



PACIFIC
ENVIRONMENTAL
GROUP, INC.

RECEIVED
MAY 21 1996
DEPT. OF ECOLOGY

release 2599
Chevron 9-0709
fall city

May 17, 1996
Project 520-069.2A

Mr. Dan Barnat
Chevron U.S.A. Products Company
P.O. Box 5004
San Ramon, CA 94583-0804

Re: Semi-Annual Monitoring and Sampling Activities
Chevron Service Station No. 9-0709
4211 Preston-Fall City Road
Fall City, Washington

Dear Mr. Barnat:

Pacific Environmental Group Inc. (PACIFIC) conducted the quarterly groundwater monitoring and sampling event on April 11, 1996 at the site referenced above. Four groundwater monitoring wells were gauged to determine the depth to groundwater and to check for the presence of separate-phase hydrocarbons (SPH). There were no SPH observed in any of the wells. Well MW-1 was not measured or sampled due to extensive bentonite clogging.

A site location map is included as Figure 1. A groundwater elevation contour map providing benzene/TPH-gasoline concentrations is presented as Figure 2. Groundwater elevations and analytical results are presented in Table 1.

Groundwater monitoring and sample collection protocol and field data sheets are presented in Attachment A. The groundwater samples were analyzed for the following parameters:

- Total petroleum hydrocarbons calculated as gasoline (TPH-gasoline) by Washington Method WTPH-G; and
- Benzene, toluene, ethylbenzene, and xylene compounds (BTEX) by EPA Method 8020.

Laboratory reports and chain-of-custody records are included in Attachment B.

May 17, 1996

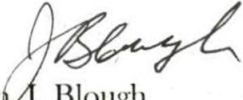
Page 2

Purge water was treated on-site by filtering the water through granular activated carbon and was subsequently discharged.

PACIFIC is pleased to assist Chevron on this project. If you have any questions, please call.

Sincerely,

Pacific Environmental Group, Inc.



