

April 2, 2014

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Mr. Mark Horne
Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583

Subject: **First Semiannual 2014 Groundwater Monitoring and Sampling Report
Former Standard Oil Service Station No. 305192**
9816 271st Street Northwest
Stanwood, Washington

Dear Mr. Horne:

Leidos Engineering, LLC, on behalf of Chevron Environmental Management (CEMC), prepared this letter summarizing the first semiannual 2014 groundwater monitoring and sampling event at former Standard Oil Service Station No. 305192 (the site) in Stanwood, Washington (Figure 1).

Gettler-Ryan Inc. (Gettler-Ryan) conducted the groundwater monitoring and sampling field event on January 10, 2014. They collected depth-to-groundwater measurements and checked for the presence of separate-phase hydrocarbons (SPH) in four monitoring wells on site.

Groundwater samples were collected from three of the four monitoring wells. Monitoring well MW-4 was not sampled due to the presence of SPH. Samples were submitted to Eurofins Lancaster Laboratories, Inc. in Pennsylvania for the following analyses:

- Total petroleum hydrocarbons (TPH) as gasoline-range organics (TPH-GRO) by Washington State Department of Ecology (Ecology) Method NWTPH-Gx;
- TPH as diesel-range organics (TPH-DRO) and TPH as heavy oil-range organics (TPH-HRO) by Ecology Method NWTPH-Dx extended with silica-gel cleanup; and
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl tert-butyl ether (MTBE) by United States Environmental Protection Agency Method 8021B.

A laboratory-supplied trip blank (QA) was submitted to the laboratory and analyzed for TPH-GRO, BTEX, and MTBE to provide quality assurance. Field data sheets are provided in the Gettler-Ryan groundwater monitoring and sampling data package (Attachment A).

FINDINGS

Historical groundwater elevation data and laboratory analytical results are summarized in Table 1. The laboratory analysis report is provided as Attachment B.

At the time of this monitoring event, groundwater elevations ranged from 97.46 feet in monitoring well MW-2 to 96.37 feet in monitoring well MW-3, based on an arbitrary benchmark elevation of 100.00 feet. Groundwater flows toward the northeast at a gradient of approximately 0.01 to 0.02 feet per foot (Figure 2). Groundwater flow direction appears to be affected by seasonal fluctuations in the nearby Stillaguamish River. Groundwater elevations increased an average of 0.58 feet since the previous semiannual monitoring event in July 2013, but are consistent with historical data reported at the site.

SPH were detected in monitoring well MW-4 at a thickness of 0.06 foot. SPH has been detected in MW-4 since August of 2011

No analytes were detected at concentrations exceeding their respective Model Toxics Control Act Method A cleanup levels in monitoring wells MW-1, MW-2, and MW-3. Petroleum hydrocarbon constituent concentrations are among the lowest since monitoring began in April of 2006.

Gettler-Ryan will continue to perform groundwater monitoring and sampling on a semiannual basis.

If you have any questions or comments, please contact me at (425) 482-3328 or via email at otteman@leidos.com.

Sincerely,

Leidos Engineering, LLC



Ruth Otteman
Project Manager, LG# 2633



Stuart Brown
Environmental Scientist

Enclosures:

Figure 1 – Vicinity Map

Figure 2 – Potentiometric Map

Table 1 – Groundwater Monitoring Data and Analytical Results

Attachment A – Groundwater Monitoring and Sampling Data Package

Attachment B – Laboratory Analysis Report

cc: Ms. Donna Musa – Ecology NW Region, Toxics Cleanup Program
3190 160th Avenue SE, Bellevue, WA 98008-5452
Mr. Wayne Raplee – Property Owner
14115 70th Avenue NW, Stanwood, WA 98292
Project File

REPORT LIMITATIONS

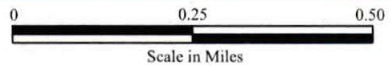
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Site history and background information provided in this technical document are based on sources that may include interviews with environmental regulatory agencies and property management personnel and a review of acquired environmental regulatory agency documents and property information obtained from CEMC and others. Leidos has not made, nor has it been asked to make, any independent investigation concerning the accuracy, reliability, or completeness of such information beyond that described in this technical document.

Recognizing reasonable limits of time and cost, this technical document cannot wholly eliminate uncertainty regarding the vertical and lateral extent of impacted environmental media.

Opinions and recommendations presented in this technical document apply only to site conditions and features as they existed at the time of Leidos site visits or site work and cannot be applied to conditions and features of which Leidos is unaware and has not had the opportunity to evaluate.

All sources of information on which Leidos has relied in making its conclusions (including direct field observations) are identified by reference in this technical document or in appendices attached to this technical document. Any information not listed by reference or in appendices has not been evaluated or relied upon by Leidos in the context of this technical document. The conclusions, therefore, represent our professional opinion based on the identified sources of information.



