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TECHNICAL MEMORANDUM

Date: July 8, 2013
To: Christopher Maurer
From: David Dinkuhn, P.E.
Subject: Former Chevron Property Long Term Monitoring Event 1
cc: Thomas Knuckey, P.E.
Project Number: 233-1896-107
Project Name: Former Chevron Property Remediation

FORMER CHEVRON PROPERTY PERFORMANCE GROUNDWATER MONITORING

This technical memorandum presents a summary of the results of the first long-term groundwater monitoring event at the Former Chevron Property in Bremerton, Washington. Long-term monitoring is being performed under the site's Agreed Order Number DE-12TCPHQ-9509. Sampling was conducted in accordance with the site's Long Term Monitoring Plan (LTGMP; Parametrix 2013). Data from this long-term monitoring event is intended to be used to evaluate groundwater quality trends at the site and confirm the continued occurrence of natural attenuation.

EVENT 1 MONITORING RESULTS

Groundwater samples were collected on January 23 and 24, 2013 using a peristaltic pump and low flow sampling techniques. Samples were collected from eleven designated long-term monitoring wells including: MW-4R, -9R, -10R, -11, -13R, -20R, -21R, -22R, -25, -26R, and -27. Note that monitoring well MW-20R is a new well recently installed for the purposes of long-term monitoring. Monitoring well logs are attached.

Prior to sampling, the wells were purged until measured water quality parameters stabilized according to criteria specified in the LTGMP. Upon stabilization, groundwater samples were collected in appropriate containers. The final set of water quality parameter measurements is provided in Table 1. Field sampling forms related to the sample collection are attached.

Groundwater samples were submitted to Onsite Environmental of Redmond, Washington, for chemical analysis of gasoline and diesel range organics along with benzene, toluene, ethylbenzene, and xylenes, total and dissolved lead and general chemistry parameters. A summary of the sampling results is presented in Table 1. An analytical data review memorandum and the laboratory report are also attached.

The depth to groundwater was measured in each well during sampling; however, the depth measurements could not be used to develop inferred groundwater elevation contours since well casing heights had been temporarily adjusted during site earthwork activities. The well casings have since been adjusted to final grade and groundwater elevation contours will be provided in the report for the upcoming Event 2 sampling in July 2013.

DISCUSSION

Concentration trends versus time for benzene and gasoline have been charted as shown in Figures 2 and 3. The trend lines show generally stable or decreasing concentrations with one exception: MW-21R is apparently exhibiting some rebound following the supplemental oxygen release compound (ORC) injection in June 2011.

Evidence that ongoing anaerobic respiration is occurring in the impacted aquifer is demonstrated by elevated alkalinity and general absence of dissolved oxygen. Additional evidence is provided by elevated dissolved methane concentrations with associated negative oxidation reduction potential values (Table 1).

Diesel and lube oil concentrations are currently below the MTCA A cleanup levels in all wells.

The sample from MW-09R was tested for both total and dissolved lead. Lead was not detected in either sample.

REFERENCES

Parametrix. 2013. Former Chevron Property Long-Term Groundwater Monitoring Plan. Prepared for Ecology on behalf of City of Bremerton. July 8.

ATTACHMENTS:

Figure 1 – Groundwater Results Summary

Figure 2 – Benzene Results

Figure 3 – Gasoline Results

Monitoring Well Logs

Field Sampling Forms

Data Validation Technical Memorandum

Laboratory Report

Figure 3. Gasoline Results - Former Chevron Property

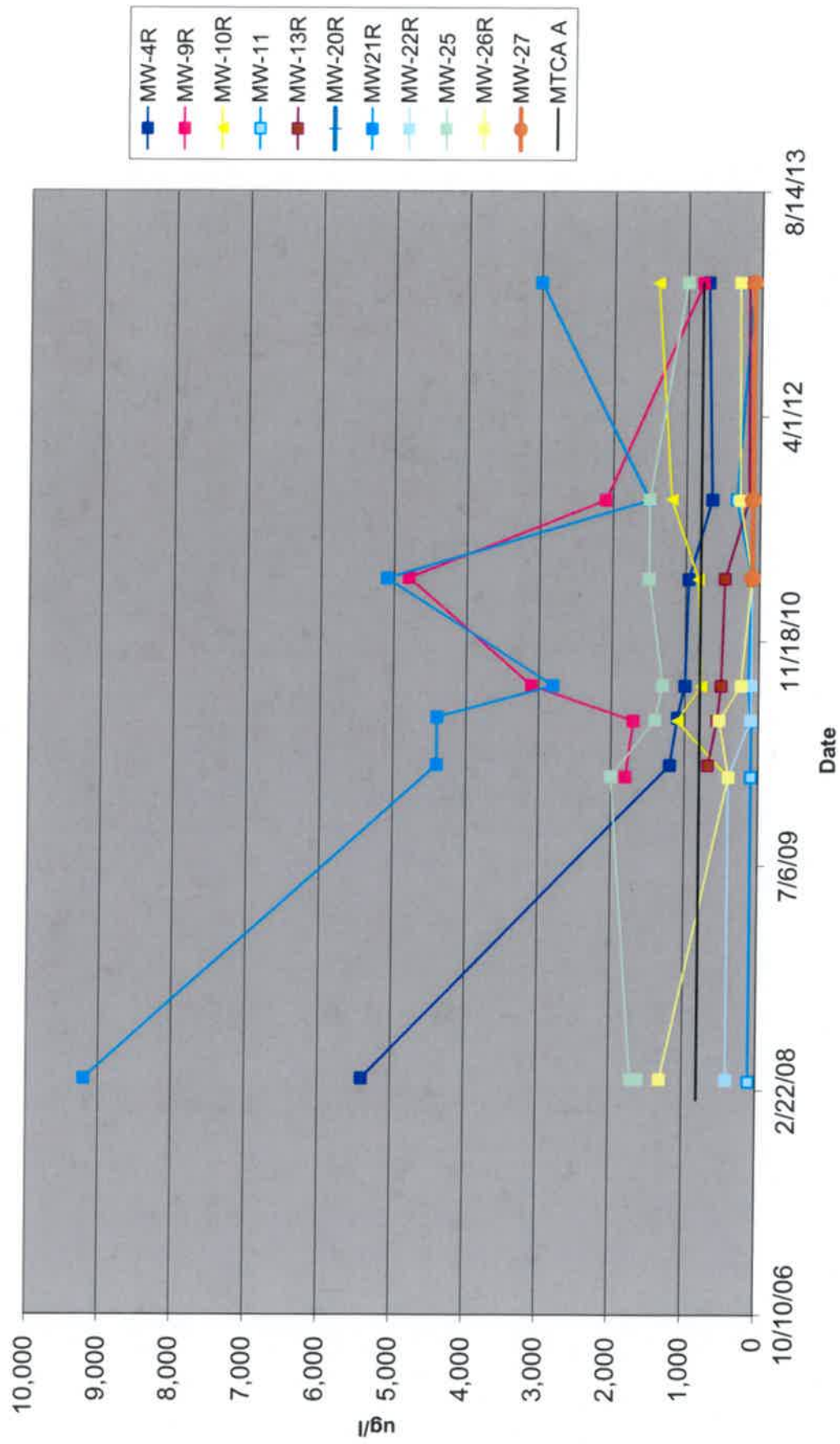


Table 1 Groundwater Results Summary, Long Term Monitoring Event 1 (January 2013)

Monitoring Well No.			MW-04R										MW-09R							MW-10R						
PARAMETERS	Units	Sample Date	3/19/08 ¹	1/21/10	6/1/10	6/1/10*	8/11/10	8/11/10*	4/5/11	4/5/11*	9/29/11	1/24/13	1/20/10	5/25/10	5/25/10*	8/11/10	4/7/11	9/28/11	1/23/13	3/17/08 ¹	1/20/10	5/25/10	8/10/10	4/5/11	9/30/11	1/23/13
MTCA A																										
VOLATILE ORGANICS (BTEX)																										
Benzene	ug/L	5	160	60 J	58	--	52	--	39	--	45	34	120 J	160	170	360	280	310	68	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1,000	10 U	2.0 J	1.0 U	--	1.0 U	--	4.0 U	--	1.0 U	2.1 U	4 U	3.2	3.6	11	11	13	4	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.2	1.7
Ethylbenzene	ug/L	700	45	31 J	45	--	40	--	17	--	20	7.9	89 J	89	97	230	220	150	20	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.2	1.0 U
m,p-Xylene	ug/L	1,000	86	15 J	7.6	--	4.7	--	9.4	--	2.1	4.1	170 J	120	140	400	300	190	12	6.8	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	ug/L	1,000	12	1.8 J	1.0 U	--	1.0 U	--	4.0	--	1.0 U	1.5	4 U	3.5	3.9	8.1	11	10	4	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																										
Gasoline	ug/L	800	5,400	1,200 J	1,100	--	1,000	--	960	--	650	720	1,800 J	1,500	1,700	3,100	4,800	2,100	790	400 U	400 U	1,100	780	830	1200	1400
Diesel	mg/L	0.5	27	0.64 M	0.34 U	--	0.62 M	--	0.46	--	0.34 U	0.31 U	0.31 U	0.29 U	0.69	0.45 M	0.82	0.33 U	0.26 U	160	0.27 U	0.61 U	0.42 U	0.45 U	0.81 U	0.76 U
Lube Oil	mg/L	0.5	2.3	0.45 U	0.42 U	--	0.41 U	--	0.42 U	--	0.42 U	0.41 U	0.49 U	0.47 U	0.66	0.42 U	0.43 U	0.42 U	0.41 U	8.8 U	0.44 U	0.42 U	0.45 U	0.43 U	0.43 U	0.41 U
METALS																										
Total Lead	ug/L	15	--	8.2	--	--	--	--	--	--	--	--	80	36 J	74 J	21 J	170	--	1.00 U	--	3.8	--	--	--	--	--
Dissolved Lead	ug/L	15	--	1.0 U	--	--	--	--	--	--	--	--	13	12	14	17	3.0	--	1.00 U	--	2.2	--	--	--	--	--
Dissolved Iron	ug/L		--	4,200	--	--	--	--	--	--	--	--	34,000	--	--	--	--	--	--	--	6,400	--	--	--	--	--
Total Ferrous Iron	mg/L		--	--	7.36	--	9.75	--	5.4	--	--	7.35	--	46.2	42.1	29.2	49.4	--	34.20	--	--	25.2	34.4	12.4	--	40.80
Dissolved Manganese	ug/L		--	3,000	4,600	--	4,400	--	3,400	--	--	4,500	5,000	3,600	3,900	4,200	4,500	--	4,000	--	1,100	1,400	2,000	1,500	--	3,700
PAHs																										
Naphthalene	ug/L		--	1.4	--	--	--	--	1.0 U	1.0 U	--	--	6.4	--	--	--	--	--	--	--	0.14	--	--	--	--	--
2-Methylnaphthalene	ug/L		--	0.20	--	--	--	--	1.0 U	1.0 U	--	--	2.8	--	--	--	--	--	--	--	0.12 U	--	--	--	--	--
1-Methylnapththalene	ug/L		--	3.2	--	--	--	--	4.7	4.9	--	--	2.2	--	--	--	--	--	--	--	21	--	--	--	--	--
Acenaphthylene	ug/L		--	0.23	--	--	--	--	1.0 U	1.0 U	--	--	0.11 U	--	--	--	--	--	--	--	0.12 U	--	--	--	--	--
Acenaphthene	ug/L		--	1.9	--	--	--	--	3.3	3.4	--	--	0.18	--	--	--	--	--	--	--	0.23	--	--	--	--	--
Flourene	ug/L		--	1.8	--	--	--	--	2.3	2.3	--	--	0.14	--	--	--	--	--	--	--	0.32	--	--	--	--	--
Phenanthrene	ug/L		--	0.15	--	--	--	--	1.0 U	1.0 U	--	--	0.17	--	--	--	--	--	--	--	0.12 U	--	--	--	--	--
Anthracene	ug/L		--	0.44	--	--	--	--	1.0 U	1.0 U	--	--	0.11 U	--	--	--	--	--	--	--	0.12 U	--	--	--	--	--
Fluoranthene	ug/L		--	0.39	--	--	--	--	1.0 U	1.0 U	--	--	0.11 U	--	--	--	--	--	--	--	0.12 U	--	--	--	--	--
Pyrene	ug/L		--	0.26	--	--	--	--	1.0 U	1.0 U	--	--	0.11 U	--	--	--	--	--	--	--	0.12 U	--	--	--	--	--
Benzo(a)anthracene	ug/L		--	0.047	0.032	0.03	0.050 U	0.042	0.10 U	0.10 U	--	--	0.011 U	--	--	--	--	--	--	--	0.014	--	--	--	--	--
Chrysene	ug/L		--	0.033	0.010 U	0.010 U	0.050 U	0.023	0.10 U	0.10 U	--	--	0.011 U	--	--	--	--	--	--	--	0.012 U	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		--	0.013	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	0.011 U	--	--	--	--	--	--	--	0.012 U	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		--	0.028	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	0.011 U	--	--	--	--	--	--	--	0.012 U	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	--	0.020	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	0.011 U	--	--	--	--	--	--	--	0.012 U	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		--	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	0.011 U	--	--	--	--	--	--	--	0.012 U	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		--	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.10 U	0.10 U	--	--	0.011 U	--	--	--	--	--	--	--	0.012 U	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		--	0.010 U	--	--	--	--	0.10 U	0.10 U	--	--	0.011 U	--	--	--	--	--	--	--	0.012 U	--	--	--	--	--
GENERAL CHEMISTRY																										
Alkalinity	mg/L		--	190	1,900	--	2,100	--	2,300	--	--	7100.00	700	720	730	800	730	--	450.00	220	190	200	210	230	--	250.00
Nitrate (as Nitrogen)	mg/L		--	0.050 U	0.050 U	--	0.050 U	--	0.050 U	--	--	0.05 U	0.050 U	0.050 U	0.050 U	0.14	0.050 U	--	0.05 U	0.050 U	0.77	0.094	0.050 U	0.050 U	--	0.05 U
Sulfate	mg/L		--	250	150	--	120	--	110	--	--	5.00 U	30	7.5	7.4	5.0 U	5.0 U	--	25.00 U	5.0 U	10	10 U	5.0 U	5.0 U	--	25.00 U
Chloride	mg/L		--	290	250	--	250	--	230	--	--	240.00	77	120	120	78	91	--	32.00	2.5	10	10	14	6.8	--	14.00
Dissolved Methane	ug/L		--	710	590	--	670	--	740	--	--	690.00	2,100	8,600	7,800	6,600	9,900	--	11000.00	--	170	510	260	590	--	2900.00
BOD5	mg/L		--	8.97	8.1	--	8.6	--	--	--	--	--	5.46	3.0	4.3	12.3	--	--	--	--	3.06	2.0	12 U	--	--	--
FIELD PARAMETERS																										
Turbidity	Neth. Turbidity Units		--	333	5.3	5.3	106	106	9.0	9.0	116.0	NM	146	57.9	57.9	>1000	>1000	106.0	NM	208	54.7	3.0	235	2.7	6.5	NM
pH	--		--	6.63	6.90	6.90	7.01	7.01	7.09	7.09	7.11	7.07	6.36	6.77	6.77	6.94	6.78	7.05	6.87	6.38	6.00	6.32	6.05	6.50	6.52	6.58
Specific Conductance	Millisiemens/cm		--	3.50	3.42	3.42	32.6	32.6	35.1	35.1	5.48	5.41	1.52	1.42	1.42	2.65	1.81	1.91	1.47	53.4	35.9	51.2	90	90	81.2	0.8
Dissolved Oxygen	mg/L		--	4.91	4.55	4.55	0.0	0.0	4.02	4.02	0.06	0.00	9.65	0.96	0.96	0.0	0.40	6.68	3.92	0.0	5.38	6.31	2.38	2.20	6.16	0.20
Oxdat. Red. Potential	Millivolts		--	-136	-115	-115	-161	-161	-149	-149	-163	-247	-124	-136.8	-136.8	-169	-134	-152	-211	-35	-64	-19.0	-79	-110	-96	-194