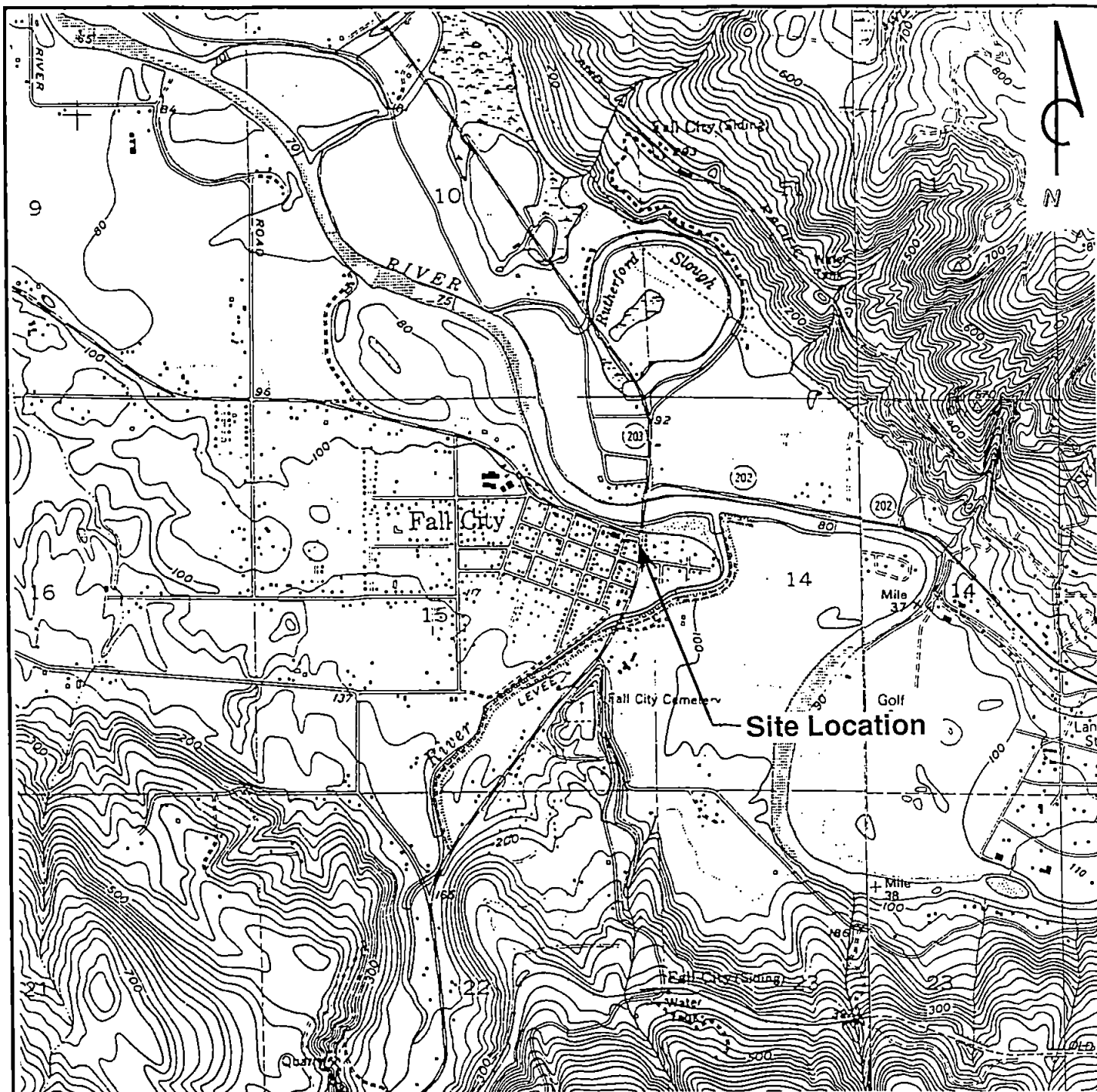
John J. Blough
Field Services Manager



Eric Larsen
Project Manager

Attachments: Figure 1 - Site Location Map
Figure 2 - Site Map
Table 1 - Groundwater Elevations and Analytical Results
Attachment A - Groundwater Monitoring and Sample Collection
Protocol
Field Data Sheets
Attachment B - Laboratory Analytical Results
Chain-of-Custody Documentation

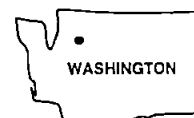
cc: Mr. Ben Forson, Department of Ecology



REFERENCE:

USGS 7.5 MIN. TOPOGRAPHIC MAP
 TITLED: SNOQUALMIE, WASHINGTON
 DATED: 1993
 TITLED: FALL CITY, WASHINGTON
 DATED: 1953 PHOTOREVISED: 1973
 COUNTY: KING

SCALE: 1 to 24,000 (1 Inch = Approximately 2000 Feet)



QUADRANGLE
 LOCATION



PACIFIC
 ENVIRONMENTAL
 GROUP, INC.

CHEVRON SERVICE STATION #9-0709
 4211 Preston - Fall City Road
 Fall City, Washington

SITE LOCATION MAP

FIGURE:

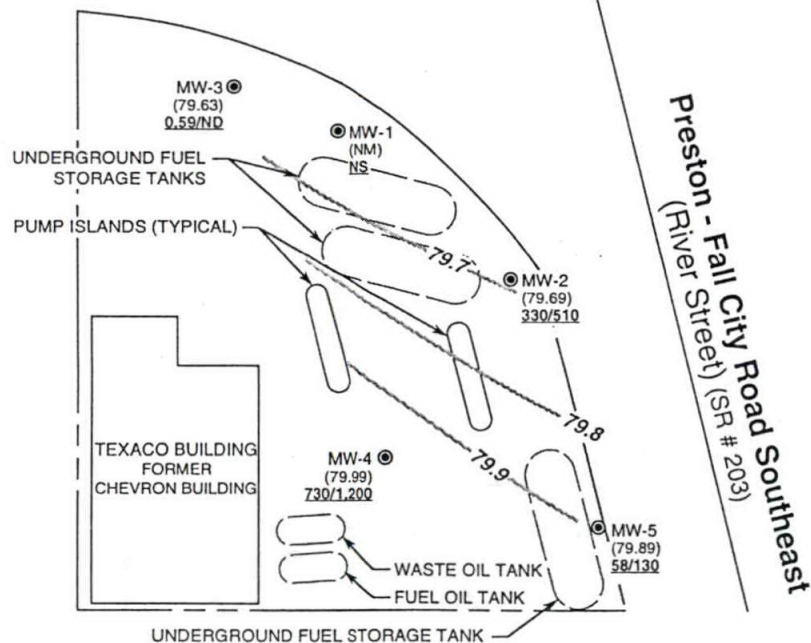
1

PROJECT:
 520-069.2A



Southeast Redmond - Fall City Road (SR #202)

INFERRED DIRECTION OF
GROUNDWATER MIGRATION



LEGEND

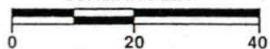
- MW-1 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- 79.8 — GROUNDWATER ELEVATION CONTOUR IN FEET, ARBITRARY SITE DATUM, 4-11-1996
- (79.69) GROUNDWATER ELEVATION IN FEET, ARBITRARY SITE DATUM, 4-11-1996
- (NM) NOT MEASURED, NOT INCLUDED IN SAMPLING PROGRAM, 4-11-1996
- 330/510 BENZENE / TPH-GASOLINE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 4-11-1996
- ND NOT DETECTED, 4-11-1996
- NS NOT SAMPLED, WELL IS DAMAGED AND CLOGGED WITH BENTONITE, 4-11-1996

NOTE: Base Map Provided by GROUNDWATER TECHNOLOGY, INC.



PACIFIC
ENVIRONMENTAL
GROUP, INC.