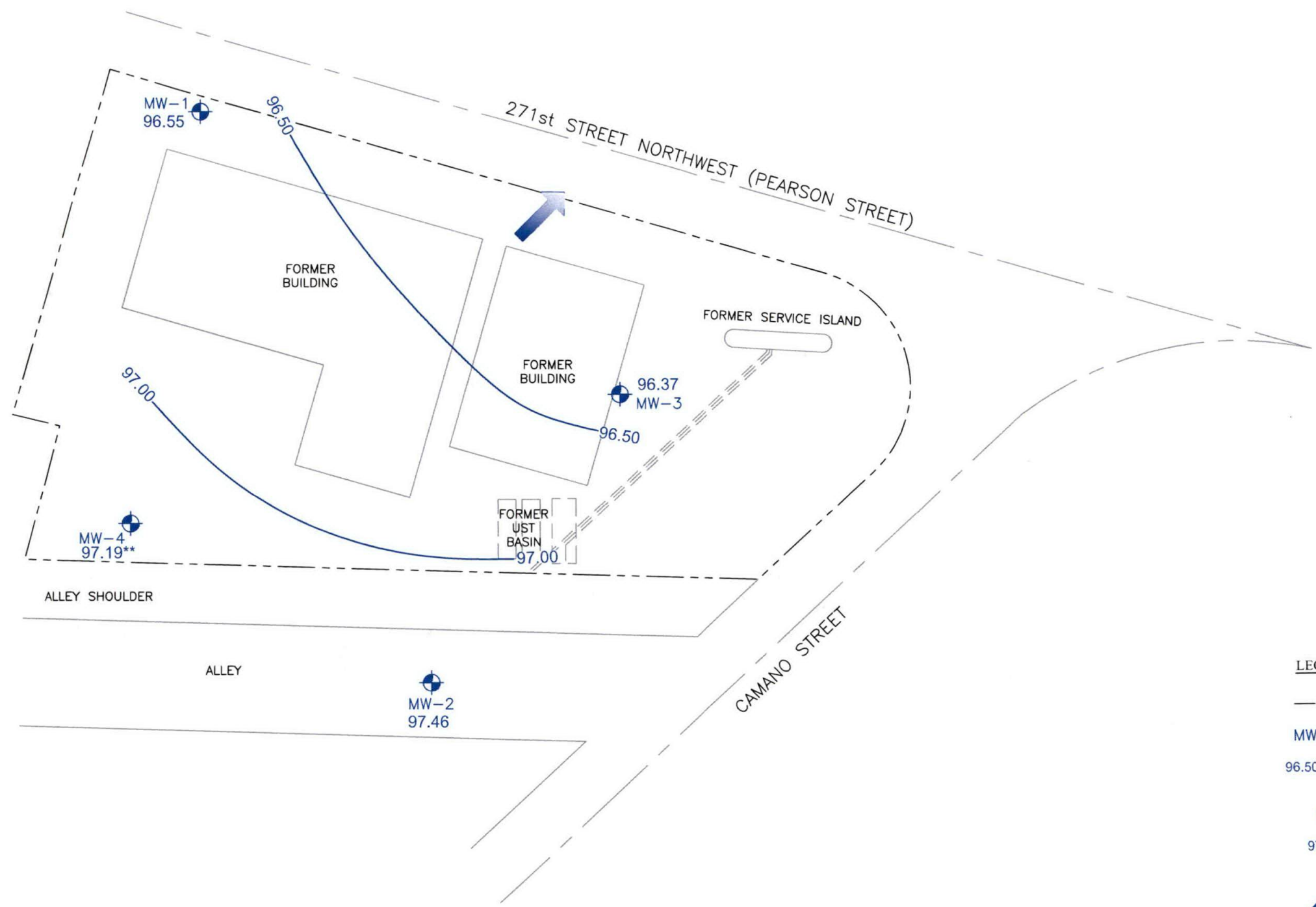
Former Standard Oil Service Station No. 305192
 9816 271st Street Northwest
 Stanwood, Washington

FIGURE 1
 Vicinity Map



FILE NAME:
 30-5192_VM2010.dwg

DATE
 4/7/2014



- LEGEND**
- Property Line
 - MW-3 Monitoring Well Location
 - 96.50 Groundwater Elevation Contour at a 0.50 Foot Interval (Dashed Where Inferred)
 - 97.46 Groundwater Elevation in Feet
 - 97.19** Groundwater Elevation Corrected for the Presence of Separate Phase Hydrocarbons (SPH)
 - Approximate Groundwater Flow Direction at a Gradient of 0.01 to 0.02

Former Standard Oil Service Station No. 305192
 9816 271st Street Northwest
 Stanwood, Washington

FIGURE 2
 Potentiometric Map
 January 10, 2014

FILE NAME: 30-5192 Site Map.dwg	DATE: 1/28/2014
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TABLE 1
GROUNDWATER MONITORING DATA AND ANALYTICAL RESULTS
FORMER STANDARD OIL SERVICE STATION NO. 305192
 9816 271st Street Northwest
 Stanwood, Washington

Concentrations reported in µg/L

Well ID/ Date	Purge Method	TOC ² (ft.)	DTP (ft.)	DTW (ft.)	SPHT (ft.)	GWE ³ (ft.)	TPH-DRO	TPH-HRO	TPH-GRO	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	D. Lead
MW-1															
04/10/06		98.32	--	1.81	--	96.51	--	--	--	--	--	--	--	--	--
05/03/06		98.32	--	--	--	--	310	120	<240	<2.5	<2.5	4.7	11	<13	<0.87
08/02/06	PER	98.32	--	2.96	--	95.36	260	330	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
10/10/06	PER	98.32	--	2.55	--	95.77	150	<100	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/15/07	PER	98.32	--	1.64	--	96.68	<160	<200	<240	<2.5	<2.5	<2.5	<7.5	<13	--
04/25/07	PER	98.32	--	1.58	--	96.74	190	130	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/15/07	PER	98.32	--	2.58	--	95.74	<81	<100	<500	<5.0	<5.0	<5.0	<1.5	<2.5	--
10/03/07	PER	98.32	--	3.00	--	95.32	130	<100	<250	<2.5	<2.5	<2.5	<7.5	<13	--
01/03/08		98.32	--	2.51	--	95.81	130	<100	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
02/28/09	LFP	98.32	--	3.27	--	95.05	610	610	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/22/09	LFP	98.32	--	4.43	--	93.89	650	720	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/08/10	LFP	98.32	--	3.32	--	95.00	350	160	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/20/10	LFP	98.32	--	3.02	--	95.30	130	100	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/21/11	LFP	98.32	--	1.71	--	96.61	<160	650	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
08/05/11	LFP	98.32	--	1.90	--	96.42	190	130	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/27/12	LFP	98.32	--	3.55	--	94.77	<30	<69	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/02/12	LFP	98.32	--	2.37	--	95.95	<29	<68	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/11/13	LFP	98.32	--	1.80	--	96.52	<29	<67	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/12/13	LFP	98.32	--	2.63	--	95.69	<29	<68	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/10/14	LFP	98.32	--	1.77	--	96.55	<29	<67	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
MW-2															
04/10/06		99.58	--	2.29	--	97.29	--	--	--	--	--	--	--	--	--
05/03/06		99.58	--	--	--	--	1,400	560	<240	13	<2.5	<2.5	<7.5	<13	<0.87
08/02/06	PER	99.58	--	2.98	--	96.60	2,000	1,800	220	20	<0.5	<0.5	1.6	<2.5	--
10/10/06	PER	99.58	--	3.64	--	95.94	1,400	790	<240	16	<2.5	<2.5	<7.5	<13	--
01/15/07	PER	99.58	--	2.08	--	97.50	810	270	<240	9.3	<2.5	<2.5	<7.5	<13	--
04/25/07	PER	99.58	--	2.16	--	97.42	830	480	250	13	<0.5	<0.5	<1.5	<2.5	--
07/15/07	PER	99.58	--	2.95	--	96.63	7,800	<1,000	<500	13	<5.0	<5.0	<1.5	<2.5	--
10/03/07	PER	99.58	--	3.44	--	96.14	1,600	1,100	<250	4.9	<2.5	<2.5	<7.5	<13	--
01/03/08		99.58	--	2.32	--	97.26	1,400	800	460	6.7	1.0	<0.5	<1.5	<2.5	--
02/28/09	LFP	99.58	--	2.89	--	96.69	2,700	2,800	450	2.5	0.6	<0.5	<1.5	<2.5	--
07/22/09	LFP	99.58	--	3.33	--	96.25	2,500	4,000	360	1.1	0.8	<0.5	1.5	<2.5	--
01/08/10	LFP	99.58	--	2.90	--	96.68	1,800	1,400	470	<0.5	0.5	0.7	<1.5	<2.5	--
07/20/10	LFP	99.58	--	2.88	--	96.70	2,000	1,600	420	<0.5	0.8	<0.5	<1.5	<2.5	--
01/21/11	LFP	99.58	--	2.07	--	97.51	2,000	1,900	390	<0.5	<0.5	0.6	<1.5	<2.5	--
08/05/11	LFP	99.58	--	1.97	--	97.61	830	880	<250	<2.5	<2.5	<2.5	<7.5	<13	--