Notes:

- 1 Sample collected from replaced well.
- * Duplicate collected.
- J = Reported concentration is an estimate.
- mg/L= Milligrams per liter.
- NM = Not measured due to equipment malfunction.
- µg/L = Micrograms per liter.
- U = Analyte not detected above practical quantitation limit given.
- U1 = The practical quantitation limit is elevated due to interferences present in the sample.
- Exceeds MTCA A cleanup level.

Table 1 Groundwater Results Summary, Long Term Monitoring Event 1 (January 2013)

Monitoring Well No.			MW-11										MW-13R						MW-20R	MW-21R									
PARAMETERS	Units	Sample Date	3/13/08	1/20/10	5/25/10	8/10/10	8/10/10*	4/5/11	4/5/11*	9/30/11	1/23/13	1/23/2013*	2/15/10	5/26/10	8/11/10	4/6/11	9/29/11	1/24/13	1/23/13	3/18/08 ¹	2/15/10	6/1/10	8/11/10	8/11/10*	4/6/11	4/6/11*	9/28/11	1/23/13	
MTCA A																													
VOLATILE ORGANICS (BTEX)																													
Benzene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	35 J	33	22	11	4	11	4.8	15	46 J	34	27	--	45	--	19	32	
Toluene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.3	1.0 U	1.0 U	1.0 U	1 U	1 U	91	5.0 J	2.9	1.7	--	6.7	--	1.0 U	4.5	
Ethylbenzene	ug/L	700	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	13 J	15	10	2.6	1.0 U	2	3	620	230 J	240	120	--	340	--	34	160	
m,p-Xylene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.4	1.7	1.0 U	1.0 U	1 U	1 U	910	190 J	210	100	--	290	--	21	85	
o-Xylene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	110	8.9 J	2.3	1.9	--	4.0 U	--	1.0 U	2.3	
TOTAL PETROLEUM HYDROCARBONS																													
Gasoline	ug/L	800	100 U	100 U	100 U	140	130	100 U	100 U	320	100 U	100 U	680 J	560	510	420	150	170	260	9,200	4,400 J	4,400	2,800	--	5,100	--	1500	3000	
Diesel	mg/L	0.5	0.27	0.17 U	0.26 U	0.25 U	0.25 U	0.26 U	0.26 U	0.37	0.26 U	0.26 U	0.49 U1	0.43	0.39 U	0.41	0.26 U	0.26 U	0.26 U	1.7	0.89 U1	0.79 U	0.87	--	0.68 U	--	0.42 U	0.47 U	
Lube Oil	mg/L	0.5	0.40 U	0.27 U	0.42 U	0.41 U	0.41 U	0.42 U	0.42 U	0.42 U	0.41 U	0.41 U	0.70 J	0.45 U	0.43 U	0.42 U	0.42 U	0.42 U	0.42 U	0.40 U	0.46 U	0.42 U	0.41 U	--	0.42 U	--	0.42 U	0.41 U	
METALS																													
Total Lead	ug/L	15	--	4.7	--	--	--	--	--	--	--	--	5.2	--	--	--	--	--	--	10	15	2.8 J	10 J	5.5 J	1.1	1.1 U	--	--	
Dissolved Lead	ug/L	15	--	1.4	--	--	--	--	--	--	--	--	1.1	--	--	--	--	--	--	8.9	2.3	1.4	1.4	1.0	1.0 U	1.0 U	--	--	
Dissolved Iron	ug/L		--	270	--	--	--	--	--	--	--	--	3,600	--	--	--	--	--	--	--	18,000	--	--	--	--	--	--	--	
Total Ferrous Iron	mg/L		--	--	19.0	30.4	30.0	2.66	2.74	--	0.67	0.88	--	15.2	9.31	7.94	--	4.51	26.20	--	--	16.2	17.9	--	10.1	--	--	6.45	
Dissolved Manganese	ug/L		--	300	1,400	2,600	2,600	400	400	--	370	350	1,500	1,300	2,000	1,800	--	1,700	1,900	--	4,100	4,500	3,500	--	4,200	--	--	2,800	
PAHs																													
Naphthalene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	15	--	--	0.35	--	--	--	18	18	--	--	--	--	--	--	--	
2-Methylnaphthalene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	1.1	--	--	0.10 U	--	--	--	32	7.3	--	--	--	--	--	--	--	
1-Methylnappthalene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	4.7	--	--	0.38	--	--	--	20	18	--	--	--	--	--	--	--	
Acenaphthylene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	1.1	--	--	0.40	--	--	--	0.099	1.1 U	--	--	--	--	--	--	--	
Acenaphthene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	48	--	--	22	--	--	--	1.1	1.3	--	--	--	--	--	--	--	
Flourene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	21	--	--	7.6	--	--	--	0.96	0.61	--	--	--	--	--	--	--	
Phenanthrene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	3.2	--	--	0.70	--	--	--	0.65	0.44	--	--	--	--	--	--	--	
Anthracene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	1.9	--	--	1.2	--	--	--	0.095 U	0.26	--	--	--	--	--	--	--	
Fluoranthene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	1.5	--	--	1.2	--	--	--	0.11	0.12	--	--	--	--	--	--	--	
Pyrene	ug/L		--	0.13 U	--	--	--	--	--	--	--	--	0.91	--	--	0.58	--	--	--	0.095 U	0.11 U	--	--	--	--	--	--	--	
Benzo(a)anthracene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	0.15	0.057	0.061	0.058	--	--	--	0.012	0.011 U	--	--	--	--	--	--	--	
Chrysene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	0.15	0.040	0.050 U	0.044	--	--	--	0.011	0.011 U	--	--	--	--	--	--	--	
Benzo(b)fluoranthene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	0.093	0.010 U	0.010 U	0.018	--	--	--	0.010	0.011 U	--	--	--	--	--	--	--	
Benzo(k)fluoranthene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	0.083	0.010 U	0.010 U	0.014	--	--	--	0.011	0.011 U	--	--	--	--	--	--	--	
Benzo(a)pyrene	ug/L	0.1	--	0.013 U	--	--	--	--	--	--	--	--	0.092	0.010 U	0.010 U	0.017	--	--	--	0.012	0.011 U	--	--	--	--	--	--	--	
Indeno(1,2,3-cd)pyrene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	0.041	0.010 U	0.010 U	0.010 U	--	--	--	0.0099	0.011 U	--	--	--	--	--	--	--	
Dibenz(a,h)anthracene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	0.013	0.010 U	0.010 U	0.010 U	--	--	--	0.0095 U	0.011 U	--	--	--	--	--	--	--	
Benzo[g,h,i]perylene	ug/L		--	0.013 U	--	--	--	--	--	--	--	--	0.053	--	--	0.010 U	--	--	--	0.013	0.011 U	--	--	--	--	--	--	--	
GENERAL CHEMISTRY																													
Alkalinity	mg/L		170	52	210	120	110	70	66	--	130.00	180.00	1,300	1,400	1,600	1,500	--	1900.00	220	150	140	1,400	1,500	--	2,000	--	--	1700.00	
Nitrate (as Nitrogen)	mg/L		0.050 U	0.050 U	0.070	0.086	0.1	0.050 U	0.050 U	--	2.40	1.60	0.050 U	0.050 U	0.050 U	0.050 U	--	0.05 U	0.05 U	0.050 U	0.050 U	0.050 U	0.057	--	0.27	--	--	0.05 U	
Sulfate	mg/L		5.0 U	8.8	10 U	25 U	25 U	5.0 U	5.0 U	--	56.00	47.00	460	460	560	280	--	160.00	25 U	5.0 U	230	170	120	--	110	--	--	5.00 U	
Chloride	mg/L		5.2	3.1	7.9	8.8	9.4	6.0	5.5	--	2.70	3.60	710	670	750	420	--	400.00	24	28	140	120	110	--	100	--	--	74.00	
Dissolved Methane	ug/L		--	15	1,200	870	730	310	340	--	53.00	68.00	280	580	680	290	--	10.00	540	--	5,700	4,200	4,800	--	3,200	--	--	1300.00	
BOD5	mg/L		--	3.36	3.1	12 U	12 U	--	--	--	--	--	4.47	2.2	5.1	--	--	--	--	--	17	8.4	16.2	--	--	--	--	--	
FIELD PARAMETERS																													
Turbidity	Neth. Turbidity Units		12.6	165	1.5	32.9	32.9	3.4	3.4	21.1	NM	--	366	275.3	106	>1000	170.0	NM	NM	168	303	8.9	384	384	52.2	52.2	646.0	NM	
pH	--		6.20	5.27	6.20	6.27	6.27	6.17	6.17	6.41	6.19	--	6.96	6.81	6.89	6.99	7.42	7.20	6.67	6.39	6.56	6.83	7.00	7.00	7.06	7.06	7.06	7.08	
Specific Conductance	Millisiemens/cm		63.5	10.3	32.0	90	90	64.3	64.3	89.0	0.4	--	57.3	4.53	55.2	438	5.99	4.85	0.6	44.4	33.3	2.50	4.47	4.47	430	430	3.33	3.22	
Dissolved Oxygen	mg/L		0.0	5.87	0.90	0.0	0.0	2.67	2.67	0.00	0.91	--	7.56	3.07	0.0	4.82	7.70	7.68	0.00	0.0	0.00	4.92	0.0	0.0	1.80	1.80	0.00	0.70	
Oxdat. Red. Potential	Millivolts		62	169	-49.3	-110	-110	-31	-31	-106	-221	--	-13	-96.3	-146	-103	-133	151	-243	15	-107	-140.0	-162	-162	-160	-160	-195	-244	

Notes:
1 Sample collected from replaced well.
* Duplicate collected.
J = Reported concentration is an estimate.
mg/L= Milligrams per liter.
NM = Not measured due to equipment malfunction.
µg/L = Micrograms per liter.
U = Analyte not detected above practical quantitation limit given.
U1 = The practical quantitation limit is elevated due to interferences present in the sample.
Exceeds MTCA A cleanup level.

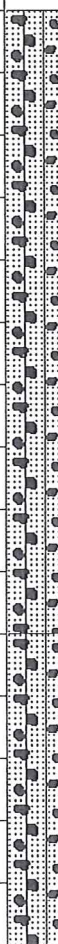
Table 1 Groundwater Results Summary, Long Term Monitoring Event 1 (January 2013)