SCALE IN FEET



CHEVRON SERVICE STATION #9-0709
4211 Preston - Fall City Road
Fall City, Washington

SITE MAP

FIGURE:
2
PROJECT:
520-069.2A

TABLE 1
GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS

1 of 3

Chevron Service Station 9-0709
4211 Preston - Fall City Road SE
Fall City, Washington

Sample I.D. TOC	Sample Date	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)	TPH- Gasoline (ppb)	TPH- Diesel (ppb)	TPH- Oil (ppb)	TPH- 418.1 (ppb)	DTW (feet)	SPH (feet)	WTE (feet)
MW-1	11/14/90	--	--	--	--	--	--	--	--	12.20	--	86.68
98.88	01/03/91	--	--	--	--	--	--	--	--	16.60	--	82.28
	01/16/91	185	6	47	52	1,200	ND	ND	1,200	13.27	--	85.61
	01/25/91	--	--	--	--	--	--	--	--	17.71	--	81.17
	09/05/91	28	9	18	23	1,800	ND	--	--	20.18	--	78.70
Duplicate	09/05/91	28	8	17	21	1,800	ND	--	--	--	--	--
	01/10/92	ND	2	6	9	430	ND	--	--	19.07	--	79.81
97.16	02/14/92	--	--	--	--	--	--	--	--	17.87	--	79.29
	12/18/92	--	--	--	--	--	--	--	--	17.69	--	79.47
	01/18/93	89	10	9	17	1,330	300	ND	--	19.63	--	77.53
	05/27/93	31	1.8	4.5	9.1	1,200	--	--	--	17.31	--	79.85
	11/22/93	8.1	2.3	3.9	8	1,200	--	--	--	18.56	--	78.60
	05/12/94	20	ND	3.7	3.6	1,200	--	--	--	17.66	--	79.50
	11/15/94	35	4.6	9	9.5	1,500	--	--	--	18.65	--	78.51
	04/06/95	--	--	--	--	--	--	--	--	--	--	--
	10/12/95	--	--	--	--	--	--	--	--	--	--	--
	04/11/96	--	--	--	--	--	--	--	--	--	--	--
MW-2	11/14/90	--	--	--	--	--	--	--	--	12.11	--	86.79
98.90	01/03/91	--	--	--	--	--	--	--	--	18.55	--	80.35
	01/16/91	995	137	6	71	3,100	ND	14,600	7,400	13.15	--	85.75
	01/25/91	--	--	--	--	--	--	--	--	17.54	--	81.36
	09/05/91	62	4	6	10	900	ND	--	--	20.01	--	78.89
	01/10/92	ND	ND	1	ND	94		--	--	18.93	--	79.97
Duplicate	01/10/92	ND	ND	1	ND	110	ND	--	--	--	--	--
96.99	02/14/92	--	--	--	--	--	--	--	--	17.56	--	79.43
	12/18/92	--	--	--	--	--	--	--	--	17.38	--	79.61
	01/18/93	38	ND	ND	ND	ND	ND	ND	--	19.37	--	77.62
	05/27/93	23	1	1	2.4	360	--	--	--	17.00	--	79.99
	11/22/93	98	2.8	4.1	15	1,100	--	--	--	18.31	--	78.68
	05/12/94	98	2.5	ND	7.5	180	--	--	--	17.41	--	79.58
Dilution	11/15/94	120	19	12	44	720	--	--	--	18.35	--	78.64
	04/06/95	180	12	6.2	37	690	--	--	--	17.75	--	79.24
	10/12/95	940	130	95	330	3,300	--	--	--	15.21	--	81.78
	04/11/96	330	0.63	4.2	5.4	510	--	--	--	17.30	--	79.69

TABLE 1
GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS

Chevron Service Station 9-0709
 4211 Preston - Fall City Road SE
 Fall City, Washington

Sample I.D. TOC	Sample Date	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)	TPH- Gasoline (ppb)	TPH- Diesel (ppb)	TPH- Oil (ppb)	TPH- 418.1 (ppb)	DTW (feet)	SPH (feet)	WTE (feet)
MW-3	11/14/90	--	--	--	--	--	--	--	--	12.15	--	87.09
99.24	01/03/91	--	--	--	--	--	--	--	--	18.78	--	80.46
	01/16/91	3	ND	ND	2	ND	ND	--	9,800,000	13.22	--	86.02
	01/25/91	--	--	--	--	--	--	--	--	17.78	--	81.46
	09/05/91	0.3	ND	ND	ND	ND	ND	--	--	20.26	--	78.98
	01/10/92	ND	ND	ND	ND	ND	ND	--	--	19.29	--	79.95
97.08	02/14/92	--	--	--	--	--	--	--	--	17.78	--	79.30
	12/18/92	--	--	--	--	--	--	--	--	17.61	--	79.47
	01/18/93	ND	ND	ND	ND	ND	ND	ND	--	19.56	--	77.52
	05/27/93	ND	ND	ND	ND	ND	--	--	--	17.15	--	79.93
	11/22/93	ND	ND	ND	ND	ND	--	--	--	18.47	--	78.61
	05/12/94	ND	ND	ND	ND	ND	--	--	--	17.59	--	79.49
	11/15/94	ND	ND	ND	ND	ND	--	--	--	18.58	--	78.50
	04/06/95	ND	2.7	1.4	9.4	180	--	--	--	17.95	--	79.13
	10/12/95	13	ND	0.92	ND	150	--	--	--	15.15	--	81.93
	04/11/96	0.59	ND	ND	ND	ND	--	--	--	17.45	--	79.63
MW-4	11/14/90	--	--	--	--	--	--	--	--	11.86	--	87.39
99.25	01/03/91	--	--	--	--	--	--	--	--	18.39	--	80.86
	01/16/91	560	9	24	25	ND	ND	ND	ND	13.00	--	86.25
	01/25/91	--	--	--	--	--	--	--	--	17.37	--	81.88
	09/05/91	820	17	110	280	2,900	ND	--	--	19.89	--	79.36
	01/10/92	640	6	13	120	1,400	ND	--	--	18.82	--	80.43
97.58	02/14/92	--	--	--	--	--	--	--	--	17.68	--	79.90
	12/18/92	--	--	--	--	--	--	--	--	17.43	--	80.15
	01/18/93	850	4	46	178	900	ND	ND	--	19.52	--	78.06
	05/27/93	1000	15	80	240	1,400	--	--	--	17.15	--	80.43
Dilution	11/22/93	810	4.1	98	380	1,600	--	--	--	18.59	--	78.99
Dilution	05/12/94	180	1.1	27	90	600	--	--	--	17.64	--	79.94
Dilution	11/15/94	710	14	120	420	2,200	--	--	--	18.45	--	79.13
	04/06/95	180	0.89	25	100	400	--	--	--	17.95	--	79.63
	10/12/95	1,400	23	180	920	6,600	--	--	--	15.43	--	82.15
	04/11/96	730	13	77	190	1,200	--	--	--	17.59	--	79.99