TABLE 1
GROUNDEWATER MONITORING DATA AND ANALYTICAL RESULTS
FORMER STANDARD OIL SERVICE STATION NO. 305192
 9816 271st Street Northwest
 Stanwood, Washington
 Concentrations reported in µg/L

Well ID/ Date	Purge Method	TOC ² (ft.)	DTP (ft.)	DTW (ft.)	SPHT (ft.)	GWE ³ (ft.)	TPH-HRO	TPH-HRO	TPH-GRO	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	D_Lead
MW-2 (cont.)															
01/27/12	LFP	99.58	--	3.45	--	96.13	<29	<68	56	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/02/12	LFP	99.58	--	3.11	--	96.47	31	110	<250	<2.5	<2.5	<2.5	<7.5	<13	--
01/11/13	LFP	99.58	--	3.14	--	96.44	32	160	130	<0.5	<0.5	0.6	<1.5	<2.5	--
07/12/13	LFP	99.58	--	3.02	--	96.56	<29	<68	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/10/14	LFP	99.58	--	2.12	--	97.46	<29	<67	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
MW-3															
04/10/06		99.16	--	0.40	--	98.76	--	--	--	--	--	--	--	--	--
05/03/06		99.16	--	--	--	--	580	240	<240	<2.5	<2.5	<2.5	<7.5	<13	<0.87
08/02/06	PER	99.16	--	2.61	--	96.55	350	380	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
10/10/06	PER	99.16	--	2.75	--	96.41	310	140	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/15/07	PER	99.16	--	0.50	--	98.66	250	<100	<240	<2.5	<2.5	<2.5	<7.5	<13	--
04/25/07	PER	99.16	--	0.84	--	98.32	260	110	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/15/07	PER	99.16	--	2.16	--	97.00	250	150	<500	<5.0	<5.0	<5.0	<15	<25	--
10/03/07	PER	99.16	--	2.68	--	96.48	330	260	<250	<2.5	<2.5	<2.5	<7.5	<13	--
01/03/08		99.16	--	1.62	--	97.54	280	210	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
02/28/09	LFP	99.16	--	1.56	--	97.60	290	190	<50	<0.5	<0.5	<0.5	1.6	<2.5	--
07/22/09	LFP	99.16	--	3.11	--	96.05	780	830	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/08/10	LFP	99.16	--	2.83	--	96.33	680	360	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/20/10	LFP	99.16	--	1.92	--	97.24	330	190	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/21/11	LFP	99.16	--	1.63	--	97.53	<160	630	<50	<0.5	<0.5	<1.5	<1.5	<2.5	--
08/05/11	LFP	99.16	--	1.70	--	97.46	230	210	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/27/12	LFP	99.16	--	2.60	--	96.56	<30	<70	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/02/12	LFP	99.16	--	1.75	--	97.41	<29	<67	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/11/13	LFP	99.16	--	2.82	--	96.34	<28	<66	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/12/13	LFP	99.16	--	2.22	--	96.94	<29	<68	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/10/14	LFP	99.16	--	2.79	--	96.37	<29	<68	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
MW-4															
04/10/06		100.00	--	2.08	--	97.92	--	--	--	--	--	--	--	--	--
05/03/06		100.00	--	--	--	--	7,900	<1,000	<240	<2.5	<2.5	<2.5	<7.5	<13	<0.87
08/02/06	PER	100.00	--	3.57	--	96.43	7,300	<1,000	73	<0.5	<0.5	<0.5	2.8	<2.5	--
10/10/06	PER	100.00	--	4.28	--	95.72	7,900	2,200	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/15/07	PER	100.00	--	2.98	--	97.02	8,300	3,000	<240	<2.5	<2.5	<2.5	<7.5	<13	--
04/25/07	PER	100.00	--	4.35	--	95.65	9,300	2,000	89	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/15/07	PER	100.00	--	4.06	--	95.94	850	320	<500	<5.0	<5.0	<5.0	<15	<25	--
10/03/07	PER	100.00	--	4.22	--	95.78	8,500	<2,100	<250	<2.5	<2.5	<2.5	<7.5	<13	--
01/03/08		100.00	--	3.98	--	96.02	9,100	2,200	61	<0.5	<0.5	<0.5	<1.5	<2.5	--



TABLE 1
GROUNDWATER MONITORING DATA AND ANALYTICAL RESULTS¹
FORMER STANDARD OIL SERVICE STATION NO. 305192
9816 271st Street Northwest
Stanwood, Washington
Concentrations reported in µg/L