Monitoring Well No.			MW-22R							MW-25							MW-26R							MW-27			
PARAMETERS	Units	Sample Date	3/17/08 ¹	1/20/10	5/26/10	8/12/10	4/6/11	9/29/11	1/24/13	3/18/08	3/18/08	1/21/10	5/27/10	8/12/10	4/6/11	9/29/11	1/24/13	3/18/08 ¹	1/20/10	5/26/10	8/11/10	4/6/11	9/28/11	1/24/13	4/7/11	9/30/11	1/24/13
MTCA A																											
VOLATILE ORGANICS (BTEX)																											
Benzene	ug/L	5	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	2.7	1.0 U	4.0 U	4.0	10 J	4.0 U	1.3	4.0 U	1.4	1.0	17	4.0 U	17	3.9	1.0 U	6.0	5.7	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1,000	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	4.0	7.2 J	4.0 U	2.1	4.0 U	2.5	1.2	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	700	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	56	56	74 J	4.0 U	6.1	5.3	11	2	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m,p-Xylene	ug/L	1,000	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.2	4.1	140 J	4.0 U	5.0 U	8.4	1.2	3.4	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.1	1.0 U	1.0 U	1.0 U
o-Xylene	ug/L	1,000	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.0 U	4.0	200 U1	4.0 U	1.0 U	4.0 U	1.0 U	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL PETROLEUM HYDROCARBONS																											
Gasoline	ug/L	800	400 U	400 U	100 U	100 U	100 U	120	100 U	1,600	1,700	2,000 U	1,400	1,300	1,500	1500	1000	1,300	400 U	530	240	100 U	270	290	100 U	100 U	100 U
Diesel	mg/L	0.5	0.26 U	0.26 U	0.27 U	0.25 U	0.27 U	0.26 U	0.26 U	1.2	1	0.49	0.92	2	7.0	1.3	0.7 U	1.3	0.27 U	0.26 U	0.31 U	0.27 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
Lube Oil	mg/L	0.5	0.41 U	0.41 U	0.43 U	0.41 U	0.43 U	0.41 U	0.41 U	0.48 U	0.46 U	0.42 U	0.42 U	0.41 U	0.42 U	0.41 U	0.44 U	0.40 U	0.43 U	0.41 U	0.40 U	0.43 U	0.41 U	0.41 U	0.41 U	0.42 U	0.42 U
METALS																											
Total Lead	ug/L	15	1.1 U	1.3	--	--	--	--	--	1.2	1.3	1.1 U	--	--	--	--	--	3.3	1.1 U	--	--	--	--	--	--	--	--
Dissolved Lead	ug/L	15	1.0 U	1.0 U	--	--	--	--	--	1.0 U	1.0 U	1.0 U	--	--	--	--	--	1.0 U	1.0 U	--	--	--	--	--	--	--	--
Dissolved Iron	ug/L		--	220	--	--	--	--	--	--	--	2,000	--	--	--	--	--	--	56 U	--	--	--	--	--	--	--	--
Total Ferrous Iron	mg/L		--	--	0.295	1.29	0.043	--	0.06	--	--	--	0.352	3.78	1.39	--	5.71	--	--	0.758	0.8	0.059	--	0.395	27.6	--	34.9
Dissolved Manganese	ug/L		--	1,400	890	3,200	840	--	700	--	--	120	220	130	170	--	670	--	11 U	66	560	10 U	--	4,000	3,900	--	4,300
PAHs																											
Naphthalene	ug/L		0.098 U	0.10 U	--	--	--	--	--	1.2	1.4	0.27	--	--	--	--	--	0.80	0.10 U	--	--	--	--	--	--	--	--
2-Methylnaphthalene	ug/L		0.098 U	0.10 U	--	--	--	--	--	0.11 U	0.11 U	0.10 U	--	--	--	--	--	0.10 U	0.10 U	--	--	--	--	--	--	--	--
1-Methylnappthalene	ug/L		0.098 U	0.10 U	--	--	--	--	--	22	25	0.67	--	--	--	--	--	69	0.10 U	--	--	--	--	--	--	--	--
Acenaphthylene	ug/L		0.098 U	0.10 U	--	--	--	--	--	0.17	0.17	0.10 U	--	--	--	--	--	0.45	0.15 U	--	--	--	--	--	--	--	--
Acenaphthene	ug/L		0.52	0.10 U	--	--	--	--	--	0.98	0.96	0.15	--	--	--	--	--	23	0.17 U	--	--	--	--	--	--	--	--
Flourene	ug/L		0.098 U	0.10 U	--	--	--	--	--	1.6	1.7	0.18	--	--	--	--	--	4.8	0.10 U	--	--	--	--	--	--	--	--
Phenanthrene	ug/L		0.098 U	0.10 U	--	--	--	--	--	0.11 U	0.11 U	0.10 U	--	--	--	--	--	10	0.10 U	--	--	--	--	--	--	--	--
Anthracene	ug/L		0.098 U	0.10 U	--	--	--	--	--	0.11 U	0.11 U	0.10 U	--	--	--	--	--	2.4	0.17 U	--	--	--	--	--	--	--	--
Fluoranthene	ug/L		0.098 U	0.10 U	--	--	--	--	--	0.11 U	0.11 U	0.10 U	--	--	--	--	--	0.88	0.10 U	--	--	--	--	--	--	--	--
Pyrene	ug/L		0.098 U	0.10 U	--	--	--	--	--	0.11 U	0.11 U	0.10 U	--	--	--	--	--	1.2	0.10 U	--	--	--	--	--	--	--	--
Benzo(a)anthracene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	0.011 U	0.011 U	0.010 U	--	--	--	--	--	0.10	0.016 U	--	--	--	--	--	--	--	--
Chrysene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	0.011 U	0.011 U	0.010 U	--	--	--	--	--	0.098	0.010 U	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	0.011 U	0.011 U	0.010 U	--	--	--	--	--	0.022	0.010 U	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	0.011 U	0.011 U	0.010 U	--	--	--	--	--	0.027	0.010 U	--	--	--	--	--	--	--	--
Benzo(a)pyrene	ug/L	0.1	0.0098 U	0.010 U	--	--	--	--	--	0.011 U	0.011 U	0.010 U	--	--	--	--	--	0.051	0.010 U	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	0.011 U	0.011 U	0.010 U	--	--	--	--	--	0.017	0.010 U	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	0.011 U	0.011 U	0.010 U	--	--	--	--	--	0.010 U	0.010 U	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	ug/L		0.0098 U	0.010 U	--	--	--	--	--	0.011 U	0.11 U	0.010 U	--	--	--	--	--	0.020	0.010 U	--	--	--	--	--	--	--	--
GENERAL CHEMISTRY																											
Alkalinity	mg/L		340	160	320	240	310	--	250.00	420	410	140	190	260	200	--	400.00	190	180	270	210	300	--	330	310	--	270
Nitrate (as Nitrogen)	mg/L		0.050 U	0.50	0.050 U	0.17	0.41	--	0.31 U	0.052	0.050 U	3.4	0.73	0.050 U	1.4	--	0.05 U	0.050 U	1.0	0.16	0.050 U	0.050 U	--	0.05 U	0.050 U	--	0.05 U
Sulfate	mg/L		22	1,200	75	200	39	--	34.00	36	36	13	8.0	26	5.0 U	--	18.00	1,400	1,200	1,400	2,200	1,300	--	1100	25 U	--	25 U
Chloride	mg/L		370	9,100	390	1,600	97	--	90.00	980	910	38	31	610	24	--	120.00	9,400	9,100	10,000	20,000	8,400	--	7200	9.8	--	10
Dissolved Methane	ug/L		--	6.3	21	10	6.8	--	1.90	--	--	220	190	330	190	--	110.00	--	3.0	68	5.0	29	--	270	8,600	--	6900
BOD5	mg/L		--	2.00 U	1.0 U	1.2 U	--	--	--	--	--	2.00 U	1.9	4.3	--	--	--	--	2.00 U	1.7	1.5	--	--	--	--	--	--
FIELD PARAMETERS																											
Turbidity	Neth. Turbidity Units		212	56.3	4.1	132	0.8	112.0	NM	120	120	164	4.8	32.6	65.5	60.0	NM	85.7	70.2	3.8	38.0	0.1	82.3	NM	49.2	>1000	NM
pH	--		6.62	6.32	6.82	6.69	7.03	7.65	7.08	6.31	6.31	5.81	6.28	6.96	6.20	6.21	6.54	6.24	6.19	6.31	6.53	6.88	6.52	6.72	6.58	6.53	6.61
Specific Conductance	Millisiemens/cm		19.6	17.9	1.37	CAL	128	6.04	0.85	19.8	19.8	31.8	28.9	5.13	90	51.6	1.1	3.25	16.6	22.42	--	--	--	5.70	92	1.18	5.76
Dissolved Oxygen	mg/L		0.0	7.55	4.90	0.01	1.75	8.48	8.69	0.0	0.0	4.96	1.10	0.0	0.57	0.00	0.07	0.0	6.75	5.52	0.01	0.36	0.00	0.21	0.27	0.00	0.10
Oxdat. Red. Potential	Millivolts		148	54	62.0	-36	32	-139	-161	-56	-56	-14	85.6	-120	-30	-99	-287	48	58	-64.5	-98	-84	-275	-321	-88	-111	-210

Notes:
1 Sample collected from replaced well.
* Duplicate collected.
J = Reported concentration is an estimate.
mg/L= Milligrams per liter.
NM = Not measured due to equipment malfunction.
µg/L = Micrograms per liter.
U = Analyte not detected above practical quantitation limit given.
U1 = The practical quantitation limit is elevated due to interferences present in the sample.
Exceeds MTCA A cleanup level.

Parametrix

Boring Log

Boring ID: MW-4R			Drilling Company:		Sheet 1 of 1	
Project Name: Chevron Interim Action			Drilling Method: Direct Push		Starting Date: 12/14/09	
Project #: 255-1896-063 / 04-1304			Logged by: Lily Vagelatos		Ending Date: 12/14/09	
Location: Bremerton, WA			Checked by: Ingmar Saul, L.G.		Boring Depth: 15 ft	
					Depth to Water: 5 ft	
Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		50"		5
5						55"
10		Silty sand and gravel, tan brown, saturated, starting at approximately 10 ft bgs.		40"		15
15		Bottom of boring at 15 feet bgs.				20



Parametrix

Boring Log

Boring ID: MW-9R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/15/09

Ending Date: 12/15/09

Boring Depth: 15 ft

Depth to Water: 9 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		TOP SOIL with VEGETATION Silty sand				
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		30"		
5				45"		5
10		Silty sand and gravel, tan brown, saturated, starting at approximately 10 ft bgs.	CHEV-SO-MW9R-0090	24"		10
15		Bottom of boring at 15 feet bgs.				15
20						20

Ground Water at 9' bgs



Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Preppacked Well Screen; 5' to 15'

Parametrix

Boring Log

Boring ID: MW-10R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/29/09

Ending Date: 12/29/09

Boring Depth: 15 ft

Depth to Water: 7 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		TILL and FILL MATERIAL Silty sand and gravel, brown tan.		12"		
5		Damp, starting at approximately 5 ft bgs.				5
		Saturated starting at approximately 7 ft bgs.	CHEV-SO-MW10R-0070	20"		
10				20"		10
15		Bottom of boring at 15 feet bgs.				15
20						20

Ground Water at 7' bgs

Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Prepacked Well Screen; 5' to 15'

MONITOR WELL NO. M 11

WELL SCHEMATIC

Casing Elevation: 100.03
Casing Stickup: -0.3

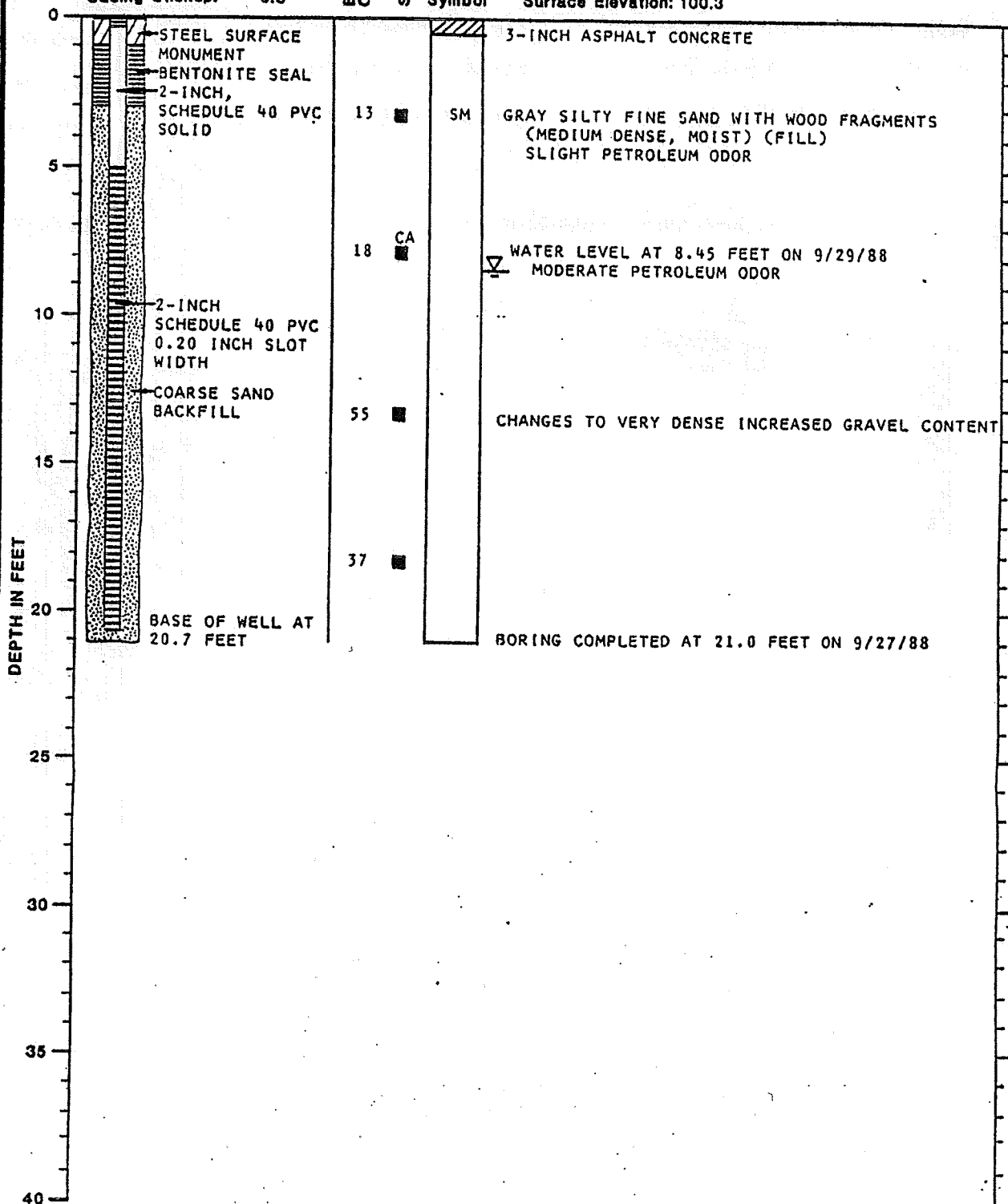
Blow-
Count

Samples

Group
Symbol

DESCRIPTION

Surface Elevation: 100.3



Note: See Figure A-2 for Explanation of Symbols

Geo  Engineers

LOG OF MONITOR WELL

FIGURE A-13

0372-34-4 KRF:DWA:GD 10/12/88

Parametrix

Boring Log

Boring ID: MW-13R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/14/09

Ending Date: 12/14/09

Boring Depth: 15 ft

Depth to Water: 7 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		45"		
5				50"		5
10		Silty sand and gravel, tan brown, saturated, at approximately 10 ft bgs.		30"		10
15		Bottom of boring at 15 feet bgs.				15
20						20

Ground Water at 7' bgs

Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Prepacked Well Screen; 5' to 15'

Parametrix

Boring Log

Boring ID: MW-16R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/29/09

Ending Date: 12/29/09

Boring Depth: 15 ft

Depth to Water: 7 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		SILTY GRAVELLY SAND Gray brown, damp, fill.				
5						5
10						10
15		Bottom of boring at 15 feet bgs.				15
20						20