TABLE 1
GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS

Chevron Service Station 9-0709
4211 Preston - Fall City Road SE
Fall City, Washington

Sample I.D. TOC	Sample Date	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)	TPH- Gasoline (ppb)	TPH- Diesel (ppb)	TPH- Oil (ppb)	TPH- 418.1 (ppb)	DTW (feet)	SPH (feet)	WTE (feet)
MW-5	11/14/90	--	--	--	--	--	--	--	--	11.42	--	86.83
98.25	01/03/91	--	--	--	--	--	--	--	--	17.98	--	80.27
Duplicate	01/16/91	653	12	47	50	ND	ND	ND	ND	12.50	--	85.75
	01/25/91	--	--	--	--	--	--	--	--	16.99	--	81.26
	09/05/91	2900	130	230	890	6,900	ND	--	--	19.49	--	78.76
	01/10/92	625	12	45	49	--	--	--	--	18.40	--	79.85
97.06	02/14/92	--	--	--	--	--	--	--	--	17.31	--	79.75
	12/18/92	--	--	--	--	--	--	--	--	17.07	--	79.99
	01/18/93	702	9	22	145	730	ND	ND	--	19.11	--	77.95
Dilution	05/27/93	210	3.1	21	62	400	--	--	--	16.80	--	80.26
Dilution	11/22/93	1100	9.6	66	200	1,400	--	--	--	18.14	--	78.92
	05/12/94	66	ND	2.7	17	140	--	--	--	17.22	--	79.84
Dilution	11/15/94	110	1.6	8.7	43	290	--	--	--	18.09	--	78.97
	04/06/95	100	1.0	6.8	31	170	--	--	--	17.55	--	79.51
	10/12/95	540	3.7	46	140	1,800	--	--	--	15.00	--	82.06
	04/11/96	58	0.74	6.7	10	130	--	--	--	17.17	--	79.89
Trip Blank	04/11/96	ND	ND	ND	ND	ND	--	--	--			
MTCA Method A Cleanup Levels:		5	40	30	20	1,000	1,000	1,000	1,000			
Laboratory Reporting Limits:		0.50	0.50	0.50	1.0	50	--	--	--			
ppb - Parts per billion (µg/L) TOC = Top of casing and groundwater elevations expressed as feet relative to an arbitrary datum. DTW = Depth to water SPH = Separate-phase hydrocarbon thickness WTE = Water table elevation ND = Not detected at the laboratory reporting limits -- = Not sampled, not measured, or not analyzed Dilution = Sample was diluted, higher detection limits Duplicate = Duplicate sample for given sampling period TPH as Gasoline - Analysis by Washington Method WTPH-G TPH as Diesel and Oil - Analysis by Washington Method WTPH-D + Extended TPH as 418.1 - Analysis by EPA Method 418.1 BTEX Compounds - Analysis by EPA Method 8020												

ATTACHMENT A
GROUNDWATER MONITORING AND
SAMPLE COLLECTION PROTOCOL
FIELD DATA SHEETS

ATTACHMENT A

Groundwater Monitoring

The groundwater sampling procedure consisted of measuring the water level in each well using an electronic water level indicator. The monitoring order is based on previous analytical data, moving from lowest to highest concentrations. Wells suspected to contain separate-phase hydrocarbons (SPH) were measured using an oil/water interface probe to measure the product thickness. Wells containing SPH are further checked using a clear bailer to observe viscosity and color of the SPH. Monitoring equipment in contact with groundwater was washed between wells with detergent and triple rinsed with distilled water.

Using existing surface elevation data, static water elevations were calculated for the groundwater elevation contour map. If SPH was measured in the well, an adjusted groundwater elevation was calculated by the following calculation:

$$(\text{Product thickness}) \times (0.8) + (\text{Water elevation}) = \text{Corrected water elevation}$$

Groundwater Sampling

The groundwater monitoring wells were purged of three casing volumes of water or until dry using a centrifugal pump with disposable polyethylene tubing or bailed by hand using disposable bailers. Wells containing SPH greater than 0.02-feet in thickness were not sampled.

