name and Location (State) Bellingham - 6380			Carrier/Waybill Number		

Contract/Purchase Order/Quote No. 1571 SEL001	Matrix	Containers & Preservatives	Special Instructions/ Conditions of Receipt
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Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix				Containers & Preservatives						NWTPH-GX	BTEX	NWTPH-DX	Total Pb	
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH					
MW 1	032404	1410	X											X	X	X	X
MW 2	↓	1300	X											X	X	X	X
MW 3	↓	1330	X											X	X	X	X
MW 4	↓	1235	X											X	X	X	X
disc-6380	↓	1150	X											X	X		

Cooler <input type="checkbox"/> Yes <input type="checkbox"/> No Cooler Temp: _____	Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown	Sample Disposal <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	(A fee may be assessed if samples are retained longer than 1 month)
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Turn Around Time Required (business days) <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 5 Days <input type="checkbox"/> 10 Days <input type="checkbox"/> 15 Days <input type="checkbox"/> Other _____	QC Requirements (Specify)
---	---------------------------

1. Relinquished By Michael Sauer	Date 032504	Time 0600	1. Received By Charles STL	Date 3/25/04	Time 1000
2. Relinquished By Charles	Date 3/25/04	Time 1122R	2. Received By Charles	Date 3/25/04	Time 1122A
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

SECOR

DAILY FIELD LOG

Page: 1 of 1
Date: 032404

Client: **ConocoPhillips** Site No: **6380 - Bellingham** Project No: **01CP.06380.04**

Scope of Work: x Quarter Monitoring/Sampling **1571SECOO1**

Describe Daily Activities:

Gauged 4 monitoring wells.
Purged 4 monitoring wells.
Sampled 4 monitoring wells.

Number of drums left on site: 0

Field Notes:

on site at 11:55 gauge purge sample 4 well per sampling logs.
purge water into carbon drum and discharged on site. collected effluent. Lft site at 1545

Arrived on Site: 1155

Departed Site: 1545

Decontamination Procedures: **3-Stage (Alconox Wash, Tap Water Rinse, & Distilled Water Rinse)**

Daily Health and Safety Log Completed?: Utility Locations Checked?:

Important Conversations: none

Important Changes in Scope of Work: none

Weather Conditions: 50° F rain Subcontractors On Site: none

SECOR Personnel On Site: mm

Signed: [Signature]

Date: 032404

SECOR

International Incorporated

Monitoring Well Inspection Report

Site No. & Name: 6380 Bellingham

Date: 032404

Project Number: 01CP.06380.04

Field Personnel: August Welch mm

Well Location Number:		mw1	mw2	mw3	mw4				
E X T E R I O R	Well Perimeter Seal Condition	G-Good P-Poor	P	P	P	P			
	Well Structure Drainage	G-Good P-Poor	P	G	G	G			
	Properly Secured	Y-Yes N-No	N	N	Y	Y			
	Type of Well Vault	(E=EMCO Wheaton M=Morrison V=Vault)							
	Type of Well Seal (Dirt, Concrete, etc.)		C	C	C	C			
	Well Casing Type (i.e. 2" or 4")		2	2	2	2			
	Locking Cap Condition	G-Good P-Poor	G	G	G	G			
	Rubber Seal Condition	G-Good P-Poor	P	P	P	P			
	Lock on Well	Y-Yes N-No	N	N	N	N			
	Liquid Present in Well Vault	Y-Yes N-No	Y	N	N	Y			

Well Location Number:									
E X T E R I O R	Well Perimeter Seal Condition	G-Good P-Poor							
	Well Structure Drainage	G-Good P-Poor							
	Properly Secured	Y-Yes N-No							
	Type of Well Vault	(E=EMCO Wheaton M=Morrison V=Vault)							
	Type of Well Seal (Dirt, Concrete, etc.)								
	Well Casing Type (i.e. 2" or 4")								
	Locking Cap Condition	G-Good P-Poor							
	Rubber Seal Condition	G-Good P-Poor							
	Lock on Well	Y-Yes N-No							
	Liquid Present in Well Vault	Y-Yes N-No							

Comments: _____

SECOR

INTERNATIONAL
INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name: 6380 Bellingham
 Project Number: 01CP.06380.04
 SECOR Rep: *mm* Checked by:

Well No: *MW4*
 Date: *032404*
 Sample Time: *1235*
 Sample No:

PURGING & SAMPLING EQUIPMENT / METHOD

WELL SPECIFICATIONS & MEASUREMENTS

Water Level Meter Type & ID: *Solinist #* Borehole Diameter (in): *(8)* 10 12
 Purging Equipment / Method: Vac Truck Bailer Casing Diameter (in): *(2)* 4 6
 Submersible Pump Peristaltic
 pH Temp/Conductivity Meter Type / ID: Depth to Water (DTW₁) (ft): *6.54*
 Sampling Method: Teflon Bailer Disposable Bailer Total Well Depth (DTB) (ft): *20.3* Water Column: *13.76*
 Other: *Peristaltic*
 Decontamination Method: Steam / High Pressure Wash Floating Product: Thickness (in):
 3 Stage (Alconox, Tap & DI rinse) Casing Volume (gal): *2.20* 3 Casing Volumes (gal): *6.60*
 Other:

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	ORP	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging						
<i>1210</i>		<i>~6.6</i>					

Maximum Drawdown (DTW₂) (ft) = *Fast Recharging Well*
 Pump Rate (GPM) = *Slow Recharging Well*

SAMPLING INFORMATION

Time Sampled: *1235* Depth to Water at time of sampling (DTW₃):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
4 VOAa	N	HCl & Ice	TPH-Gx
1 L Amber	N	HCl & Ice	TPH-Dx
16 oz. Plastic	N	HNO ₃	Total Pb

BOREHOLE VOLUME CALCULATIONS

RECOVERY CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW ₁)
2	10	1.14 (DTB-DTW ₁)
4	10	1.50 (DTB-DTW ₁)
4	12	1.95 (DTB-DTW ₁)
6	10	2.11 (DTB-DTW ₁)

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad) - (\quad)}{(\quad) - (\quad)} = \underline{\quad\quad\quad} \%$$

Notes:

80% Recharge =

SECOR

INTERNATIONAL
INCORPORATED

WELL PURGING / SAMPLING LOG

Well No:

mw 2

Project Name: 6380 Bellingham

Date: 032404

Project Number: 01CP.06380.04

Sample Time: 1300

SECOR Rep: mw

Checked by:

Sample No:

PURGING & SAMPLING EQUIPMENT / METHOD

WELL SPECIFICATIONS & MEASUREMENTS

Water Level Meter Type & ID: Solinst #

Borehole Diameter (in): 8 10 12

Purging Equipment / Method: Vac Truck Bailer
 Submersible Pump Peristaltic

Casing Diameter (in): 2 4 6

pH Temp/Conductivity Meter Type / ID:

Depth to Water (DTW₁) (ft): 8.13Sampling Method: Teflon Bailer Disposable Bailer
 Other: Peristaltic

Total Well Depth 20.6 (DTB) (ft): Water Column: 12.47

Decontamination Method: Steam / High Pressure Wash
 3 Stage (Alconox, Tap & DI rinse)
Other:

Floating Product: Thickness (in):

Casing Volume (gal): 2.0 3 Casing Volumes (gal): 6

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	ORP	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging						
1245		~ 6					

Maximum Drawdown (DTW₂) (ft) =

Pump Rate (GPM) =

 Fast Recharging Well
 Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1300	Depth to Water at time of sampling (DTW ₃):		
Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
4 VOAA	N	HCl & Ice	TPH-Gx
1 L Amber	N	HCl & Ice	TPH-Dx
16 oz. Plastic	N	HNO ₃	Total Pb

BOREHOLE VOLUME CALCULATIONS

RECOVERY CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW ₁)
2	10	1.14 (DTB-DTW ₁)
4	10	1.50 (DTB-DTW ₁)
4	12	1.95 (DTB-DTW ₁)
6	10	2.11 (DTB-DTW ₁)

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad) - (\quad)}{(\quad) - (\quad)} = \underline{\quad\quad\quad} = \underline{\quad\quad\quad} \%$$

Notes:

80% Recharge =

<h1>SECOR</h1> <p>INTERNATIONAL INCORPORATED</p>	WELL PURGING / SAMPLING LOG		Well No: mw3
	Project Name: 6380 Bellingham		Date: 032404
	Project Number: 01CP.06380.04		Sample Time: 1330
	SECOR Rep: mm	Checked by:	Sample No:

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in):	8 10 12
Purging Equipment / Method: <input type="checkbox"/> Vac Truck <input type="checkbox"/> Bailer <input checked="" type="checkbox"/> Submersible Pump <input type="checkbox"/> Peristaltic	Casing Diameter (in):	6 4 6
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW ₁) (ft):	4.81
Sampling Method: <input type="checkbox"/> Teflon Bailer <input type="checkbox"/> Disposable Bailer <input checked="" type="checkbox"/> Other: Peristaltic	Total Well Depth (DTB) (ft):	20.8
Decontamination Method: <input type="checkbox"/> Steam / High Pressure Wash <input checked="" type="checkbox"/> 3 Stage (Alconox, Tap & DI rinse) Other:	Floating Product:	Water Column: 16
	Casing Volume (gal): 2.56	Thickness (in):
	3 Casing Volumes (gal): 7.7	

PURGING INFORMATION							
Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	ORP	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging						
1315		~7.7					