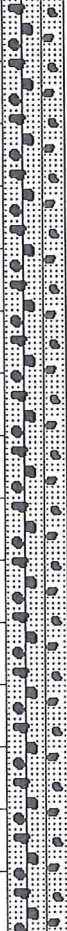
Ground Water at 7' bgs

Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Prepacked Well Screen; 5' to 15'

Parametrix

Boring Log

Boring ID: MW-18R Project Name: Chevron Interim Action Project #: 255-1896-063 / 04-1304 Location: Bremerton, WA				Drilling Company: Drilling Method: Direct Push Logged by: Lily Vagelatos Checked by: Ingmar Saul, L.G.		Sheet 1 of 1 Starting Date: 12/29/09 Ending Date: 12/29/09 Boring Depth: 15 ft Depth to Water: 5 ft	
Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)	
			Sample ID	Recovery			
0		Ground Surface			 Ground Water at 5' bgs Bentonite Seal from 0 to 5' 0.75" Diameter Casing; 0 to 5' Well Screen Sand Pack from 5' to 15' 0.75" Diameter Prepacked Well Screen; 5' to 15'	0	
		SILTY GRAVELLY SAND Gray brown, damp, fill.				5	
						10	
						15	
15		Bottom of boring at 15 feet bgs.				15	
20						20	

Parametrix

Boring Log

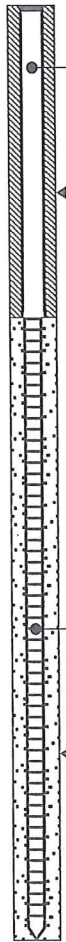
Boring ID: MW-19R		Drilling Company:		Sheet 1 of 1	
Project Name: Chevron Interim Action		Drilling Method: Direct Push		Starting Date: 12/29/09	
Project #: 255-1896-063 / 04-1304		Logged by: Lily Vagelatos		Ending Date: 12/29/09	
Location: Bremerton, WA		Checked by: Ingmar Saul, L.G.		Boring Depth: 15 ft	
				Depth to Water: 4 ft	

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
0 to 20		SILTY GRAVELLY SAND Gray brown, damp, fill.				0 to 20
20		Bottom of boring at 20 feet bgs.				20
25						25

Parametrix

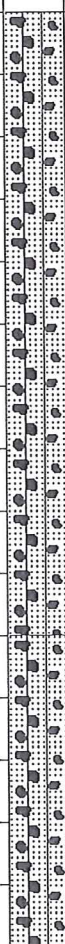
Boring Log

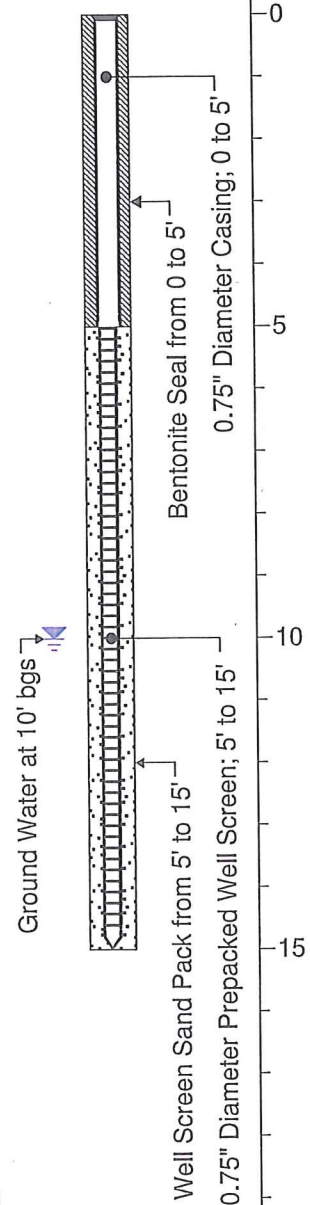
Boring ID: MW-21R Project Name: Chevron Interim Action Project #: 255-1896-063 / 04-1304 Location: Bremerton, WA				Drilling Company: Drilling Method: Direct Push Logged by: Lily Vagelatos Checked by: Ingmar Saul, L.G.		Sheet 1 of 1 Starting Date: 12/15/09 Ending Date: 12/15/09 Boring Depth: 15 ft Depth to Water: 7 ft
Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		50"		
5						5
				50"		
10		Silty sand and gravel, tan brown, saturated, starting at approximately 10 ft bgs.	CHEV-SO-MW21R-0100			10
				40"		
15		Bottom of boring at 15 feet bgs.				15
20						20



Parametrix

Boring Log

Boring ID: MW-22R			Drilling Company:		Sheet 1 of 1	
Project Name: Chevron Interim Action			Drilling Method: Direct Push		Starting Date: 12/14/09	
Project #: 255-1896-063 / 04-1304			Logged by: Lily Vagelatos		Ending Date: 12/14/09	
Location: Bremerton, WA			Checked by: Ingmar Saul, L.G.		Boring Depth: 15 ft	
					Depth to Water: 10 ft	
Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		50"		5
5						55"
10		Silty sand and gravel, tan brown, saturated, starting at approximately 10 ft bgs.	CHEV-SO-MW22R-0100	45"		15
15		Bottom of boring at 15 feet bgs.				20



Boring ID: MW-25

Drilling Company: ESN

Sheet 1 of 1

Project Name: Chevron Prop RI/FS

Drilling Method: Auger

Drilling Date: 3/7/08

Project #: 255-1896-063

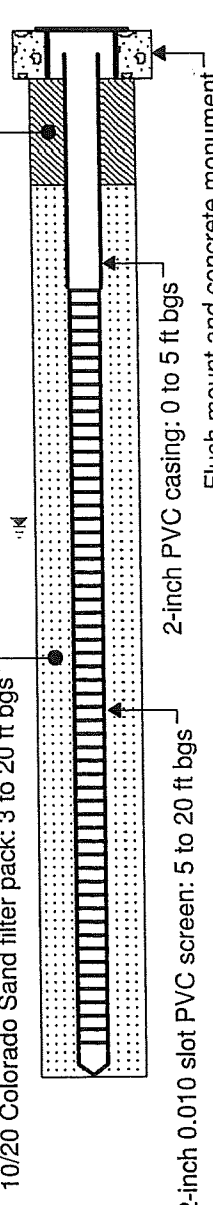
Logged by: David Dinkuhn, P.E.

Boring Depth: 20 ft

Location: SEE MAP

Checked by: David Dinkuhn, P.E.

Depth to Water: 9.5 ft

Depth (ft)	Sample Type	Lithologic Symbol	Description/Classification of Materials	Sample			Well Point Diagram	Depth (ft)
				PID Reading	Sample ID	Recovery (ft)		
0			Ground Surface				 Bentonite Anular Seal: 1 to 3 ft bgs 10/20 Colorado Sand filter pack: 3 to 20 ft bgs 2-inch 0.010 slot PVC screen: 5 to 20 ft bgs 2-inch PVC casing: 0 to 5 ft bgs Flush mount and concrete monument	0
			Silty Sandy Gravel Gray brown, damp, No petroleum hydrocarbon odor (FILL)	0		4		
5				0		3		5
				0		3		
10			Silty Gravelly Sand Gray, wet, moderate petroleum hydrocarbon odor (FILL)	1400	CHEV-SO-MW25-0100	3		10
			Silty Gravelly Sand Wet, No petroleum hydrocarbon odor (OUTWASH)			3		
15				4		3		15
						3		
20						1		20
			Bottom of boring at 20 feet bgs.					

Parametrix

Boring Log

Boring ID: MW-26R

Drilling Company:

Project Name: Chevron Interim Action

Drilling Method: Direct Push

Project #: 255-1896-063 / 04-1304

Logged by: Lily Vagelatos

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Sheet 1 of 1

Starting Date: 12/14/09

Ending Date: 12/14/09

Boring Depth: 15 ft

Depth to Water: 9.5 ft

Depth (ft)	Lithologic Symbol	Description/Classification of Materials	Sample		Boring Diagram	Depth (ft)
			Sample ID	Recovery		
0		Ground Surface				0
		MIXED TREATMENT ZONE Sandy silt with gravel, tan brown, very moist.		50"		
5				45"		5
10		Silty sand and gravel, tan brown, saturated, untreated fill in saturation zone, starting at approximately 10 ft bgs.	CHEV-SO-MW26R-0095	40"		10
15		Bottom of boring at 15 feet bgs.				15
20						20

Ground Water at 9.5' bgs

Bentonite Seal from 0 to 5'
0.75" Diameter Casing; 0 to 5'

Well Screen Sand Pack from 5' to 15'
0.75" Diameter Prepacked Well Screen; 5' to 15'

Boring ID: MW-20R

Drilling Method: HSA

Sheet 1 of 1

Project Name: Chevron LTM

Sample Method: Sprit Spoon

Drilling Date: 1/10/13

Project #: 233-1896-107

Logged by: Lara Linde, L.G.

Boring Depth: 15 ft

Location: Bremerton, WA

Checked by: Ingmar Saul, L.G.

Depth to Water: 4.99 ft

Ecology Tag #: BHK 398

Elevation (ft)	Lithologic Symbol	U.S.C.S.	Description/Classification of Materials; Soil: Group name, group symbol, color, plasticity, grain size, moisture, density, misc.	PID (PPM)	Recovery (in)	Well Diagram	Depth (ft)
0.0			Ground Surface				0
	SM		SAND (SM) Brown-gray, nonplastic, medium to fine, moist, loose, trace of fine rounded gravel, no petroleum odor.		36"/60"		
-8.0			Increasing silt content starting at approx. 8 ft bgs.		30"/60"		
-9.0			Strong petroleum odor starting at approx. 9 ft bgs.				
-9.5							
	SP		SAND (SP) Gray, low plasticity, fine to medium grained, wet, loose, some fine rounded gravel, strong petroleum odor.		36"/60"		10
-14.0							
-15.0	ML		SILT (ML) Brown-gray, high plasticity, moist, soft, some fine rounded gravel, slight petroleum odor.				15
			Bottom of boring at 15 feet bgs.				

Boring ID: MW-27

Drilling Method: Probe/HSA Combo

Project Name: Former Chevron Prop. Remediation

Sample Method: Split Spoon

Project #: 233-1896-098 / 01-03

Logged by: Lara Linde

Location: 1310 Highland Drive, Bremerton

Checked by: Ingmar Saul, R.G.

Sheet 1 of 1

Drilling Date: 3/11/11

Boring Depth: 16 ft

Depth to Water: 6 ft

Ecology Tag #: BCN 891

Elevation (ft)	Lithologic Symbol	U.S.C.S.	Description/Classification of Materials; Soil: Group name, group symbol, color, plasticity, grain size, moisture, density, misc.	PID (PPM)	Recovery (in)	Well Diagram	Depth (ft)
12.0			Ground Surface				0
11.5	GW		RIP RAP Coarse gravel to cobbles (beach reinforcement)				
9.0	SP		SAND Brown, fine to medium grained, dry, loose, occassional fine gravel, no odor.	0	36/48		
6.0			Red, moist, iron staining starting at approximately 3 ft bgs.				
3.5			Moist to wet, few fine gravels, no odor, starting at approximately 6 ft bgs.	0	18/48		
	SM		SAND Brown to gray, fine to medium grained, wet, loose, organic odor, no sheen.	0	40/48		
-4.0			Gray, fine grained, wet to saturated, 5% shell fragments, moderate petroleum odor at approximately 16 ft bgs.	0	42/48		
			Bottom of boring at 16 feet bgs.				

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-4RSample #: Chev-GW-MW04R-0130

Project Number:	<u>2331896107</u>		Date:	<u>1-24-13</u>			
Project Name:	<u>Former Chevron Property</u>		Location:	<u>Chevron Lower yard</u>			
Project Address:	<u>1310 Highland Ave, Bremerton</u>		Sampled By:	<u>W. Harvey</u>			
Client Name:	<u>City of Bremeerton</u>		Purged By:	<u>W. Harvey</u>			
Casing Diameter:	2" ☐ 4" ☐ 6" ☐ Other ☒ 3/4"						
Depth to Water (feet):	<u>10.90</u>		Purge Volume Measurement Method:	<u>Measure cup/stopwatch</u>			
Depth of Well (feet):	<u>17.90</u>		Date Purged:	<u>1-24-13</u>			
Reference Point (surveyor's notch, etc.):	<u>TOC North</u>		Purge Time (from/to):	<u>North0946-1006</u>			
Date/Time Sampled:	<u>1-24-13 1012</u>						
Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$ Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$ Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): <u>3.0</u>							
TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>0946</u>	<u>12.40</u>	<u>7.08</u>	<u>6.167</u>	<u>0.30</u>	<u>12.31</u>	<u>3.6</u>	<u>-215.0</u>
<u>0950</u>	<u>12.56</u>	<u>7.07</u>	<u>5.969</u>	<u>0.17</u>	<u>12.51</u>	<u>1.6</u>	<u>-233.0</u>
<u>0954</u>	<u>12.56</u>	<u>7.06</u>	<u>5.704</u>	<u>0.03</u>	<u>12.66</u>	<u>0.6</u>	<u>-238.8</u>
<u>0958</u>	<u>12.60</u>	<u>7.08</u>	<u>5.569</u>	<u>-0.01</u>	<u>12.71</u>	<u>0.5</u>	<u>-245.2</u>
<u>1002</u>	<u>12.65</u>	<u>7.07</u>	<u>5.458</u>	<u>-0.03</u>	<u>12.82</u>	<u>0.3</u>	<u>-238.8</u>
<u>1006</u>	<u>12.67</u>	<u>7.07</u>	<u>5.407</u>	<u>-0.01</u>	<u>12.78</u>	<u>0.3</u>	<u>-246.7</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Purge Equipment:	<u>Geopump, perisaltic</u>		Sampling Equipment:	<u>YSI6920 flowmeter</u>			
Laboratory:	<u>Onsite/ARI</u>		Date Sent to Lab:	<u>1-25-13</u>			
Chain-of-Custody (yes/no):	<u>Yes</u>		Field QC Sample Number:	<u>NA</u>			
Shipment Method:	<u>Courier</u>		Split With (names[s]/organization):	<u>NA</u>			
Well Integrity:	<u>well casing is above monument and the monument is filled wit water</u>						
Remarks:	<u>Groundwater has a yellow tint anda fuel odor</u>						
Signature:	_____						