After the water level in each well recovered to within at least 60% of the initial measurement, a sample was collected using a disposable bailer and was placed into appropriate EPA-approved containers. Slow recharging wells were allowed to recharge as long as possible before sample collection. Samples requiring filtering were filtered in the laboratory. Information about each well, purge, recovery data and observations were noted on the groundwater sample data sheets which are included in this attachment. The samples were labeled, logged onto a chain-of-custody document, sealed, and transported to a Chevron approved laboratory. A set of trip blanks accompanied the groundwater samples throughout the sampling event.

Duplicate samples and blind samples were not collected unless specifically requested by Chevron.

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No. : 520-069-AA LOCATION: 4211 Preston DATE: 4/11/96
Fall City, WA
CLIENT/STATION NO. : 9-0709 FIELD TECHNICIAN: _____ DAY OF WEEK: Thursday

PROBE TYPE/ID No.

☐ Oil/Water IF _____
☒ H₂O level
 indicator _____
☐ Other: _____

[illegible]

Comments: _____

PROJECT NO.: 520-069.2A LOCATION: 4211 Preston WELL ID #: MW-1
Fall City, WA
CLIENT/STATION No.: 9-0709 FIELD TECHNICIAN: MJ

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC _____
Depth to water: _____ TOB _____ TOC _____
Total depth: _____ TOB _____ TOC _____
Date: _____ Time (2400): _____

Probe Type and I.D. #
☐ Oil/Water interface
☒ Electronic indicator
☐ Other: _____

CASING
DIAMETER

	<u>DIAMETER</u>	<u>GAL/</u> <u>LINEAR FT.</u>
☒	<u>2</u>	<u>0.17</u>
☐	<u>3</u>	<u>0.38</u>
☐	<u>4</u>	<u>0.66</u>
☐	<u>4.5</u>	<u>0.83</u>
☐	<u>5</u>	<u>1.02</u>
☐	<u>6</u>	<u>1.5</u>
☐	<u>8</u>	<u>2.6</u>

GAL/
LINEAR FT.

SAMPLE TYPE

☒ Groundwater
☐ Duplicate
☐ Extraction well
☐ Trip blank
☐ Field blank
☐ Equipment blank
☐ Other: _____

TD _____ - DTW = _____ Gal/Linear x Foot .17 = _____ Number of x Casings _____ Calculated = Purge _____

DATE PURGED: 4/11/96 START: _____ END (2400 hr): _____ PURGED BY: _____
DATE SAMPLED: 4/11/96 START: _____ END (2400 hr): _____ SAMPLED BY: _____

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR

Pumped dry Yes / No

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D. #

☒ Bailer: Disposable ☐ Airlift: _____
☒ Centrifugal: _____ ☐ Dedicated: _____
☐ Other: _____

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: Disposable ☐ Airlift: _____
☐ Centrifugal: _____ ☐ Dedicated: _____
☐ Other: _____

SAMPLE I.D. DATE TIME (2400) No. of Cont. SIZE CONTAINER PRESERVE ANALYTICAL PARAMETER

_____ SEE C.O.C. _____

WELL INTEGRITY: ☒ Good ☐ Fair ☐ Poor

REMARKS: Bentonite in well, not sampled, Bolts stripped.

SIGNATURE: Michael Jones



PROJECT NO. 520-C69-2A LOCATION: Fall City, IA WELL ID #: MW-2

CLIENT/STATION No.: 9-0709 FIELD TECHNICIAN: Michael Jones

WELL INFORMATION

Depth to Liquid: TOB TOC
Depth to water: TOB TOC
Total depth: TOB TOC
Date: Time (2400):

Probe Type and I.D. # ☐ Oil/Water interface
☒ Electronic indicator
☐ Other;

CASING
DIAMETER

	<u>CASING</u> <u>DIAMETER</u>	<u>GAL/</u> <u>LINEAR FT.</u>
☒	2	0.17
☐	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

GAL/
LINEAR FT.

SAMPLE TYPE

☒ Groundwater
☐ Duplicate
☐ Extraction well
☐ Trip blank
☐ Field blank
☐ Equipment blank
☐ Other;

TD 24.00 - DTW = 17.30 Gal/Linear x Foot 0.17 = 1.13 Number of x Casings 3 Calculated = Purge 3.41

DATE PURGED: 4/11/96 START: 1045 END (2400 hr): 1055 PURGED BY: Mike

DATE SAMPLED: 4/11/96 START: 1215 END (2400 hr): 1220 SAMPLED BY: Mike

<u>TIME</u> <u>(2400 hr)</u>	<u>VOLUME</u> <u>(gal.)</u>	<u>pH</u> <u>(units)</u>	<u>E.C.</u> <u>(umhos/cm @ 25°C)</u>	<u>TEMPERATURE</u> <u>(°F)</u>	<u>COLOR</u>	<u>TURBIDITY</u>	<u>ODOR</u>
---------------------------------	--------------------------------	-----------------------------	---	-----------------------------------	--------------	------------------	-------------

not required

Pumped dry Yes / No

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: TOB/TOC

PURGING EQUIPMENT/I.D. #

☒ Bailer: Disposable ☐ Airlift
☒ Centrifugal: ☐ Dedicated:
☐ Other:

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: Disposable
☐ Dedicated:
☐ Other:

<u>SAMPLE I.D.</u>	<u>DATE</u>	<u>TIME (2400)</u>	<u>No. of Cont.</u>	<u>SIZE</u>	<u>CONTAINER</u>	<u>PRESERVE</u>	<u>ANALYTICAL PARAMETER</u>
--------------------	-------------	--------------------	---------------------	-------------	------------------	-----------------	-----------------------------

SEE C.O.C.