Well ID/ Date	Purge Method	TOC ² (ft.)	DTP (ft.)	DTW (ft.)	SPHT (ft.)	GWE ³ (ft.)	TPH-DRO	TPH-HRO	TPH-GRO	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	D. Lead
MW-4 (cont.)															
02/28/09	LFP	100.00	--	3.44	--	96.56	5,400	2,100	56	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/22/09	LFP	100.00	--	3.30	--	96.70	14,000	7,600	100	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/08/10	LFP	100.00	--	3.51	--	96.49	13,000	18,000	75	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/20/10	LFP	100.00	--	4.31	--	95.69	12,000	13,000	69	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/21/11	LFP	100.00	--	2.71	--	97.29	14,000	<1,800	50	<0.5	<0.5	<0.5	<1.5	<2.5	--
08/05/11	LFP	100.00	4.34	4.36	0.02	95.66	UNABLE TO SAMPLE DUE TO PRESENCE OF SPH					--	--	--	--
01/27/12		100.00	2.85	3.00	0.15	97.12	UNABLE TO SAMPLE DUE TO PRESENCE OF SPH					--	--	--	--
07/02/12		100.00	3.10	3.20	0.10	96.88	UNABLE TO SAMPLE DUE TO PRESENCE OF SPH					--	--	--	--
01/11/13		100.00	2.83	2.92	0.09	97.15	UNABLE TO SAMPLE DUE TO PRESENCE OF SPH					--	--	--	--
07/12/13		100.00	3.96	3.99	0.03	96.03	UNABLE TO SAMPLE DUE TO PRESENCE OF SPH					--	--	--	--
01/10/14		100.00	2.80	2.86	0.06	97.19	UNABLE TO SAMPLE DUE TO PRESENCE OF SPH					--	--	--	--
TRIP BLANK QA															
05/03/06		--		--		--	--	--	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
08/02/06		--		--		--	--	--	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
10/10/06		--		--		--	--	--	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/15/07		--		--		--	--	--	<48	<0.5	<0.5	<0.5	<1.5	<2.5	--
04/25/07		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/15/07		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
10/03/07		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/03/08		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
02/28/09		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/22/09		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/08/10		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/20/10		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/21/11		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
08/05/11		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/27/12		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/02/12		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/11/13		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
07/12/13		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
01/10/14		--		--		--	--	--	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--
Standard Laboratory Reporting Limits:							--	--	50	0.5	0.5	0.5	1.5	2.5	0.001
MTCA Method A Cleanup Levels:							500	500	800/1,000	5	1,000	700	1,000	20	--
Current Method ¹ :							NWTPH-Dx + Extended ³		NWTPH-Gx	USEPA 8021B				USEPA 7421	



TABLE 1
GROUNDWATER MONITORING DATA AND ANALYTICAL RESULTS¹
FORMER STANDARD OIL SERVICE STATION NO. 305192
9816 271st Street Northwest
Stanwood, Washington
Concentrations reported in µg/L

Abbreviations:

D. Lead = Dissolved Lead
DTP = Depth to Product
DTW = Depth to Water
(ft.) = Feet
GWE = Groundwater Elevation
LFP = Low Flow Purge
MTBE = Methyl Tertiary Butyl Ether

MTCA = Model Toxics Control Act
PER = Peristaltic Pump
QA = Quality Assurance/Trip Blank
SPH = Separate-Phase Hydrocarbons
SPHT = SPH Thickness
TOC = Top of Casing
TPH = Total Petroleum Hydrocarbons

TPH-DRO = TPH as Diesel-Range Organics
TPH-GRO = TPH as Gasoline-Range Organics
TPH-HRO = TPH as Heavy Oil-Range Organics
USEPA = United States Environmental Protection Agency
µg/L = Micrograms per liter
-- = Not Measured/Not Analyzed

Notes:

- 1 Analytical results in bold font indicate concentrations exceed MTCA Method A cleanup levels.
- 2 TOC elevations are expressed in feet relative to an arbitrary datum.
- 3 GWE has been corrected for the presence of SPH, correction factor: $[(TOC - DTW) + (SPHT \times 0.80)]$.
- 4 Laboratory analytical methods for historical data may not be consistent with list of current analytical methods. When necessary, consult original laboratory reports to verify methods used.
- 5 Analyzed with silica-gel cleanup.

Attachment A:
Groundwater Monitoring and Sampling Data Package



GETTLER-RYAN INC.



TRANSMITTAL

January 22, 2014
G-R #387100

TO: Ms. Ruth A. Otteman
Leidos, Inc.
18912 North Creek Parkway, Suite 101
Bothell, WA 98011

FROM: Deanna L. Harding
Project Coordinator
Gettler-Ryan Inc.
6805 Sierra Court, Suite G
Dublin, California 94568

RE: Former Chevron Service Station
#305192
9816 271st Street Northwest
Stanwood, Washington

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package First Semi-Annual Event of January 10, 2014

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

trans/305192

Standard Operating Procedure, Low-Flow Purging and Sampling

Gettler-Ryan Inc. field personnel adhere to the following Standard Operating Procedure (SOP) for the collection and handling of representative groundwater samples using the Low-Flow (Minimal-Drawdown) Purging technique. This SOP incorporates purging and sampling methods discussed in U.S. EPA, Ground Water Issue, Publication Number EPA/540/S-95/504, April 1996 by Puls, R.W. and M.J. Barcelona - "*Low-Flow (Minimal-Drawdown) Ground-Water Sampling Procedures.*"

A QED Well Wizard™ (or equivalent) bladder pump or Peristaltic Pump will be used to purge and sample selected wells as outlined in the scope-of-work. An in-line flow cell or other multi-parameter meter is used to collect water quality indicating parameters during purging.

Initial Pump Discharge Test Procedures

The Static Water Level (SWL) is measured in all wells at the site prior to the installation of the pump or tubing and initiation of the test procedures in any well. In addition, the presence or absence of separate-phase hydrocarbons (SPH) is determined using an interface probe. Product thickness, if present, is measured to the nearest 0.01 foot. The SWL measurement and SPH thickness, if any, will be recorded on the field data sheet.

The bladder pump or suction inlet tubing of the peristaltic pump is then positioned with its inlet located within the screened interval of the well. The in-line flow cell is then connected to the discharge tubing. After pump installation, the SWL is allowed to recover to its original level. The pump is then started at a discharge rate between 100 ml to 300 ml per minute with the in-line flow cell connected. The water level is monitored continuously for any change from the original measurement and the discharge rate is adjusted until an optimum discharge rate (ODR) is determined. The goal for the ODR is to produce a stable drawdown of less than 0.1 meter as allowed by site conditions; however the total drawdown from the initial SWL should not exceed 25% of the distance between pump inlet location and the top of the well screen. Once achieved, the ODR will be confirmed by volumetric discharge measurement and recorded on the field data sheet.

Purging and Water Quality Parameter Measurement

When the ODR has been determined and the SWL drawdown has been established within the acceptable range, and a minimum of one pump system volume (bladder volume and/or discharge tubing volume) has been purged, field measurements for temperature (T), pH, conductivity (Ec), and if required, oxygen reduction potential (ORP) and dissolved oxygen (DO) will be collected and documented on the field data sheet. Measurements should be taken every three to five minutes until parameters stabilize for three consecutive readings. The minimum parameter subset of T ($\pm 10\%$), pH (± 0.1 unit), and Ec (± 10 uS) are required to stabilize. Additional parameters that may be required are DO (± 0.2 mg/l) and ORP (± 20 mV).