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-9R

Sample #: Chev-GW-MW09R-0120

Project Number:	2331896107	Date:	1-23-13
Project Name:	Former Chevron Property	Location:	Chevron Lower Yard
Project Address:	1310 Highland Ave, Bremerton	Sampled By:	W. Harvey
Client Name:	City of Bremeerton	Purged By:	W. Harvey

Casing Diameter:	2" _____ 4" _____ 6" _____ Other <u>X 3/4"</u>		
Depth to Water (feet):	9.52	Purge Volume Measurement Method:	Measuring cup/stopwatch
Depth of Well (feet):	17.41	Date Purged:	1-23-13
Reference Point (surveyor's notch, etc.):	TOC North	Purge Time (from/to):	1445-1453
Date/Time Sampled:	1-23-13 1459		

Purge Volume Calculation: ($\pi r^2 h$) (7.48 gal/ft³) (# Casing volumes)
 Purge Volume (gallons) for: 2" = (0.16)(h)(#Cv); 4" = (0.653)(h)(#Cv); 6" = (1.48)(h)(#Cv)
 Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): 1.0

TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
1445	12.4	6.8	1.506	4.11	10.16	179.2	-209.1
1449	12.8	6.90	1.491	4.01	10.20	184.2	-210.2
1453	12.9	6.87	1.478	3.92	10.33	187.6	-210.6

Purge Equipment:	Goepump, perisaltic	Sampling Equipment:	YSI6920 flowmeter
Laboratory:	Onsite/ARI	Date Sent to Lab:	1-25-13
Chain-of-Custody (yes/no):	Yes	Field QC Sample Number:	NA
Shipment Method:	Courier	Split With (names[s]/organization):	NA

Well Integrity: Well casing is above the monument and the monument is filled with water

Remarks: groundwater had a grey tint and a fuel odor. Well lost flow, it took 25 mins. to fill the flowmeter

Signature: _____

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-10RSample #: Chev-GW-M10R-0110

Project Number:	<u>2331896107</u>	Date:	<u>1-23-13</u>
Project Name:	<u>Former Chevron Property</u>	Location:	<u>Chevron lower Yard</u>
Project Address:	<u>1310 Highland Ave, Bremerton</u>	Sampled By:	<u>W. Harvey</u>
Client Name:	<u>City of Bremeerton</u>	Purged By:	<u>W. Harvey</u>

Casing Diameter:	2" ☐ 4" ☐ 6" ☐ Other ☒ <u>3/4"</u>
Depth to Water (feet):	<u>8.4</u>
Purge Volume Measurement Method:	<u>Measure cup/stopwatch</u>
Depth of Well (feet):	<u>17.74</u>
Date Purged:	<u>1-23-13</u>
Reference Point (surveyor's notch, etc.):	<u>TOC North</u>
Purge Time (from/to):	<u>1359-1415</u>
Date/Time Sampled:	<u>1-23-13 1423</u>

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): 3.5

TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>1359</u>	<u>9.43</u>	<u>6.61</u>	<u>0.814</u>	<u>2.65</u>	<u>10.09</u>	<u>8.7</u>	<u>-204.3</u>
<u>1403</u>	<u>9.51</u>	<u>6.61</u>	<u>0.822</u>	<u>0.70</u>	<u>10.12</u>	<u>2.7</u>	<u>-200.0</u>
<u>1407</u>	<u>9.60</u>	<u>6.60</u>	<u>0.823</u>	<u>0.43</u>	<u>10.22</u>	<u>2.0</u>	<u>-195.5</u>
<u>1411</u>	<u>9.70</u>	<u>6.59</u>	<u>0.822</u>	<u>0.21</u>	<u>10.25</u>	<u>1.7</u>	<u>-195.0</u>
<u>1415</u>	<u>9.76</u>	<u>6.58</u>	<u>0.821</u>	<u>0.20</u>	<u>10.26</u>	<u>1.5</u>	<u>-193.8</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Purge Equipment:	<u>Geopump, perisaltic</u>	Sampling Equipment:	<u>YSI6920 flowmeter</u>
Laboratory:	<u>Onsite/ARI</u>	Date Sent to Lab:	<u>1-25-13</u>
Chain-of-Custody (yes/no):	<u>Yes</u>	Field QC Sample Number:	<u>NA</u>
Shipment Method:	<u>Courier</u>	Split With (names[s]/organization):	<u>NA</u>

Well Integrity: Well casing is above mound and mound is filled with water

Remarks: Groundwater has a grey tint and a fuel odor.

Signature: _____

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-11Sample #: Chev-GW-MW11-0080/0800

Project Number:	<u>2331896107</u>	Date:	<u>1-23-13</u>				
Project Name:	<u>Former Chevron Property</u>	Location:	<u>Chevron Lower Yard</u>				
Project Address:	<u>1310 Highland Ave, Bremerton</u>	Sampled By:	<u>W. Harvey</u>				
Client Name:	<u>City of Bremeerton</u>	Purged By:	<u>W. Harvey</u>				
Casing Diameter:	2" <u>X</u> 4" _____ 6" _____ Other _____						
Depth to Water (feet):	<u>6.0</u>	Purge Volume Measurement Method:	<u>Measure cup /stopwatch</u>				
Depth of Well (feet):	<u>20.3</u>	Date Purged:	<u>1-23-13</u>				
Reference Point (surveyor's notch, etc.):	<u>TOC North</u>	Purge Time (from/to):	<u>1150-1206</u>				
Date/Time Sampled:	<u>1-23-13 1215/1230</u>						
Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$ Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$ Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): <u>3.0</u>							
TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>1150</u>	<u>6.40</u>	<u>6.28</u>	<u>0.433</u>	<u>1.14</u>	<u>8.96</u>	<u>15.8</u>	<u>-195.1</u>
<u>1154</u>	<u>6.40</u>	<u>6.22</u>	<u>0.425</u>	<u>0.92</u>	<u>9.97</u>	<u>13.0</u>	<u>-200.8</u>
<u>1158</u>	<u>6.46</u>	<u>6.22</u>	<u>0.415</u>	<u>0.98</u>	<u>8.99</u>	<u>11.3</u>	<u>-208.8</u>
<u>1202</u>	<u>6.57</u>	<u>6.17</u>	<u>0.410</u>	<u>0.87</u>	<u>9.02</u>	<u>8.5</u>	<u>-215.2</u>
<u>1206</u>	<u>6.67</u>	<u>6.19</u>	<u>0.407</u>	<u>0.91</u>	<u>9.07</u>	<u>7.5</u>	<u>-220.5</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Purge Equipment:	<u>Geopump, perisaltic</u>		Sampling Equipment:	<u>YSi6920 flowmeter</u>			
Laboratory:	<u>Onsite/ARI</u>		Date Sent to Lab:	<u>1-25-13</u>			
Chain-of-Custody (yes/no):	<u>Yes</u>		Field QC Sample Number:	<u>NA</u>			
Shipment Method:	<u>Courier</u>		Split With (names[s]/organization):	<u>NA</u>			
Well Integrity:	<u>Well casing is above the monument and the monument is filled with water</u>						
Remarks:	<u>Groundwater has a grey tint and fueuel odor</u>						
Signature:	_____						

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-13RSample #: Chev-GW-MW13R-0130

Project Number:	2331896107		Date:	1-24-13	
Project Name:	Former Chevron Property		Location:	Chevron Lower Yard	
Project Address:	1310 Highland Ave, Bremerton		Sampled By:	W. Harvey	
Client Name:	City of Bremeerton		Purged By:	W. Harvey	

Casing Diameter:	2" _____	4" _____	6" _____	Other <u>X 3/4"</u>
Depth to Water (feet):	9.36		Purge Volume Measurement Method:	Measure cup /stopwatch
Depth of Well (feet):	15.99		Date Purged:	1-24-13
Reference Point (surveyor's notch, etc.):	TOC North		Purge Time (from/to):	1050-1107
Date/Time Sampled:	1-24-13 1113			

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): 2.75

TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
1050	15.99	6.82	5.409	3.51	10.67	33.0	-155.1
1055	14.90	7.02	5.43	4.39	10.72	23.8	-155.5
1059	14.96	7.06	4.973	5.34	10.76	37.1	-155.6
1103	14.82	7.12	4.888	6.98	10.74	20.1	-150.5
1107	14.82	7.20	4.846	7.68	10.69	18.9	151.0
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Purge Equipment:	Geopump, perisaltic	Sampling Equipment:	YSI6920 flowmeter
Laboratory:	Onsite/ARI	Date Sent to Lab:	1-25-13
Chain-of-Custody (yes/no):	Yes	Field QC Sample Number:	NA
Shipment Method:	Courier	Split With (names[s]/organization):	NA

Well Integrity: Well casing is above the monutment and the monument is filled with water

Remarks: Groundwater has a yellow tint and fuel odor. Had to stop pumping often to recharge the well

Signature: _____

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-20RSample #: Chev-GW-MW20R-0100

Project Number:	<u>2331896107</u>	Date:	<u>1-23-13</u>				
Project Name:	<u>Former Chevron Property</u>	Location:	<u>Chevron Lower Yard</u>				
Project Address:	<u>1310 Highland Ave, Bremerton</u>	Sampled By:	<u>W. Harvey</u>				
Client Name:	<u>City of Bremerton</u>	Purged By:	<u>W. Harvey</u>				
Casing Diameter:	2" <u>X</u> 4" _____ 6" _____ Other _____						
Depth to Water (feet):	<u>7.0</u>	Purge Volume Measurement Method:	<u>Measure cup / stopwatch</u>				
Depth of Well (feet):	<u>15.0</u>	Date Purged:	<u>1-23-13</u>				
Reference Point (surveyor's notch, etc.):	<u>TOC North</u>	Purge Time (from/to):	<u>0853-0909</u>				
Date/Time Sampled:	<u>1-23-13 0915</u>						
Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$ Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$ Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): <u>2.0</u>							
TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>0853</u>	<u>7.32</u>	<u>19.4</u>	<u>0.62</u>	<u>0.53</u>	<u>9.88</u>	<u>2.8</u>	<u>-238.6</u>
<u>0857</u>	<u>7.32</u>	<u>6.71</u>	<u>0.633</u>	<u>0.18</u>	<u>9.96</u>	<u>3.0</u>	<u>-241.1</u>
<u>0901</u>	<u>7.32</u>	<u>6.69</u>	<u>0.636</u>	<u>0.04</u>	<u>10.12</u>	<u>3.0</u>	<u>-243.0</u>
<u>0905</u>	<u>7.33</u>	<u>6.69</u>	<u>0.641</u>	<u>-0.02</u>	<u>10.20</u>	<u>3.5</u>	<u>-244.0</u>
<u>0909</u>	<u>7.35</u>	<u>6.67</u>	<u>0.643</u>	<u>-0.02</u>	<u>10.33</u>	<u>3.7</u>	<u>-243.0</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Purge Equipment:	<u>Geopump</u>	Sampling Equipment:	<u>YSI6920 flowmeter</u>				
Laboratory:	<u>Onsite/ARI</u>	Date Sent to Lab:	<u>1-25-13</u>				
Chain-of-Custody (yes/no):	<u>Yes</u>	Field QC Sample Number:	<u>NA</u>				
Shipment Method:	<u>Courier</u>	Split With (names[s]/organization):	<u>NA</u>				
Well Integrity:	<u>Well casing is above the monument and the monument is filled with water</u>						
Remarks:	<u>Groundwater has a brown tint and a fuel odor</u>						
Signature:	_____						

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-21RSample #: Chev-GW-MW21R-0120

Project Number:	<u>2331896107</u>	Date:	<u>1-23-13</u>				
Project Name:	<u>Former Chevron Property</u>	Location:	<u>Chevron Lower Yard</u>				
Project Address:	<u>1310 Highland Ave, Bremerton</u>	Sampled By:	<u>W. Harvey</u>				
Client Name:	<u>City of Bremeerton</u>	Purged By:	<u>W. Harvey</u>				
Casing Diameter:	2" ☐ 4" ☐ 6" ☐ Other ☒ <u>3/4"</u>						
Depth to Water (feet):	<u>8.50</u>	Purge Volume Measurement Method:	<u>Measure cup /stopwatch</u>				
Depth of Well (feet):	<u>13.32</u>	Date Purged:	<u>1-23-13</u>				
Reference Point (surveyor's notch, etc.):	<u>TOC North</u>	Purge Time (from/to):	<u>1017-1033</u>				
Date/Time Sampled:	<u>1-23-13 1040</u>						
Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$ Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$ Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): <u>2.0</u>							
TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>1017</u>	<u>9.61</u>	<u>7.09</u>	<u>3.969</u>	<u>0.47</u>	<u>10.11</u>	<u>27.3</u>	<u>256.4</u>
<u>1021</u>	<u>9.71</u>	<u>7.09</u>	<u>3.671</u>	<u>0.19</u>	<u>10.34</u>	<u>10.6</u>	<u>257.8</u>
<u>1025</u>	<u>9.71</u>	<u>7.08</u>	<u>3.478</u>	<u>0.08</u>	<u>10.54</u>	<u>7.7</u>	<u>246.9</u>
<u>1029</u>	<u>9.73</u>	<u>7.08</u>	<u>3.316</u>	<u>0.07</u>	<u>10.65</u>	<u>5.9</u>	<u>245.7</u>
<u>1033</u>	<u>10.23</u>	<u>7.08</u>	<u>3.220</u>	<u>0.7</u>	<u>10.78</u>	<u>4.5</u>	<u>244.1</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Purge Equipment:	<u>Geopump, peristaltic</u>	Sampling Equipment:	<u>YSI6920 flowmeter</u>				
Laboratory:	<u>Onsite/ARI</u>	Date Sent to Lab:	<u>1-25-13</u>				
Chain-of-Custody (yes/no):	<u>Yes</u>	Field QC Sample Number:	<u>NA</u>				
Shipment Method:	<u>Courier</u>	Split With (names[s]/organization):	<u>NA</u>				
Well Integrity:	<u>Well casing is above the monument and the monument is filled with water.</u>						
Remarks:	<u>Groundwater has ayellow tint and fuel odor</u>						
Signature:	_____						

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-22RSample #: Chev-GW-MW22R-0110