WELL INTEGRITY: ☒ Good ☐ Fair ☐ Poor

REMARKS: 3.5 gallons purged, bolts stripped out, moderate odor

SIGNATURE: Michael Jones



PROJECT No. 520-069-2A LOCATION: Fall City, WA WELL ID #: MW-3

CLIENT/STATION No.: 9-0709 FIELD TECHNICIAN: Michael Jones

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC _____
Depth to water: _____ TOB _____ TOC _____
Total depth: _____ TOB _____ TOC _____
Date: _____ Time (2400): _____

Probe Type and I.D. # ☐ Oil/Water interface _____
☒ Electronic indicator _____
☐ Other: _____

CASING

DIAMETER

GAL/

LINEAR FT.

☒ 2 _____ 0.17
☐ 3 _____ 0.38
☐ 4 _____ 0.66
☐ 4.5 _____ 0.83
☐ 5 _____ 1.02
☐ 6 _____ 1.5
☐ 8 _____ 2.6

SAMPLE TYPE

☒ Groundwater
☐ Duplicate
☐ Extraction well
☐ Trip blank
☐ Field blank
☐ Equipment blank
☐ Other: _____

TD 22.70 - DTW = 17.45 Gal/Linear x Foot 17 = .89 Number of x Casings 3 Calculated = Purge 2.67

DATE PURGED: 4/11/96 START: 1030 END (2400 hr): 1040 PURGED BY: Mike

DATE SAMPLED: 4/11/96 START: 1200 END (2400 hr): 1205 SAMPLED BY: Mike

TIME (2400 hr)	VOLUME (gal.)	pH (units)	EC (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
-------------------	------------------	---------------	-------------------------	---------------------	-------	-----------	------

_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Pumped dry Yes ☒ No ☐

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D. #

☒ Bailer: Disposable ☐ Airlift: _____
☒ Centrifugal: _____ ☐ Dedicated: _____
☐ Other: _____

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: Disposable
☐ Dedicated: _____
☐ Other: _____

SAMPLE I.D.	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
-------------	------	-------------	--------------	------	-----------	----------	----------------------

_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

WELL INTEGRITY: ☒ Good ☐ Fair ☐ Poor

REMARKS: Actual purge 3 gallons; Bolts Stripped out, Yellow purge water, Faint odor,

SIGNATURE: Michael Jones



PACIFIC
ENVIRONMENTAL
GROUP, INC.

PROJECT No. 520-069.2A LOCATION: Fall City, WA WELL ID #: MW-4

CLIENT/STATION No.: 9-0709 FIELD TECHNICIAN: Michael Jones

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC _____
Depth to water: _____ TOB _____ TOC _____
Total depth: _____ TOB _____ TOC _____
Date: _____ Time (2400): _____

Probe Type and I.D. # ☐ Oil/Water interface _____
☒ Electronic indicator _____
☐ Other: _____

CASING

DIAMETER

GAL/

LINEAR FT.

☒ 2 _____ 0.17
☐ 3 _____ 0.38
☐ 4 _____ 0.66
☐ 4.5 _____ 0.83
☐ 5 _____ 1.02
☐ 6 _____ 1.5
☐ 8 _____ 2.6

SAMPLE TYPE

☒ Groundwater
☐ Duplicate
☐ Extraction well
☐ Trip blank
☐ Field blank
☐ Equipment blank
☐ Other: _____

TD 22.10 - DTW = 17.59 Gal/Linear 17 x Foot = .76 Number of 3 x Casings Calculated = Purge 2.30

DATE PURGED: 4/11/96 START: 1125 END (2400 hr): 1135 PURGED BY: Mike

DATE SAMPLED: 4/11/96 START: 1245 END (2400 hr): 1250 SAMPLED BY: Mike

TIME (2400 hr)	VOLUME (gal.)	pH (units)	EC (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
-------------------	------------------	---------------	-------------------------	---------------------	-------	-----------	------

_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Pumped dry Yes ☒ No ☐

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D.

☒ Bailer: Disposable ☐ Airlift _____
☒ Centrifugal: _____ ☐ Dedicated: _____
☐ Other: _____

SAMPLING EQUIPMENT/I.D.

☒ Bailer: Disposable
☐ Dedicated: _____
☐ Other: _____

SAMPLE I.D.	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
-------------	------	-------------	--------------	------	-----------	----------	----------------------

_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

WELL INTEGRITY: ☒ Good ☐ Fair ☐ Poor

REMARKS: 2.5 gallons purged, pretty clear water, strong odor, bolts stripped out.