Sample Collection

When water quality parameters have stabilized, and the SWL drawdown remains established within the acceptable range, groundwater sample collection may begin. If used, the in-line flow cell and its tubing are disconnected from the discharge tubing prior to sample collection. Water samples are collected from the discharge tubing into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used when possible. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards, as directed by the scope of work. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler,

maintained at 4°C for transport to the laboratory. A laboratory supplied trip blank accompanies each sampling set. The trip blank is analyzed for some or all of the same compounds as the groundwater samples. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

A laboratory supplied trip blank accompanies each sampling set. For sampling sets greater than 20 samples, 5% trip blanks are included. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.



GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #305192 Job Number: 387100
 Site Address: 9816 271st Street NW Event Date: 1.10.14 (inclusive)
 City: Stanwood, WA Sampler: J.P.

Well ID: MW-1 Date Monitored: 1.10.14

Well Diameter: 1.5 in.

Total Depth: 14.44 ft.

Depth to Water: 1.77 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

Check if water column is less than 0.50 ft.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 4.30
 xVF = - = - x3 case volume = Estimated Purge Volume: - gal.

Purge Equipment:

Disposable Bailer _____
 Stainless Steel Bailer _____
 Stack Pump _____
 Suction Pump _____
 Grundfos _____
 Peristaltic Pump X
 QED Bladder Pump _____
 Other: _____

Sampling Equipment:

Disposable Bailer _____
 Pressure Bailer _____
 Metal Filters _____
 Peristaltic Pump X
 QED Bladder Pump _____
 Other: _____

Time Started:	(2400 hrs)
Time Completed:	(2400 hrs)
Depth to Product:	ft
Depth to Water:	ft
Hydrocarbon Thickness:	ft
Visual Confirmation/Description:	
Skimmer / Absorbant Sock (circle one)	
Amt Removed from Skimmer:	gal
Amt Removed from Well:	gal
Water Removed:	
Product Transferred to:	

Start Time (purge): 0714 Weather Conditions: Overcast
 Sample Time/Date: 0731 1.10.14 Water Color: clear Odor: Y (N)
 Approx. Flow Rate: 1.00 mpm Sediment Description: clear to clear
 Did well de-water? no If yes, Time: - Volume: - gal. DTW @ Sampling: 2.25

Time (2400 hr.)	Volume (Liters)	pH	Conductivity (µmhos/cm @ 25°C)	Temperature (C F)	D.O. (mg/L)	ORP (mV)	Gauge DTW as parameters are recorded
<u>0732</u>	<u>1.0</u>	<u>7.02</u>	<u>.212</u>	<u>11.66</u>	<u>.92</u>	<u>-101.0</u>	<u>2.01</u>
<u>0735</u>	<u>2.1</u>	<u>6.99</u>	<u>.210</u>	<u>11.72</u>	<u>.94</u>	<u>-102.3</u>	<u>2.12</u>
<u>0738</u>	<u>2.7</u>	<u>6.97</u>	<u>.210</u>	<u>11.79</u>	<u>.96</u>	<u>-102.7</u>	<u>2.23</u>

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-1</u>	<u>2</u> x vial	<u>YES</u>	<u>HCL</u>	<u>LANCASTER</u>	<u>NWTPH-Gx/BTEX+MTBE(8021)</u>
	<u>2</u> x 1 liter ambers	<u>YES</u>	<u>HCL</u>	<u>LANCASTER</u>	<u>NWTPH-Dx w/sgc</u>

COMMENTS: Depth Tubing Set At: 9-10' Reinject Tubing

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Add/Replaced Bolt: _____



GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #305192 Job Number: 387100
 Site Address: 9816 271st Street Nw Event Date: 1.10.14 (inclusive)
 City: Stanwood, WA Sampler: JF

Well ID: MW-2 Date Monitored: 1.10.14
 Well Diameter: 1.5 in.
 Total Depth: 14.73 ft.
 Depth to Water: 2.12 ft. Check if water column is less than 0.50 ft.
17.61 xVF = x3 case volume = Estimated Purge Volume: gal.

Volume	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
Factor (VF)	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 4.64

Purge Equipment:
 Disposable Bailer _____
 Stainless Steel Bailer _____
 Stack Pump _____
 Suction Pump _____
 Grundfos _____
 Peristaltic Pump x
 QED Bladder Pump _____
 Other: _____

Sampling Equipment:
 Disposable Bailer _____
 Pressure Bailer _____
 Metal Filters _____
 Peristaltic Pump x
 QED Bladder Pump _____
 Other: _____

Time Started: _____ (2400 hrs)
 Time Completed: _____ (2400 hrs)
 Depth to Product: _____ ft
 Depth to Water: _____ ft
 Hydrocarbon Thickness: _____ ft
 Visual Confirmation/Description: _____
 Skimmer / Absorbent Sock (circle one)
 Amt Removed from Skimmer: _____ gal
 Amt Removed from Well: _____ gal
 Water Removed: _____
 Product Transferred to: _____

Start Time (purge): 0853 Weather Conditions: Overcast
 Sample Time/Date: 0922 1.10.14 Water Color: clear Odor: milky
 Approx. Flow Rate: 100 mlpm Sediment Description: None
 Did well de-water? No If yes, Time: _____ Volume: _____ gal. DTW @ Sampling: 2.77

Time (2400 hr.)	Volume (Liters)	pH	Conductivity (µmhos/cm - µS)	Temperature (C F)	D.O. (mg/L)	ORP (mV)	Gauge DTW as parameters are recorded
<u>0911</u>	<u>1.8</u>	<u>6.710</u>	<u>.883</u>	<u>11.50</u>	<u>.88</u>	<u>-101.6</u>	<u>2.44</u>
<u>0914</u>	<u>2.1</u>	<u>6.716</u>	<u>.882</u>	<u>11.66</u>	<u>.84</u>	<u>-101.92</u>	<u>2.60</u>
<u>0917</u>	<u>2.4</u>	<u>6.74</u>	<u>.882</u>	<u>11.72</u>	<u>.81</u>	<u>-102.6</u>	<u>2.77</u>

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-2	3 x vov vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX+MTBE(8021)
	2 x 1 liter ambers	YES	HCL	LANCASTER	NWTPH-Dx w/sgc

COMMENTS: Depth Tubing Set At: 9'-10" VERY SLIGHT SNEAK

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Add/Replaced Bolt: _____



GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #305192 Job Number: 387100
 Site Address: 9816 271st Street Nw Event Date: 1.10.14 (inclusive)
 City: Stanwood, WA Sampler: J.P.