Project Number:	<u>2331896107</u>	Date:	<u>1-24-13</u>				
Project Name:	<u>Former Chevron Property</u>	Location:	<u>Chevron Lower Yard</u>				
Project Address:	<u>1310 Highland Ave, Bremerton</u>	Sampled By:					
Client Name:	<u>City of Bremeerton</u>	Purged By:					
Casing Diameter: 2" _____ 4" _____ 6" _____ Other <u>X 3/4"</u>							
Depth to Water (feet):	<u>9.03</u>	Purge Volume Measurement Method:	<u>Measure cup /stopwatch</u>				
Depth of Well (feet):	<u>15.95</u>	Date Purged:	<u>1-24-13</u>				
Reference Point (surveyor's notch, etc.):	<u>TOC North</u>	Purge Time (from/to):	<u>1222-1242</u>				
Date/Time Sampled:	<u>1-24-13 1250</u>						
Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$							
Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$							
Calculated Purge Volume (gallons): _____		Actual Purge Volume (gallons): <u>2.5</u>					
TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>1222</u>	<u>10.65</u>	<u>7.37</u>	<u>0.899</u>	<u>6.50</u>	<u>10.82</u>	<u>32.2</u>	<u>-147.5</u>
<u>1226</u>	<u>10.80</u>	<u>7.26</u>	<u>0.873</u>	<u>7.29</u>	<u>11.11</u>	<u>115.6</u>	<u>-150.8</u>
<u>1230</u>	<u>10.68</u>	<u>7.28</u>	<u>0.851</u>	<u>8.16</u>	<u>11.25</u>	<u>88.7</u>	<u>-153.4</u>
<u>1234</u>	<u>12.40</u>	<u>7.19</u>	<u>0.851</u>	<u>6.97</u>	<u>11.77</u>	<u>64.1</u>	<u>-157.7</u>
<u>1238</u>	<u>11.95</u>	<u>7.13</u>	<u>0.847</u>	<u>5.90</u>	<u>11.79</u>	<u>122.7</u>	<u>-160.7</u>
<u>1242</u>	<u>12.62</u>	<u>7.08</u>	<u>0.846</u>	<u>5.69</u>	<u>11.84</u>	<u>158.4</u>	<u>-161.6</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Purge Equipment:	<u>Geopump, perisaltic</u>	Sampling Equipment:	<u>YSI6920 flowmeter</u>				
Laboratory:	<u>Onsite/ARI</u>	Date Sent to Lab:	<u>1-25-13</u>				
Chain-of-Custody (yes/no):	<u>Yes</u>	Field QC Sample Number:	<u>NA</u>				
Shipment Method:	<u>Courier</u>	Split With (names[s]/organization):	<u>NA</u>				
Well Integrity:	<u>Well casing is above the monument and the monument is filled with water</u>						
Remarks:	<u>Groundwater has floating debris and a fuel odor. Had to stop pumping often to recharge the well</u>						
Signature:	_____						

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-25Sample #: Chev-GW-MW25-0120

Project Number: <u>2331896107</u>		Date: <u>1-24-13</u>	
Project Name: <u>Former Chevron Property</u>		Location: <u>Chevron Lower Yard</u>	
Project Address: <u>1310 Highland Ave, Bremerton</u>		Sampled By: <u>W. Harvey</u>	
Client Name: <u>City of Bremeerton</u>		Purged By: <u>W. Harvey</u>	

Casing Diameter: <u>2" X</u> <u>4" _____</u> <u>6" _____</u> Other <u>_____</u>
Depth to Water (feet): <u>8.71</u> Purge Volume Measurement Method: <u>Measure cup /stopwatch</u>
Depth of Well (feet): <u>20.32</u> Date Purged: <u>1-24-13</u>
Reference Point (surveyor's notch, etc.): <u>TOC North</u> Purge Time (from/to): <u>0839-0907</u>
Date/Time Sampled: <u>1-24-13 0915</u>

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
 Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
 Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): 3.5

TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>0839</u>	<u>9.32</u>	<u>6.47</u>	<u>0.677</u>	<u>0.47</u>	<u>9.73</u>	<u>22.0</u>	<u>-248.7</u>
<u>0843</u>	<u>9.44</u>	<u>6.42</u>	<u>0.767</u>	<u>0.18</u>	<u>9.83</u>	<u>22.8</u>	<u>-255.7</u>
<u>0847</u>	<u>9.60</u>	<u>6.48</u>	<u>0.834</u>	<u>0.07</u>	<u>9.91</u>	<u>19.2</u>	<u>-270.3</u>
<u>0851</u>	<u>9.76</u>	<u>6.47</u>	<u>0.854</u>	<u>0.12</u>	<u>9.84</u>	<u>16.2</u>	<u>-275.7</u>
<u>0855</u>	<u>9.91</u>	<u>6.48</u>	<u>0.910</u>	<u>0.03</u>	<u>9.80</u>	<u>11.0</u>	<u>-281.7</u>
<u>0859</u>	<u>10.04</u>	<u>6.50</u>	<u>0.969</u>	<u>0.06</u>	<u>9.86</u>	<u>11.5</u>	<u>-283.1</u>
<u>0903</u>	<u>10.14</u>	<u>6.053</u>	<u>1.031</u>	<u>0.09</u>	<u>9.95</u>	<u>14.1</u>	<u>-270.9</u>
<u>0907</u>	<u>10.22</u>	<u>6.54</u>	<u>1.069</u>	<u>0.07</u>	<u>9.99</u>	<u>18.4</u>	<u>-287.2</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Purge Equipment: <u>Geopump, perisaltic</u>	Sampling Equipment: <u>YSI6920 flowmeter</u>
Laboratory: <u>Onsite/ARI</u>	Date Sent to Lab: <u>1-25-13</u>
Chain-of-Custody (yes/no): <u>Yes</u>	Field QC Sample Number: <u>NA</u>
Shipment Method: <u>Courier</u>	Split With (names[s]/organization): <u>NA</u>

Well Integrity: Well casing is above the monument and the monument is filled with water
 Remarks: Groundwater has grey tint, a fuel odor and an oil sheen.
 Signature: _____

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-26RSample #: Chev-GW-MW26R-0120

Project Number:	<u>2331896107</u>	Date:	<u>1-24-13</u>				
Project Name:	<u>Former Chevron Property</u>	Location:	<u>Chevron Lower Yard</u>				
Project Address:	<u>1310 Highland Ave, Bremerton</u>	Sampled By:	<u>W. Harvey</u>				
Client Name:	<u>City of Bremeerton</u>	Purged By:	<u>W. Harvey</u>				
Casing Diameter:	2" ☐ 4" ☐ 6" ☐ Other ☒ 3/4"						
Depth to Water (feet):	<u>10.0</u>	Purge Volume Measurement Method:	<u>Measure cup /stopwatch</u>				
Depth of Well (feet):	<u>16.97</u>	Date Purged:	<u>1-24-13</u>				
Reference Point (surveyor's notch, etc.):	<u>TOC North</u>	Purge Time (from/to):	<u>1335-1359</u>				
Date/Time Sampled:	<u>1-24-13 1406</u>						
Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$ Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$ Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): <u>3.0</u>							
TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>1335</u>	<u>11.81</u>	<u>6.55</u>	<u>5692</u>	<u>1.81</u>	<u>10.10</u>	<u>48.3</u>	<u>-267.6</u>
<u>1339</u>	<u>10.40</u>	<u>6.59</u>	<u>5.681</u>	<u>0.74</u>	<u>10.11</u>	<u>15.9</u>	<u>-295.3</u>
<u>1343</u>	<u>10.90</u>	<u>6.61</u>	<u>5.683</u>	<u>0.79</u>	<u>10.15</u>	<u>12.1</u>	<u>-301.3</u>
<u>1347</u>	<u>10.70</u>	<u>6.62</u>	<u>5.686</u>	<u>0.58</u>	<u>10.12</u>	<u>12.0</u>	<u>-301.3</u>
<u>1351</u>	<u>10.82</u>	<u>6.66</u>	<u>5.689</u>	<u>0.44</u>	<u>10.27</u>	<u>7.6</u>	<u>-313.5</u>
<u>1355</u>	<u>10.82</u>	<u>6.070</u>	<u>5.693</u>	<u>0.41</u>	<u>10.36</u>	<u>3.7</u>	<u>-318.7</u>
<u>1359</u>	<u>10.84</u>	<u>6.72</u>	<u>5.698</u>	<u>0.21</u>	<u>10.43</u>	<u>2.6</u>	<u>-320.9</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Purge Equipment:	<u>Geopump, perisaltic</u>	Sampling Equipment:	<u>YSI6920 flowmeter</u>				
Laboratory:	<u>Onsite/ARI</u>	Date Sent to Lab:	<u>1-25-13</u>				
Chain-of-Custody (yes/no):	<u>Yes</u>	Field QC Sample Number:	<u>NA</u>				
Shipment Method:	<u>Courier</u>	Split With (names[s]/organization):	<u>NA</u>				
Well Integrity:	<u>Well casing is above the monument, the monument concrete foundation is cracked/broken</u>						
Remarks:	<u>roundwater has a darj\k brown tint and a strong fuel odor.</u>						
Signature:	_____						

Groundwater Sampling Field Data Sheet No. 2

Well #: MW-27Sample #: Chev-GW-MW27-0080

Project Number:	<u>2331896107</u>	Date:	<u>1-24-13</u>
Project Name:	<u>Former Chevron Property</u>	Location:	<u>Chevron Lower Yard</u>
Project Address:	<u>1310 Highland Ave, Bremerton</u>	Sampled By:	<u>W. Harvey</u>
Client Name:	<u>City of Bremeerton</u>	Purged By:	<u>W. Harvey</u>

Casing Diameter:	2" ☐ 4" ☐ 6" ☐ Other ☒ 3/4"
Depth to Water (feet):	<u>5.96</u>
Purge Volume Measurement Method:	<u>Measure cup /stopwatch</u>
Depth of Well (feet):	<u>16.99</u>
Date Purged:	<u>1-24-13</u>
Reference Point (surveyor's notch, etc.):	<u>TOC North</u>
Purge Time (from/to):	<u>1452-1512</u>
Date/Time Sampled:	<u>1-24-13 1516</u>

Purge Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)(\# \text{ Casing volumes})$
Purge Volume (gallons) for: 2" = $(0.16)(h)(\#Cv)$; 4" = $(0.653)(h)(\#Cv)$; 6" = $(1.48)(h)(\#Cv)$
Calculated Purge Volume (gallons): _____ Actual Purge Volume (gallons): 3.0

TIME (2400 hr)	WATER LEVEL (feet)	pH (units)	COND (mS/cm)	DO (mg/L)	TEMP °C	SAL %	REDOX (mv)
<u>1452</u>	<u>6.29</u>	<u>6.71</u>	<u>5.771</u>	<u>0.64</u>	<u>10.48</u>	<u>94.7</u>	<u>-217.4</u>
<u>1456</u>	<u>6.35</u>	<u>6.67</u>	<u>5.755</u>	<u>0.13</u>	<u>10.53</u>	<u>116.7</u>	<u>-222.4</u>
<u>1500</u>	<u>6.43</u>	<u>6.64</u>	<u>50757</u>	<u>0.10</u>	<u>10.46</u>	<u>122.4</u>	<u>-220.2</u>
<u>1504</u>	<u>6.46</u>	<u>6.63</u>	<u>5.754</u>	<u>-0.05</u>	<u>10.49</u>	<u>70.9</u>	<u>-194.0</u>
<u>1508</u>	<u>6.58</u>	<u>6.61</u>	<u>5.751</u>	<u>0.010</u>	<u>10.53</u>	<u>206.3</u>	<u>-207.6</u>
<u>1512</u>	<u>6.60</u>	<u>6.61</u>	<u>5.761</u>	<u>0.10</u>	<u>10.56</u>	<u>1099.6</u>	<u>-210.8</u>

Purge Equipment:	<u>Geopump, perisaltic</u>	Sampling Equipment:	<u>YSI6920 floemeter</u>
Laboratory:	<u>Onsite/ARI</u>	Date Sent to Lab:	<u>1-25-13</u>
Chain-of-Custody (yes/no):	<u>Yes</u>	Field QC Sample Number:	<u>NA</u>
Shipment Method:	<u>Courier</u>	Split With (names[s]/organization):	<u>NA</u>

Well Integrity: Well integrity is good - cap and bolts. Monument is filled with water.

Remarks: Groundwater has abrown tint, fuel odor and is cloudy, this has casused turbidity to be skewed.

Signature: _____

4660 KITSAP WAY, SUITE A
BREMERTON, WA 98312-2357
T. 360.377.0014 F. 360.479.5961
www.parametrix.com

TECHNICAL MEMORANDUM

Date: February 18, 2013
To: Project File
From: Lisa Gilbert
Subject: Quality Assurance/Quality Control Review for Former Chevron Property
cc: David Dinkuhn
Project Number: 233-1896-107
Project Name: Former Chevron Property Remediation Performance Monitoring January 2013

INTRODUCTION

This technical memorandum summarizes the results of an internal quality assurance/quality control (QA/QC) review of analytical results for groundwater samples collected on January 23 and 24, 2013. Twelve groundwater samples, including one field duplicate (CHEV-GW-MW11-0800), were submitted to OnSite Environmental, Inc. (Redmond, WA) for analysis. The samples were accompanied by one gasoline/BTEX trip blank. Ferrous iron analyses were subcontracted to Analytical Resources, Inc. due to the short holding time.

All samples were analyzed for gasoline/BTEX, diesel/lube oil, dissolved manganese, nitrate, sulfate, alkalinity, chloride and dissolved methane, with the exception of sample CHEV-GW-MR9R-0120 which was also analyzed for dissolve and total lead, and the trip blank which was analyzed for gasoline/BTEX only. One soil sample was submitted CHEV-SOIL-MW-20R-WELL and analyzed for gasoline/BTEX, diesel/lube oil, and RCRA metals for disposal characterization.

Final laboratory data were submitted to Parametrix via a Tier II-type data report and EIM EDDs (OnSite Laboratory Reference Number 1301-176). All data and analytical QC elements were reviewed against laboratory and method QC criteria, and qualifiers were applied where judged appropriate. The laboratory report did not include results for dissolved methane.

DATA REVIEW SUMMARY

All samples collected were prepared and analyzed using standard methods. All sample temperature requirements were met. All analyses requested on the COC were conducted. No laboratory method or trip blank contamination was reported.