SIGNATURE: _____

Michael Jones



PACIFIC
ENVIRONMENTAL
GROUP, INC.

PROJECT No. 520-069-2A LOCATION: Fall City, WI WELL ID #: MW-5

CLIENT/STATION No.: 9-0709 FIELD TECHNICIAN: Michael Jones

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC _____
Depth to water: _____ TOB _____ TOC _____
Total depth: _____ TOB _____ TOC _____
Date: _____ Time (2400): _____

Probe Type and I.D. #
☐ Oil/Water interface
☒ Electronic indicator
☐ Other: _____

CASING

DIAMETER

DIAMETER	LINEAR FT.
☒ 2	0.17
☐ 3	0.38
☐ 4	0.66
☐ 4.5	0.83
☐ 5	1.02
☐ 6	1.5
☐ 8	2.6

GAL/

LINEAR FT.

SAMPLE TYPE

☒ Groundwater
☐ Duplicate
☐ Extraction well
☐ Trip blank
☐ Field blank
☐ Equipment blank
☐ Other: _____

TD 21.60 - DTW = 17.17 Gal/Linear x Foot 17 = .75 Number of x Casings 3 Calculated = Purge 2.25

DATE PURGED: 4/11/96 START: 1105 END (2400 hr): 1115 PURGED BY: Mike
DATE SAMPLED: 4/11/96 START: 1230 END (2400 hr): 1235 SAMPLED BY: Mike

TIME (2400 hr)	VOLUME (gal.)	pH (units)	EC (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
----------------	---------------	------------	----------------------	------------------	-------	-----------	------

not required

Pumped dry Yes ☒ No ☐

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D.

☒ Bailer: Disposable ☐ Airlift
☒ Centrifugal: _____ ☐ Dedicated: _____
☐ Other: _____

SAMPLING EQUIPMENT/I.D.

☒ Bailer: Disposable
☐ Dedicated: _____
☐ Other: _____

SAMPLE I.D.	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
-------------	------	-------------	--------------	------	-----------	----------	----------------------

SEE C.O.C.

WELL INTEGRITY: ☒ Good ☐ Fair ☐ Poor

REMARKS: 2.5 Gallons purged, belts stripped out, water pretty clear, faint odor,

SIGNATURE: Michael Jones



ATTACHMENT B
LABORATORY ANALYTICAL RESULTS
CHAIN-OF-CUSTODY DOCUMENTATION



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Pacific Environmental Group
4020 148th Avenue NE, #B
Redmond, WA 98052
Attention: John Blough

Project Name: Chevron Fall City, #9-0709
Client Project : #520-069.2A
NCA Project #: B604205

Received: Apr 12, 1996
Reported: Apr 24, 1996

PROJECT SUMMARY PAGE

Laboratory Sample Number	Sample Description	Sample Matrix	Date Sampled
B604205-01	MW-2	Water	4/11/96
B604205-02	MW-3	Water	4/11/96
B604205-03	MW-4	Water	4/11/96
B604205-04	MW-5	Water	4/11/96
B604205-05	TB-LB	Water	4/11/96

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
This analytical report must be reproduced in its entirety.

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Pacific Environmental Group
4020 148th Avenue NE, #B
Redmond, WA 98052
Attention: John Blough

Client Project ID: Chevron Fall City, #9-0709
Sample Matrix: Water
Analysis Method: WTPH-G
First Sample #: B604205-01

Sampled: Apr 11, 1996
Received: Apr 12, 1996
Analyzed: Apr 22-23, 1996
Reported: Apr 24, 1996

TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result µg/L (ppb)	Surrogate Recovery %
B604205-01	MW-2	510	145
B604205-02	MW-3	N.D.	81
B604205-03	MW-4	1,200	107
B604205-04	MW-5	130	105
B604205-05	TB-LB	N.D.	84
BLK042296	Method Blank	N.D.	89

Reporting Limit:

50

4-Bromofluorobenzene surrogate recovery control limits are 50 - 150 %.

Volatile Total Petroleum Hydrocarbons are quantitated as Gasoline Range Organics (toluene - dodecane).

Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager



NORTH CREEK ANALYTICAL

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Pacific Environmental Group
4020 148th Avenue NE, #B
Redmond, WA 98052
Attention: John Blough

Client Project ID: Chevron Fall City, #9-0709
Sample Matrix: Water
Analysis Method: WTPH-G
Units: µg/L (ppb)

Analyzed: Apr 22, 1996
Reported: Apr 24, 1996

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT Laboratory Control Sample

Gasoline

Spike Conc.
Added: 100

Spike
Result: 93

%
Recovery: 93

Upper Control
Limit %: 132

Lower Control
Limit %: 56

PRECISION ASSESSMENT Sample Duplicate

Gasoline Range
Organics

Sample
Number: B604205-01

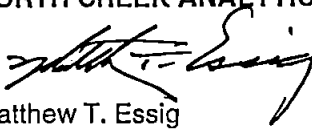
Original
Result: 514

Duplicate
Result: 531

Relative
% Difference: 3.2

Maximum
RPD: 50

NORTH CREEK ANALYTICAL Inc.