Maximum Drawdown (DTW ₂) (ft) =	<input checked="" type="checkbox"/> Fast Recharging Well
Pump Rate (GPM) =	<input type="checkbox"/> Slow Recharging Well

SAMPLING INFORMATION			
Time Sampled: 1330	Depth to Water at time of sampling (DTW ₃):		
Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
4 VOAa	N	HCl & Ice	TPH-Gx
1 L Amber	N	HCl & Ice	TPH-Dx
16 oz. Plastic	N	HNO ₃	Total Pb

BOREHOLE VOLUME CALCULATIONS	RECOVERY CALCULATIONS																		
<p>The calculation of one borehole volume is based on the formula in the SAM Manual.</p> <table border="1"> <tr> <th>Casing Diameter (in)</th> <th>Borehole Diameter (in)</th> <th>Calculated Borehole Volume (gal)</th> </tr> <tr> <td>2</td> <td>8</td> <td>.77 (DTB-DTW₁)</td> </tr> <tr> <td>2</td> <td>10</td> <td>1.14 (DTB-DTW₁)</td> </tr> <tr> <td>4</td> <td>10</td> <td>1.50 (DTB-DTW₁)</td> </tr> <tr> <td>4</td> <td>12</td> <td>1.95 (DTB-DTW₁)</td> </tr> <tr> <td>6</td> <td>10</td> <td>2.11 (DTB-DTW₁)</td> </tr> </table>	Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)	2	8	.77 (DTB-DTW ₁)	2	10	1.14 (DTB-DTW ₁)	4	10	1.50 (DTB-DTW ₁)	4	12	1.95 (DTB-DTW ₁)	6	10	2.11 (DTB-DTW ₁)	$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$ $\% \text{ of Recovery} = 1 - \frac{(\quad) - (\quad)}{(\quad) - (\quad)} = \underline{\quad\quad\quad}$ $= \underline{\quad\quad\quad} \%$
Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)																	
2	8	.77 (DTB-DTW ₁)																	
2	10	1.14 (DTB-DTW ₁)																	
4	10	1.50 (DTB-DTW ₁)																	
4	12	1.95 (DTB-DTW ₁)																	
6	10	2.11 (DTB-DTW ₁)																	
Notes:	80% Recharge =																		

SECOR

INTERNATIONAL
INCORPORATED

WELL PURGING / SAMPLING LOG

Well No:

mw1

Project Name: 6380 Bellingham

Date:

032404

Project Number: 01CP.06380.04

Sample Time:

1410

SECOR Rep: mm

Checked by:

Sample No:

PURGING & SAMPLING EQUIPMENT / METHOD

WELL SPECIFICATIONS & MEASUREMENTS

Water Level Meter Type & ID: <u>Solinist #</u>	Borehole Diameter (in): <u>8</u> 10 12
Purging Equipment / Method: <input type="checkbox"/> Vac Truck <input type="checkbox"/> Bailer <input checked="" type="checkbox"/> Submersible Pump <input type="checkbox"/> Peristaltic	Casing Diameter (in): <u>2</u> 4 6
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW ₁) (ft): <u>6.11</u>
Sampling Method: <input type="checkbox"/> Teflon Bailer <input type="checkbox"/> Disposable Bailer <input checked="" type="checkbox"/> Other: <u>Peristaltic</u>	Total Well Depth <u>21.8</u> (DTB) (ft):
Decontamination Method: <input type="checkbox"/> Steam / High Pressure Wash <input checked="" type="checkbox"/> 3 Stage (Alconox, Tap & DI rinse) Other:	Floating Product:
	Casing Volume (gal): <u>2.51</u>
	Water Column: <u>15.7</u>
	Thickness (in):
	3 Casing Volumes (gal): <u>7.5</u>

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	ORP	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging						
<u>1350</u>		<u>~25</u>					

Maximum Drawdown (DTW₂) (ft) = _____

Pump Rate (GPM) = _____

Fast Recharging Well
 Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1410 Depth to Water at time of sampling (DTW₃): _____

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
4 VOAA	N	HCl & Ice	TPH-Gx
1 L Amber	N	HCl & Ice	TPH-Dx
16 oz. Plastic	N	HNO ₃	Total Pb

BOREHOLE VOLUME CALCULATIONS

RECOVERY CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Casing Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW ₁)
2	10	1.14 (DTB-DTW ₁)
4	10	1.50 (DTB-DTW ₁)
4	12	1.95 (DTB-DTW ₁)
6	10	2.11 (DTB-DTW ₁)

Notes: _____

80% Recharge = _____

% of Recovery = 1 - $\frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$

% of Recovery = 1 - $\frac{(\quad) - (\quad)}{(\quad) - (\quad)} = \underline{\quad\quad\quad} \%$