Holding times for nitrate were not met for the following samples: CHEV-GW-MW4R-0080, CHEV-GW-MW11-0800, CHEV-GW-MW21R-0120 (lab qualified); and CHEV-GW-MW13R-0130, CHEV-GW-MW20R-0100, CHEV-GW-MW22R-0110, CHEV-GW-MW25-0120, CHEV-GW-MW26R-0120 (Parametrix qualified).

Sulfate PQLs were elevated for samples CHEV-GW-MW10R-0110, CHEV-GW-MW4R-0080, CHEV-GW-MW20R-0100, and CHEV-GW-MW27-0080, and sulfate was non-detected in these samples.

The field duplicate results indicated elevated RPDs for nitrate (40 percent) and ferrous iron (27 percent).

The laboratory qualified some diesel results with “U1” indicating an elevated practical quantitation limit. These results were not qualified based on this data review. All other analytical QC results were in control, indicating acceptable analytical accuracy and precision.

CONCLUSION

Appropriate standard methods were used. No laboratory method blank contamination was observed. Analytical accuracy and precision were determined to be generally acceptable based on this review.

Nitrate data should be qualified “J” as estimated for the following samples due to preparation and analysis beyond recommended holding time: CHEV-GW-MW4R-0080, CHEV-GW-MW11-0800, CHEV-GW-MW21-0120, and CHEV-GW-MW13R-0130, CHEV-GW-MW20R-0100, CHEV-GW-MW22R-0110, CHEV-GW-MW25-0120, CHEV-GW-MW26R-0120. Nitrate data for sample CHEV-GW-MW11-0080 should also be qualified “J” as estimated due to variability between the sample and field duplicate.

All data reported should be considered valid as qualified and acceptable for further use.



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 6, 2013

David Dinkuhn
Parametrix, Inc.
4660 Kitsap Way, Suite A
Bremerton, WA 98312

Re: Analytical Data for Project 233-1896-107
Laboratory Reference No. 1301-176

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on January 25, 2013.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

Case Narrative

Samples were collected on January 23 and 24, 2013 and received by the laboratory on January 25, 2013. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Sulfate ASTM D516-02 Analysis

Samples CHEV-GW-MW10R-0110, CHEV-GW-MW4R-0080, CHEV-GW-MW20R-0100 and CHEV-GW-MW27R-0080 (01-176-02-03, 07, and 12) PQL's were increased due to sample interference.

Nitrate EPA 353.2 Analysis

Samples CHEV-GW-MW4R-0080, CHEV-GW-MW11-0800 and CHEV-GW-MW21R-0120 (01-176-04, 05, and 08) were analyzed out of holding time.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**DISSOLVED MANGANESE and LEAD
 EPA 200.8**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-176-01					
Client ID:	CHEV-GW-MW9R-0120					
Lead	ND	1.0	200.8		1-31-13	
Manganese	4000	200	200.8		1-31-13	
Lab ID:	01-176-02					
Client ID:	CHEV-GW-MW10R-0110					
Manganese	3700	200	200.8		1-31-13	
Lab ID:	01-176-03					
Client ID:	CHEV-GW-MW4R-0130					
Manganese	4500	200	200.8		1-31-13	
Lab ID:	01-176-04					
Client ID:	CHEV-GW-MW11-0080					
Manganese	370	10	200.8		1-31-13	
Lab ID:	01-176-05					
Client ID:	CHEV-GW-MW11-0800					
Manganese	350	10	200.8		1-31-13	
Lab ID:	01-176-06					
Client ID:	CHEV-GW-MW13R-0130					
Manganese	1700	100	200.8		1-31-13	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**DISSOLVED MANGANESE
EPA 200.8**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID: 01-176-07						
Client ID: CHEV-GW-MW20R-0100						
Manganese	1900	100	200.8		1-31-13	
Lab ID: 01-176-08						
Client ID: CHEV-GW-MW21R-0120						
Manganese	2800	100	200.8		1-31-13	
Lab ID: 01-176-09						
Client ID: CHEV-GW-MW22R-0110						
Manganese	700	20	200.8		1-31-13	
Lab ID: 01-176-10						
Client ID: CHEV-GW-MW25-0120						
Manganese	670	20	200.8		1-31-13	
Lab ID: 01-176-11						
Client ID: CHEV-GW-MW26R-0120						
Manganese	4000	200	200.8		1-31-13	
Lab ID: 01-176-12						
Client ID: CHEV-GW-MW27-0080						
Manganese	4300	200	200.8		1-31-13	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

**DISSOLVED MANGANESE and LEAD
EPA 200.8
METHOD BLANK QUALITY CONTROL**

Date Analyzed: 1-31-13

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0131D1

Analyte	Method	Result	PQL
Lead	200.8	ND	1.0
Manganese	200.8	ND	10

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

DISSOLVED MANGANESE and LEAD
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Analyzed: 1-31-13

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-176-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	ND	ND	NA	1.0	
Manganese	4000	3980	1	200	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

DISSOLVED MANGANESE and LEAD
EPA 200.8
MS/MSD QUALITY CONTROL

Date Analyzed: 1-31-13

Matrix: Water

Units: ug/L (ppb)

Lab ID: 01-176-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	200	195	97	195	97	0	
Manganese	4000	7710	93	7940	98	3	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: CHEV-GW-MW9R-0120						
Laboratory ID:	01-176-01					
Benzene	68	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	3.7	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	20	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	12	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	3.5	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	790	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	103	71-116				
Client ID: CHEV-GW-MW10R-0110						
Laboratory ID:	01-176-02					
Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	1.7	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	1400	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	93	71-116				
Client ID: CHEV-GW-MW4R-0130						
Laboratory ID:	01-176-03					
Benzene	34	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	2.1	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	7.9	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	4.1	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	1.5	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	720	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	97	71-116				

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: CHEV-GW-MW11-0080						
Laboratory ID:	01-176-04					
Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	ND	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	94	71-116				
Client ID: CHEV-GW-MW11-0800						
Laboratory ID:	01-176-05					
Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	ND	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	94	71-116				
Client ID: CHEV-GW-MW13R-0130						
Laboratory ID:	01-176-06					
Benzene	11	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	2.2	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	170	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	93	71-116				

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: CHEV-GW-MW20R-0100						
Laboratory ID:	01-176-07					
Benzene	4.8	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	2.7	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	260	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	93	71-116				
Client ID: CHEV-GW-MW21R-0120						
Laboratory ID:	01-176-08					
Benzene	32	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	4.5	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	160	10	EPA 8021B	1-30-13	1-30-13	
m,p-Xylene	85	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	2.3	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	3000	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	104	71-116				
Client ID: CHEV-GW-MW22R-0110						
Laboratory ID:	01-176-09					
Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	ND	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	94	71-116				

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: CHEV-GW-MW25-0120						
Laboratory ID:	01-176-10					
Benzene	1.0	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	1.2	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	2.3	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	3.4	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	1000	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	94	71-116				
Client ID: CHEV-GW-MW26R-0120						
Laboratory ID:	01-176-11					
Benzene	5.7	1.0	EPA 8021B	1-30-13	1-30-13	
Toluene	ND	1.0	EPA 8021B	1-30-13	1-30-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-30-13	1-30-13	
m,p-Xylene	1.1	1.0	EPA 8021B	1-30-13	1-30-13	
o-Xylene	ND	1.0	EPA 8021B	1-30-13	1-30-13	
Gasoline	290	100	NWTPH-Gx	1-30-13	1-30-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	85	71-116				
Client ID: CHEV-GW-MW27-0080						
Laboratory ID:	01-176-12					
Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	ND	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	93	71-116				

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TRIP BLANKS					
Laboratory ID:	01-176-14					
Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	ND	100	NWTPH-Gx	1-29-13	1-29-13	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	<i>94</i>	<i>71-116</i>				

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**NWTPH-Gx/BTEX
 METHOD BLANK QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0129W1					
Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	ND	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	96	71-116				
Laboratory ID:	MB0129W2					
Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Toluene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
o-Xylene	ND	1.0	EPA 8021B	1-29-13	1-29-13	
Gasoline	ND	100	NWTPH-Gx	1-29-13	1-29-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	96	71-116				
Laboratory ID:	MB0130W1					
Benzene	ND	1.0	EPA 8021B	1-30-13	1-30-13	
Toluene	ND	1.0	EPA 8021B	1-30-13	1-30-13	
Ethyl Benzene	ND	1.0	EPA 8021B	1-30-13	1-30-13	
m,p-Xylene	ND	1.0	EPA 8021B	1-30-13	1-30-13	
o-Xylene	ND	1.0	EPA 8021B	1-30-13	1-30-13	
Gasoline	ND	100	NWTPH-Gx	1-30-13	1-30-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	94	71-116				

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**NWTPH-Gx/BTEX
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-176-04							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	NA	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethyl Benzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
<i>Surrogate:</i>								
Fluorobenzene				94	94	71-116		
MATRIX SPIKES								
Laboratory ID:	01-176-05							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	NA	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethyl Benzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
<i>Surrogate:</i>								
Fluorobenzene				94	94	71-116		
Laboratory ID:	01-176-04							
	MS	MSD	MS	MSD	MS	MSD		
Benzene	53.1	52.1	50.0	50.0	ND	106 104	81-121	2 11
Toluene	53.7	52.6	50.0	50.0	ND	107 105	83-122	2 13
Ethyl Benzene	54.2	52.9	50.0	50.0	ND	108 106	81-121	2 15
m,p-Xylene	54.3	53.0	50.0	50.0	ND	109 106	80-119	2 16
o-Xylene	52.6	51.4	50.0	50.0	ND	105 103	80-119	2 15
<i>Surrogate:</i>								
Fluorobenzene					105	100	71-116	

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NWTPH-Gx/BTEX

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-SOIL-MW20R-WELL					
Laboratory ID:	01-176-13					
Benzene	1.3	0.025	EPA 8021B	1-28-13	1-29-13	
Toluene	ND	0.13	EPA 8021B	1-28-13	1-29-13	
Ethyl Benzene	0.83	0.13	EPA 8021B	1-28-13	1-29-13	
m,p-Xylene	0.68	0.13	EPA 8021B	1-28-13	1-29-13	
o-Xylene	ND	0.13	EPA 8021B	1-28-13	1-29-13	
Gasoline	140	13	NWTPH-Gx	1-28-13	1-29-13	O
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	<i>103</i>	<i>70-132</i>				

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**NWTPH-Gx/BTEX
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0128S1					
Benzene	ND	0.020	EPA 8021B	1-28-13	1-28-13	
Toluene	ND	0.050	EPA 8021B	1-28-13	1-28-13	
Ethyl Benzene	ND	0.050	EPA 8021B	1-28-13	1-28-13	
m,p-Xylene	ND	0.050	EPA 8021B	1-28-13	1-28-13	
o-Xylene	ND	0.050	EPA 8021B	1-28-13	1-28-13	
Gasoline	ND	5.0	NWTPH-Gx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	102	70-132				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-164-39							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	NA	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethyl Benzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
Surrogate:								
Fluorobenzene				100	105	70-132		

SPIKE BLANKS

Laboratory ID:	SB0128S1									
	SB	SBD	SB	SBD	SB	SBD				
Benzene	0.998	0.998	1.00	1.00	100	100	71-125	0	11	
Toluene	1.03	1.03	1.00	1.00	103	103	77-125	0	11	
Ethyl Benzene	1.04	1.04	1.00	1.00	104	104	76-125	0	10	
m,p-Xylene	1.08	1.05	1.00	1.00	108	105	78-124	3	9	
o-Xylene	1.03	1.03	1.00	1.00	103	103	77-123	0	9	
Surrogate:										
Fluorobenzene					101	101	70-132			

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**DISSOLVED METHANE
RSK 175**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW9R-0120					
Laboratory ID:	01-176-01					
Methane	11000	1000	RSK 175	1-30-13	1-30-13	

Client ID:	CHEV-GW-MW10R-0110					
Laboratory ID:	01-176-02					
Methane	2900	500	RSK 175	1-30-13	1-30-13	

Client ID:	CHEV-GW-MW4R-0130					
Laboratory ID:	01-176-03					
Methane	690	50	RSK 175	1-30-13	1-30-13	

Client ID:	CHEV-GW-MW11-0080					
Laboratory ID:	01-176-04					
Methane	53	2.5	RSK 175	1-30-13	1-30-13	

Client ID:	CHEV-GW-MW11-0800					
Laboratory ID:	01-176-05					
Methane	68	6.0	RSK 175	1-30-13	1-30-13	

Client ID:	CHEV-GW-MW13R-0130					
Laboratory ID:	01-176-06					
Methane	10	0.50	RSK 175	1-30-13	1-30-13	

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**DISSOLVED METHANE
RSK 175**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW20R-0100					
Laboratory ID:	01-176-07					
Methane	540	50	RSK 175	1-31-13	1-31-13	

Client ID:	CHEV-GW-MW21R-0120					
Laboratory ID:	01-176-08					
Methane	1300	170	RSK 175	1-31-13	1-31-13	

Client ID:	CHEV-GW-MW22R-0110					
Laboratory ID:	01-176-09					
Methane	1.9	0.50	RSK 175	1-31-13	1-31-13	

Client ID:	CHEV-GW-MW25-0120					
Laboratory ID:	01-176-10					
Methane	110	6.0	RSK 175	1-31-13	1-31-13	

Client ID:	CHEV-GW-MW26R-0120					
Laboratory ID:	01-176-11					
Methane	270	25	RSK 175	1-31-13	1-31-13	

Client ID:	CHEV-GW-MW27-0080					
Laboratory ID:	01-176-12					
Methane	6900	500	RSK 175	1-31-13	1-31-13	

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**DISSOLVED METHANE
 RSK 175
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0130W1					
Methane	ND	0.50	RSK 175	1-30-13	1-30-13	
Laboratory ID:	MB0131W1					
Methane	ND	0.50	RSK 175	1-31-13	1-31-13	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0130W1										
	SB	SBD	SB	SBD		SB	SBD				
Methane	4.89	4.22	4.42	4.42	N/A	111	95	70-130	15	25	
Laboratory ID:	SB0131W1										
	SB	SBD	SB	SBD		SB	SBD				
Methane	4.49	5.01	4.42	4.42	N/A	102	113	70-130	11	25	

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NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW9R-0120					
Laboratory ID:	01-176-01					
Diesel Range Organics	ND	0.26	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	86	50-150				