Well ID: MW-3 Date Monitored: 1.10.14

Well Diameter: 1.5 in.

Total Depth: 13.83 ft.

Depth to Water: 11.04 ft.

Volume Factor (VF)	3/4" = 0.02	1" = 0.04	2" = 0.17	3" = 0.38
	4" = 0.66	5" = 1.02	6" = 1.50	12" = 5.80

Check if water column is less than 0.50 ft.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 4.99 gal.

Purge Equipment:

Disposable Bailer _____
 Stainless Steel Bailer _____
 Stack Pump _____
 Suction Pump _____
 Grundfos _____
 Peristaltic Pump x
 QED Bladder Pump _____
 Other: _____

Sampling Equipment:

Disposable Bailer _____
 Pressure Bailer _____
 Metal Filters _____
 Peristaltic Pump x
 QED Bladder Pump _____
 Other: _____

Time Started:	_____ (2400 hrs)
Time Completed:	_____ (2400 hrs)
Depth to Product:	_____ ft
Depth to Water:	_____ ft
Hydrocarbon Thickness:	_____ ft
Visual Confirmation/Description:	_____
Skimmer / Absorbent Sock (circle one)	_____
Amt Removed from Skimmer:	_____ gal
Amt Removed from Well:	_____ gal
Water Removed:	_____ gal
Product Transferred to:	_____

Start Time (purge): 0803 Weather Conditions: Overcast
 Sample Time/Date: 0831 1.10.14 Water Color: Clear Odor: DI N Mild
 Approx. Flow Rate: 100 mlpm Sediment Description: NONE
 Did well de-water? NO If yes, Time: _____ Volume: _____ gal. DTW @ Sampling: 3.24

Time (2400 hr.)	Volume (Liters)	pH	Conductivity (µmhos/cm)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)	Gauge DTW as parameters are recorded
<u>0821</u>	<u>1.8</u>	<u>6.98</u>	<u>192</u>	<u>11.60</u>	<u>1.01</u>	<u>-90.3</u>	<u>3.03</u>
<u>0824</u>	<u>2.1</u>	<u>6.99</u>	<u>192</u>	<u>11.60</u>	<u>1.04</u>	<u>-90.0</u>	<u>3.12</u>
<u>0827</u>	<u>2.4</u>	<u>6.99</u>	<u>191</u>	<u>11.74</u>	<u>1.09</u>	<u>-90.1</u>	<u>3.24</u>

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-3</u>	<u>3</u> x vov vial	<u>YES</u>	<u>HCL</u>	<u>LANCASTER</u>	<u>NWTPH-Gx/BTEX+MTBE(8021)</u>
	<u>2</u> x 1 liter ambers	<u>YES</u>	<u>HCL</u>	<u>LANCASTER</u>	<u>NWTPH-Dx w/sgc</u>

COMMENTS: Depth Tubing Set At: 8-9' REARJUST TOBINL

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Add/Replaced Bolt: _____



GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #305192 Job Number: 387100
 Site Address: 9816 271st Street Nw Event Date: 1.10.14 (inclusive)
 City: Stanwood, WA Sampler: J.P.

Well ID: MW-4 Date Monitored: 1.10.14
 Well Diameter: 1.5 in.
 Total Depth: 13.75 ft.
 Depth to Water: 2.810 ft. Check if water column is less than 0.50 ft.
 Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 10.99 xVF = - x3 case volume = Estimated Purge Volume: - gal.

Volume	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
Factor (VF)	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

- Purge Equipment:**
- Disposable Bailer _____
 - Stainless Steel Bailer _____
 - Stack Pump _____
 - Suction Pump _____
 - Grundfos _____
 - Peristaltic Pump _____
 - QED Bladder Pump _____
 - Other: _____

- Sampling Equipment:**
- Disposable Bailer _____
 - Pressure Bailer _____
 - Metal Filters _____
 - Peristaltic Pump _____
 - QED Bladder Pump _____
 - Other: _____

Time Started: 1402 (2400 hrs)
 Time Completed: 1420 (2400 hrs)
 Depth to Product: 2.810 ft
 Depth to Water: 2.810 ft
 Hydrocarbon Thickness: .06 ft
 Visual Confirmation/Description: BLACK THICK OILY
 Skimmer / Absorbent Coek (circle one): _____
 Amt Removed from Skimmer: _____ gal
 Amt Removed from Well: _____ gal
 Water Removed: _____ gal
 Product Transferred to: _____

Start Time (purge): _____ Weather Conditions: _____
 Sample Time/Date: 1 Water Color: _____ Odor: Y / N
 Approx. Flow Rate: _____ mlpm Sediment Description: _____
 Did well de-water? _____ If yes, Time: _____ Volume: _____ gal. DTW @ Sampling: _____

Time (2400 hr.)	Volume (Liters)	pH	Conductivity (µmhos/cm - µS)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)	Gauge DTW as parameters are recorded

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-	x voa vial	YES	HCL	LANCASTER	NWTPH-Gx/BTEX+MTBE(8021)
	x 1 liter ambers	YES	HCL	LANCASTER	NWTPH-Dx w/sgc

COMMENTS: Depth Tubing Set At: 6FT

Add/Replaced Lock: _____ Add/Replaced Plug: _____ Add/Replaced Bolt: _____

Chevron Northwest Region Analysis Request/Chain of Custody



Lancaster Laboratories

Acct. # _____

For Eurofins Lancaster Laboratories use only

Group # _____ Sample # _____

Instructions on reverse side correspond with circled numbers.