Matthew T. Essig
Project Manager

% Recovery: $\frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$

Relative % Difference: $\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$



NORTH CREEK ANALYTICAL

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Pacific Environmental Group
4020 148th Avenue NE, #B
Redmond, WA 98052
Attention: John Blough

Client Project ID: Chevron Fall City, #9-0709
Sample Matrix: Water
Analysis Method: EPA 8020
First Sample #: B604205-01

Sampled: Apr 11, 1996
Received: Apr 12, 1996
Analyzed: Apr 22-23, 1996
Reported: Apr 24, 1996

BTEX DISTINCTION

Sample Number	Sample Description	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)	Surrogate Recovery %
B604205-01	MW-2	330	0.63	4.2	5.4	106
B604205-02	MW-3	0.59	N.D.	N.D.	N.D.	80
B604205-03	MW-4	730	13	77	190	96
B604205-04	MW-5	58	0.74	6.7	10	95
B604205-05	TB-LB	N.D.	N.D.	N.D.	N.D.	81
BLK042296	Method Blank	N.D.	N.D.	N.D.	N.D.	85

Reporting Limits:

0.50

0.50

0.50

1.0

4-Bromofluorobenzene surrogate recovery control limits are 59 - 144 %.
Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.

Matthew T. Essig
Project Manager

604205.PEG <4>



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Pacific Environmental Group
4020 148th Avenue NE, #B
Redmond, WA 98052
Attention: John Blough

Client Project ID: Chevron Fall City, #9-0709

Sample Matrix: Water

Analysis Method: EPA 8020

Units: µg/L (ppb)

QC Sample #: B604197-04

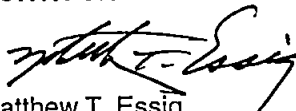
Analyzed: Apr 22, 1996

Reported: Apr 24, 1996

MATRIX SPIKE QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Sample Result:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10.0	10.0	10.0	30.0
Spike Result:	9.7	10.0	10.7	31.7
Spike % Recovery:	97%	100%	107%	106%
Spike Dup. Result:	9.8	10.2	10.8	32.2
Spike Duplicate % Recovery:	98%	102%	108%	107%
Upper Control Limit %:	115	116	122	122
Lower Control Limit %:	82	81	85	85
Relative % Difference:	1.0%	2.0%	<1.0%	1.6%
Maximum RPD:	16	16	16	17

NORTH CREEK ANALYTICAL Inc.


Matthew T. Essig
Project Manager

% Recovery:	$\frac{\text{Spike Result} - \text{Sample Result}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Spike Result} - \text{Spike Dup. Result}}{(\text{Spike Result} + \text{Spike Dup. Result}) / 2} \times 100$

CHEVRON U.S.A., Inc. CHAIN OF CUSTODY REPORT

CHEVRON INFORMATION	
CHEVRON Facility #:	9-0709
Facility Address:	4211 Proctor
City, State, ZIP:	Fall City, RD
CHEVRON Contact Name:	Garrick Jaworski
CHEVRON Telephone #:	
Laboratory Release #:	NC 3091780

CONSULTANT INFORMATION	
Name:	P.E.G.
Consultant Project #:	520-069.2A
Address:	4600 148th Ave. NE., Suite B Redmond, WA, 98052
Phone:	(206) 867-5679
Fax:	(206) 867-5659
Project Manager:	John Bleugh
Consultant Project #:	520-069.2A
Sample Collection by:	Mina
Airbill #:	

Turnaround Times	
Standard Analyses (DAYS)	☒ 24 ☐ 48
RUSH Analyses (HOURS)	☐ 24 ☐ 48
RUSH Analyses (DAYS)	☐ 5

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O,A)	# OF CONTAINERS
1. MW-2	4/11/96 1215	W	2
2. MW-3	1201	W	2
3. MW-4	1245	W	2
4. MW-5	1250	W	2
5. TB	↓	W	2
6.			
7.			
8.			
9.			
10.			

O Oregon ☒ Washington O Alaska O Other - Hydrocarbon Methods																
TPH-HCID	TPH-Gas	BTEX (EPA 8020 Mod.)	TPH-Gas + BTEX <i>WTPH-G</i>	TPH-Diesel	TPH-Diesel Extended	TPH-418.1	Halogen. Volatiles (EPA 8010)	Aromatic Volatiles (EPA 8020)	Pesticides/PCBs or PCBs Only	GC/MS Volatiles (EPA 8240/8260)	GC/MS Semi Vols. (EPA 8270)	PAHs by HPLC (EPA 8310)	Lead: Total or Dissolved	TCLP Metals (6)	NCA Sample Number	
			✓													
			✓													
			✓													
			✓													

REMARKS
B604205-01
-02
-03
-04
-05

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. Michael Jones	P.E.G.	4/11/96 12:00PM	Marco G.	UCA	4-12-96 12:15
2. Marco G.	NCA	12-4-96 1:25pm	Usableny	NCA	4-12-96 14:15
3.					

REPORTS:	SAMPLE PRESERVATION (Iced)
Level 1 ☐	☒ Yes
Level 2 ☐	☐ No
Fax Copy of Lab Report & COC to CHEVRON:	
☐ Yes ☒ No	

Don't Bill for TB