1 Client Information			4 Matrix			5 Analyses Requested										6 Remarks			
Facility # WBS 557305192-OWL 6-R#387100			Sediment <input type="checkbox"/> Ground <input checked="" type="checkbox"/> Surface <input type="checkbox"/> Potable <input type="checkbox"/> NPDES <input type="checkbox"/> Air <input type="checkbox"/>	Soil <input type="checkbox"/> Water <input type="checkbox"/> Oil <input type="checkbox"/>	Total Number of Containers BTEX + MTBE 8021 <input checked="" type="checkbox"/> 8260 full scan <input type="checkbox"/> Oxygenates _____ NMTPH-Gx _____ NMTPH-Dx with Silica Gel Cleanup <input checked="" type="checkbox"/> NMTPH-Dx without Silica Gel Cleanup <input type="checkbox"/> WA VPH <input type="checkbox"/> WA EPH <input type="checkbox"/> Lead Total <input type="checkbox"/> Diss. <input type="checkbox"/> Method _____	SCR #: _____										<input type="checkbox"/> Results in Dry Weight <input type="checkbox"/> J value reporting needed <input type="checkbox"/> Must meet lowest detection limits possible for 8260 compounds <input type="checkbox"/> 8021 MTBE Confirmation <input type="checkbox"/> Confirm MTBE + Naphthalene <input type="checkbox"/> Confirm highest hit by 8260 <input type="checkbox"/> Confirm all hits by 8260 <input type="checkbox"/> Run _____ oxy's on highest hit <input type="checkbox"/> Run _____ oxy's on all hits			
Site Address 9816 271st Street NW, STARWOOD, WA																			
Chevron PM Lead Consultant NMO LEIDUSKO Ruth Orlman																			
Consultant/Office Letisi-Ryan, Inc., 6505 Sierra Court, Suite U, Dublin, CA 94568																			
Consultant Project Mgr.																			
Consultant Phone #																			
Sampler																			
2 Sample Identification		3 Collected		Grab	Composite														
Date	Time																		
7 Turnaround Time Requested (TAT) (please circle)						Relinquished by Date 1-13-14 Time 16:00		Received by _____ Date _____ Time _____											
Standard 5 day 4 day 72 hour 48 hour 24 hour						Relinquished by _____ Date _____ Time _____		Received by _____ Date _____ Time _____											
8 Data Package (circle if required)						Relinquished by Commercial Carrier:		Received by _____ Date _____ Time _____											
Type I - Full Type VI (Raw Data)						UPS <input checked="" type="checkbox"/> FedEx _____ Other _____		Temperature Upon Receipt _____ °C											
EDD (circle if required) CVX-RTBU-FL_05 (default) Other: _____						Custody Seals Intact? Yes No													

Attachment B:
Laboratory Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Chevron
6001 Bollinger Canyon Road
L4310
San Ramon CA 94583

January 24, 2014

Project: 305192

Submittal Date: 01/14/2014

Group Number: 1445687

PO Number: 0015119898

Release Number: SHRILL HOPKINS

State of Sample Origin: WA

<u>Client Sample Description</u>	<u>Lancaster Labs (LL) #</u>
QA Water	7334952
MW-1 Grab Groundwater	7334953
MW-2 Grab Groundwater	7334954
MW-3 Grab Groundwater	7334955

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	Gettler-Ryan Inc.	Attn: Gettler Ryan
ELECTRONIC COPY TO	SAIC	Attn: Jamalyn Green
ELECTRONIC COPY TO	SAIC	Attn: Ruth Otteman

Respectfully Submitted,



Amek Carter
Specialist

(717) 556-7252

Sample Description: QA Water
Facility# 305192 Job# 387100
9816 271st Street NW - Stanwood, WA

LL Sample # WW 7334952
LL Group # 1445687
Account # 11260

Project Name: 305192

Collected: 01/10/2014

Chevron

6001 Bollinger Canyon Road

Submitted: 01/14/2014 09:25

L4310

Reported: 01/24/2014 13:55

San Ramon CA 94583

5192Q

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles					
	ECY 97-602 NWTPH-Gx		ug/l	ug/l	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles					
	SW-846 8021B		ug/l	ug/l	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14020A53A	01/21/2014 14:22	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	14020A53A	01/21/2014 14:22	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	14020A53A	01/21/2014 14:22	Marie D Beamenderfer	1

Sample Description: MW-1 Grab Groundwater
Facility# 305192 Job# 387100
9816 271st Street NW - Stanwood, WA

LL Sample # WW 7334953
LL Group # 1445687
Account # 11260

Project Name: 305192

Collected: 01/10/2014 07:43 by JP

Chevron

6001 Bollinger Canyon Road

Submitted: 01/14/2014 09:25

L4310

Reported: 01/24/2014 13:55

San Ramon CA 94583

51921

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles					
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWT n.a.	ug/l N.D.	ug/l 50	1
GC Volatiles					
02102	Benzene	SW-846 8021B 71-43-2	ug/l N.D.	ug/l 0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum					
Hydrocarbons w/Si modified					
12005	DRO C12-C24 w/Si Gel	ECY 97-602 NWT n.a.	ug/l N.D.	ug/l 29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1
The reverse surrogate, capric acid, is present at <1%.					

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWT Gx	1	14020A53A	01/21/2014 15:16	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	14020A53A	01/21/2014 15:16	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	14020A53A	01/21/2014 15:16	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWT Dx modified	1	140150011A	01/21/2014 12:56	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWT Dx 06/97	1	140150011A	01/16/2014 02:45	Sherry L Morrow	1

Sample Description: MW-2 Grab Groundwater
Facility# 305192 Job# 387100
9816 271st Street NW - Stanwood, WA

LL Sample # WW 7334954
LL Group # 1445687
Account # 11260

Project Name: 305192

Collected: 01/10/2014 09:22 by JP

Chevron

6001 Bollinger Canyon Road

Submitted: 01/14/2014 09:25

L4310

Reported: 01/24/2014 13:55

San Ramon CA 94583

51922

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles					
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx n.a.	ug/l N.D.	ug/l 50	1
GC Volatiles					
02102	Benzene	SW-846 8021B 71-43-2	ug/l N.D.	ug/l 0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum					
Hydrocarbons w/Si modified					
12005	DRO C12-C24 w/Si Gel	ECY 97-602 NWTPH-Dx n.a.	ug/l N.D.	ug/l 29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1
The reverse surrogate, capric acid, is present at <1%.					

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14020A53A	01/21/2014 15:43	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	14020A53A	01/21/2014 15:43	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	14020A53A	01/21/2014 15:43	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	140150011A	01/21/2014 13:19	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	140150011A	01/16/2014 02:45	Sherry L Morrow	1

Sample Description: MW-3 Grab Groundwater
Facility# 305192 Job# 387100
9816 271st Street NW - Stanwood, WA

LL Sample # WW 7334955
LL Group # 1445687
Account # 11260

Project Name: 305192

Collected: 01/10/2014 08:31 by JP

Chevron

6001 Bollinger Canyon Road

Submitted: 01/14/2014 09:25

L4310

Reported: 01/24/2014 13:55

San Ramon CA 94583

51923

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles					
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx n.a.	ug/l N.D.	ug/l 50	1
GC Volatiles					
02102	Benzene	SW-846 8021B 71-43-2	ug/l N.D.	ug/l 0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum					
Hydrocarbons w/Si					
12005	DRO C12-C24 w/Si Gel	ECY 97-602 NWTPH-Dx modified n.a.	ug/l N.D.	ug/l 29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	68	1

The reverse surrogate, capric acid, is present at <1%.

General Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	14020A53A	01/21/2014 16:10	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	14020A53A	01/21/2014 16:10	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	14020A53A	01/21/2014 16:10	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	140150011A	01/21/2014 13:42	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	140150011A	01/16/2014 02:45	Sherry L Morrow	1

Quality Control Summary

Client Name: Chevron Group Number: 1445687
Reported: 01/24/14 at 01:55 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 14020A53A Sample number(s): 7334952-7334955								
Benzene	N.D.	0.2	ug/l	104	108	80-120	3	30
Ethylbenzene	N.D.	0.2	ug/l	101	105	80-120	3	30
Methyl tert-Butyl Ether	N.D.	0.3	ug/l	97	94	76-131	2	30
NWTPH-Gx water C7-C12	N.D.	50.	ug/l	108	109	75-135	1	30
Toluene	N.D.	0.2	ug/l	104	107	80-120	3	30
Total Xylenes	N.D.	0.6	ug/l	104	108	80-120	4	30
Batch number: 140150011A Sample number(s): 7334953-7334955								
DRO C12-C24 w/Si Gel	N.D.	30.	ug/l	76	70	32-117	9	20
HRO C24-C40 w/Si Gel	N.D.	70.	ug/l					

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Method 8021 Water Master
Batch number: 14020A53A

	Trifluorotoluene-P	Trifluorotoluene-F
7334952	82	70
7334953	82	70
7334954	82	77
7334955	82	69
Blank	81	70
LCS	80	76
LCSD	81	77
Limits:	51-120	63-135

Analysis Name: NWTPH-Dx water w/ 10g Si Gel
Batch number: 140150011A
Orthoterphenyl

7334953	73
7334954	118
7334955	79

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control SummaryClient Name: Chevron
Reported: 01/24/14 at 01:55 PM

Group Number: 1445687

Surrogate Quality Control

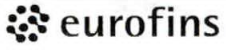
Blank	84
LCS	106
LCSD	94

Limits: 50-150

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Chevron Northwest Region Analysis Request/Chain of Custody



Lancaster Laboratories

Acct. # 11260

For Eurofins Lancaster Laboratories use only
 Group # 1445687 Sample # 7334952-55
Instructions on reverse side correspond with circled numbers.

1 Client Information				4 Matrix				5 Analyses Requested										6 Remarks	
Facility # <u>WBS</u>		Site Address <u>9816 271st Street NW, STANWOOD, WA</u>		Sediment <input type="checkbox"/> Ground <input checked="" type="checkbox"/> Surface <input type="checkbox"/> Potable <input type="checkbox"/> NPDES <input type="checkbox"/> Air <input type="checkbox"/>	Composite <input type="checkbox"/> Soil <input type="checkbox"/> Water <input type="checkbox"/> Oil <input type="checkbox"/>	Total Number of Containers BTEX + MTBE 8021 <input checked="" type="checkbox"/> 8260 full scan <input type="checkbox"/>	Oxygenates <input type="checkbox"/> NWTPH-Gx <input type="checkbox"/> NWTPH-Dx with Silica Gel Cleanup <input checked="" type="checkbox"/> NWTPH-Dx without Silica Gel Cleanup <input type="checkbox"/>	WA VPH <input type="checkbox"/> Lead <input type="checkbox"/>	Method <input type="checkbox"/> Diss. <input type="checkbox"/>	<input type="checkbox"/> Results in Dry Weight <input type="checkbox"/> J value reporting needed <input type="checkbox"/> Must meet lowest detection limits possible for 8260 compounds <input type="checkbox"/> 8021 MTBE Confirmation <input type="checkbox"/> Confirm MTBE + Naphthalene <input type="checkbox"/> Confirm highest hit by 8260 <input type="checkbox"/> Confirm all hits by 8260 <input type="checkbox"/> Run _____ oxy's on highest hit <input type="checkbox"/> Run _____ oxy's on all hits									
Chevron PM <u>MHO</u> Lead Consultant <u>Ruth Otteman</u>		Consultant/Office <u>LEIDOSRO</u>																	
Consultant Project Mgr. <u>Deanna J. Harding (deanna@grinc.com)</u>		Consultant Phone # <u>(525) 584 7444 x180</u>																	
Sampler <u>J. Payne</u>		Collected Date <u>1.10.14</u> Time <u>14:30</u>																	
Sample Identification <u>RA</u>		Grab <input checked="" type="checkbox"/>																	
<u>MM:1</u>		<input checked="" type="checkbox"/>																	
<u>MM:2</u>		<input checked="" type="checkbox"/>																	
<u>MM:3</u>		<input checked="" type="checkbox"/>																	
7 Turnaround Time Requested (TAT) (please circle) Standard 5 day 4 day 72 hour 48 hour 24 hour EDF/EDD				Relinquished by <u>[Signature]</u> Date <u>1.13.14</u> Time <u>1600</u>		Received by <u>[Signature]</u> Date _____ Time _____													
8 Data Package (circle if required) Type I - Full <input type="checkbox"/> Type VI (Raw Data) <input type="checkbox"/>				Relinquished by Commercial Carrier: UPS <input checked="" type="checkbox"/> FedEx _____ Other _____		Received by <u>[Signature]</u> Date <u>1/14/14</u> Time <u>0925</u>													
EDD (circle if required) CVX-RTBU-FL_05 (default) <input type="checkbox"/> Other: _____				Temperature Upon Receipt <u>06.09</u> °C		Custody Seals Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No													
Please forward the lab results directly to the lead consultant and cc: G-R.																			

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m³	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than - The number following the sign is the <u>limit of quantitation</u> , the smallest amount of analyte which can be reliably determined using this specific test.		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is \geq the Method Detection Limit (MDL) and $<$ the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	B	Value is $<$ CRDL, but \geq IDL
B	Analyte was also detected in the blank	E	Estimated due to interference
C	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	S	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
P	Concentration difference between primary and confirmation columns $>$ 25%	W	Post digestion spike out of control limits
U	Compound was not detected	*	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	+	Correlation coefficient for MSA $<$ 0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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