Client ID:	CHEV-GW-MW10R-0110					
Laboratory ID:	01-176-02					
Diesel Range Organics	ND	0.76	NWTPH-Dx	1-28-13	1-28-13	U1
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	85	50-150				

Client ID:	CHEV-GW-MW4R-0130					
Laboratory ID:	01-176-03					
Diesel Range Organics	ND	0.32	NWTPH-Dx	1-28-13	1-28-13	U1
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	86	50-150				

Client ID:	CHEV-GW-MW11-0080					
Laboratory ID:	01-176-04					
Diesel Range Organics	ND	0.26	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	81	50-150				

Client ID:	CHEV-GW-MW11-0800					
Laboratory ID:	01-176-05					
Diesel Range Organics	ND	0.26	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	87	50-150				

Client ID:	CHEV-GW-MW13R-0130					
Laboratory ID:	01-176-06					
Diesel Range Organics	ND	0.26	NWTPH-Dx	1-28-13	1-28-13	U1
Lube Oil Range Organics	ND	0.42	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	88	50-150				

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NWTPH-Dx

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: CHEV-GW-MW20R-0100						
Laboratory ID:	01-176-07					
Diesel Range Organics	ND	0.26	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	0.42	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	83	50-150				
Client ID: CHEV-GW-MW21R-0120						
Laboratory ID:	01-176-08					
Diesel Range Organics	ND	0.47	NWTPH-Dx	1-28-13	1-28-13	U1
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	88	50-150				
Client ID: CHEV-GW-MW22R-0110						
Laboratory ID:	01-176-09					
Diesel Range Organics	ND	0.26	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	89	50-150				
Client ID: CHEV-GW-MW25-0120						
Laboratory ID:	01-176-10					
Diesel Range Organics	ND	0.69	NWTPH-Dx	1-28-13	1-28-13	U1
Lube Oil Range Organics	ND	0.44	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	89	50-150				
Client ID: CHEV-GW-MW26R-0120						
Laboratory ID:	01-176-11					
Diesel Range Organics	ND	0.26	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	88	50-150				
Client ID: CHEV-GW-MW27-0080						
Laboratory ID:	01-176-12					
Diesel Range Organics	ND	0.26	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	0.42	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	91	50-150				

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**NWTPH-Dx
 QUALITY CONTROL
 (with acid/silica gel clean-up)**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0128W1					
Diesel Range Organics	ND	0.25	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	0.40	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	86	50-150				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	01-176-04						
	ORIG	DUP					
Diesel Range Organics	ND	ND			NA	NA	
Lube Oil Range Organics	ND	ND			NA	NA	
Surrogate:							
o-Terphenyl			81	89	50-150		
Laboratory ID:	01-182-01						
	ORIG	DUP					
Diesel Range Organics	ND	ND			NA	NA	
Lube Oil Range Organics	ND	ND			NA	NA	
Surrogate:							
o-Terphenyl			77	95	50-150		

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NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-SOIL-MW20R-WELL					
Laboratory ID:	01-176-13					
Diesel Range Organics	65	29	NWTPH-Dx	1-28-13	1-28-13	M
Lube Oil	65	59	NWTPH-Dx	1-28-13	1-28-13	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	66	50-150				

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**NWTPH-Dx
 QUALITY CONTROL
 (with acid/silica gel clean-up)**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0128S1					
Diesel Range Organics	ND	25	NWTPH-Dx	1-28-13	1-28-13	
Lube Oil Range Organics	ND	50	NWTPH-Dx	1-28-13	1-28-13	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	88	50-150				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-164-37							
	ORIG	DUP						
Diesel Range Organics	ND	ND				NA	NA	
Lube Oil Range Organics	ND	ND				NA	NA	
Surrogate:								
o-Terphenyl			74	87	50-150			

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NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW9R-0120					
Laboratory ID:	01-176-01					
Nitrate	ND	0.050	EPA 353.2	1-25-13	1-29-13	

Client ID:	CHEV-GW-MW10R-0110					
Laboratory ID:	01-176-02					
Nitrate	ND	0.050	EPA 353.2	1/25/2013	1-29-13	

Client ID:	CHEV-GW-MW4R-0130					
Laboratory ID:	01-176-03					
Nitrate	ND	0.050	EPA 353.2	1-25-13	1-29-13	

Client ID:	CHEV-GW-MW11-0080					
Laboratory ID:	01-176-04					
Nitrate	2.4	0.050	EPA 353.2	1-25-13	1-29-13	

Client ID:	CHEV-GW-MW11-0800					
Laboratory ID:	01-176-05					
Nitrate	1.6	0.050	EPA 353.2	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW13R-0130					
Laboratory ID:	01-176-06					
Nitrate	ND	0.050	EPA 353.2	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW20R-0100					
Laboratory ID:	01-176-07					
Nitrate	ND	0.050	EPA 353.2	1-29-13	1-29-13	

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NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW21R-0120					
Laboratory ID:	01-176-08					
Nitrate	ND	0.050	EPA 353.2	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW22R-0110					
Laboratory ID:	01-176-09					
Nitrate	0.31	0.050	EPA 353.2	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW25-0120					
Laboratory ID:	01-176-10					
Nitrate	ND	0.050	EPA 353.2	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW26R-0120					
Laboratory ID:	01-176-11					
Nitrate	ND	0.050	EPA 353.2	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW27-0080					
Laboratory ID:	01-176-12					
Nitrate	ND	0.050	EPA 353.2	1-25-13	1-29-13	

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NITRATE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0129W1					
Nitrate	ND	0.050	EPA 353.2	1-29-13	1-29-13	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-168-08							
	ORIG	DUP						
Nitrate	ND	ND	NA	NA	NA	NA	11	

MATRIX SPIKE								
Laboratory ID:	01-168-08							
	MS	MS		MS				
Nitrate	1.83	2.00	ND	92	81-122	NA	NA	

SPIKE BLANK								
Laboratory ID:	SB0129W1							
	SB	SB		SB				
Nitrate	1.88	2.00	NA	94	86-114	NA	NA	

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NITRATE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0125F1					
Nitrate	ND	0.050	EPA 353.2	1-25-13	1-29-13	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-176-01							
	ORIG	DUP						
Nitrate	ND	ND	NA	NA	NA	NA	11	

MATRIX SPIKE								
Laboratory ID:	01-176-01							
	MS	MS		MS				
Nitrate	1.83	2.00	ND	92	81-122	NA	NA	

SPIKE BLANK								
Laboratory ID:	SB0125F1							
	SB	SB		SB				
Nitrate	1.84	2.00	NA	92	86-114	NA	NA	

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SULFATE
ASTM D516-02

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW9R-0120					
Laboratory ID:	01-176-01					
Sulfate	ND	5.0	ASTM D516-02	1-25-13	1-29-13	

Client ID:	CHEV-GW-MW10R-0110					
Laboratory ID:	01-176-02					
Sulfate	ND	25	ASTM D516-02	1-25-13	1-29-13	

Client ID:	CHEV-GW-MW4R-0130					
Laboratory ID:	01-176-03					
Sulfate	ND	25	ASTM D516-02	1-25-13	1-29-13	

Client ID:	CHEV-GW-MW11-0080					
Laboratory ID:	01-176-04					
Sulfate	56	25	ASTM D516-02	1-25-13	1-29-13	

Client ID:	CHEV-GW-MW11-0800					
Laboratory ID:	01-176-05					
Sulfate	47	10	ASTM D516-02	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW13R-0130					
Laboratory ID:	01-176-06					
Sulfate	160	50	ASTM D516-02	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW20R-0100					
Laboratory ID:	01-176-07					
Sulfate	ND	25	ASTM D516-02	1-29-13	1-29-13	

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SULFATE
ASTM D516-02

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW21R-0120					
Laboratory ID:	01-176-08					
Sulfate	ND	5.0	ASTM D516-02	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW22R-0110					
Laboratory ID:	01-176-09					
Sulfate	34	10	ASTM D516-02	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW25-0120					
Laboratory ID:	01-176-10					
Sulfate	18	10	ASTM D516-02	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW26R-0120					
Laboratory ID:	01-176-11					
Sulfate	1100	250	ASTM D516-02	1-29-13	1-29-13	

Client ID:	CHEV-GW-MW27R-0080					
Laboratory ID:	01-176-12					
Sulfate	ND	25	ASTM D516-02	1-25-13	1-29-13	

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**SULFATE
 ASTM D516-02
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0129W1					
Sulfate	ND	5.0	ASTM D516-02	1-29-13	1-29-13	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-168-09							
	ORIG	DUP						
Sulfate	16.6	17.0	NA	NA	NA	2	10	

MATRIX SPIKE								
Laboratory ID:	01-168-09							
	MS	MS		MS				
Sulfate	36.3	20.0	16.6	99	84-117	NA	NA	

SPIKE BLANK								
Laboratory ID:	SB0129W1							
	SB	SB		SB				
Sulfate	10.6	10.0	NA	106	94-113	NA	NA	

Date of Report: February 6, 2013
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**SULFATE
 ASTM D516-02
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0125F1					
Sulfate	ND	5.0	ASTM D516-02	1-25-13	1-29-13	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-176-04							
	ORIG	DUP						
Sulfate	55.7	55.8	NA	NA	NA	NA	0	10

MATRIX SPIKE								
Laboratory ID:	01-176-04							
	MS	MS		MS				
Sulfate	109	50.0	55.7	107	84-117	NA	NA	

SPIKE BLANK								
Laboratory ID:	SB0125F1							
	SB	SB		SB				
Sulfate	10.9	10.0	NA	109	94-113	NA	NA	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

ALKALINITY
EPA 310.2

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW9R-0120					
Laboratory ID:	01-176-01					
Alkalinity	450	100	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW10R-0110					
Laboratory ID:	01-176-02					
Alkalinity	250	50	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW4R-0130					
Laboratory ID:	01-176-03					
Alkalinity	7100	1000	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW11-0080					
Laboratory ID:	01-176-04					
Alkalinity	130	20	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW11-0800					
Laboratory ID:	01-176-05					
Alkalinity	180	50	EPA 310.2	1-31-13	1-31-13	
Client ID:	CHEV-GW-MW13R-0130					
Laboratory ID:	01-176-06					
Alkalinity	1900	400	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW20R-0100					
Laboratory ID:	01-176-07					
Alkalinity	220	50	EPA 310.2	1-30-13	1-30-13	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

ALKALINITY
EPA 310.2

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW21R-0120					
Laboratory ID:	01-176-08					
Alkalinity	1700	200	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW22R-0110					
Laboratory ID:	01-176-09					
Alkalinity	250	50	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW25-0120					
Laboratory ID:	01-176-10					
Alkalinity	400	50	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW26R-0120					
Laboratory ID:	01-176-11					
Alkalinity	330	50	EPA 310.2	1-30-13	1-30-13	
Client ID:	CHEV-GW-MW27-0080					
Laboratory ID:	01-176-12					
Alkalinity	270	50	EPA 310.2	1-30-13	1-30-13	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**ALKALINITY
 EPA 310.2
 QUALITY CONTROL**

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0130W1					
Alkalinity	ND	10	EPA 310.2	1-30-13	1-30-13	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-168-08							
	ORIG	DUP						
Alkalinity	167	154	NA	NA	NA	NA	8	26

MATRIX SPIKE

Laboratory ID:	01-168-08							
	MS	MS		MS				
Alkalinity	409	250	167	97	73-125	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0130W1							
	SB	SB		SB				
Alkalinity	50.3	50.0	NA	101	81-110	NA	NA	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**ALKALINITY
 EPA 310.2
 QUALITY CONTROL**

Matrix: Water
 Units: mg CaCO₃/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0131W1					
Alkalinity	ND	10	EPA 310.2	1-31-13	1-31-13	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-176-05							
	ORIG	DUP						
Alkalinity	179	207	NA	NA	NA	NA	15	26

MATRIX SPIKE

Laboratory ID:	01-176-05							
	MS	MS		MS				
Alkalinity	424	250	179	98	73-125	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0131W1							
	SB	SB		SB				
Alkalinity	52.3	50.0	NA	105	81-110	NA	NA	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

CHLORIDE
SM 4500-Cl E

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW9R-0120					
Laboratory ID:	01-176-01					
Chloride	32	2.0	SM 4500 Cl E	1-25-13	1-28-13	

Client ID:	CHEV-GW-MW10R-0110					
Laboratory ID:	01-176-02					
Chloride	14	2.0	SM 4500 Cl E	1-25-13	1-28-13	

Client ID:	CHEV-GW-MW4R-0130					
Laboratory ID:	01-176-03					
Chloride	240	10	SM 4500 Cl E	1-25-13	1-28-13	

Client ID:	CHEV-GW-MW11-0080					
Laboratory ID:	01-176-04					
Chloride	2.7	2.0	SM 4500 Cl E	1-25-13	1-28-13	

Client ID:	CHEV-GW-MW11-0800					
Laboratory ID:	01-176-05					
Chloride	3.6	2.0	SM 4500 Cl E	1-28-13	1-28-13	

Client ID:	CHEV-GW-MW13R-0130					
Laboratory ID:	01-176-06					
Chloride	400	10	SM 4500 Cl E	1-28-13	1-28-13	

Client ID:	CHEV-GW-MW20R-0100					
Laboratory ID:	01-176-07					
Chloride	24	2.0	SM 4500 Cl E	1-28-13	1-28-13	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

CHLORIDE
SM 4500-Cl E

Matrix: Water
 Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	CHEV-GW-MW21R-0120					
Laboratory ID:	01-176-08					
Chloride	74	4.0	SM 4500 Cl E	1-28-13	1-28-13	

Client ID:	CHEV-GW-MW22R-0110					
Laboratory ID:	01-176-09					
Chloride	90	2.0	SM 4500 Cl E	1-28-13	1-28-13	

Client ID:	CHEV-GW-MW25-0120					
Laboratory ID:	01-176-10					
Chloride	120	4.0	SM 4500 Cl E	1-28-13	1-28-13	

Client ID:	CHEV-GW-MW26R-0120					
Laboratory ID:	01-176-11					
Chloride	7200	200	SM 4500 Cl E	1-28-13	1-28-13	

Client ID:	CHEV-GW-MW27-0080					
Laboratory ID:	01-176-12					
Chloride	9.7	2.0	SM 4500 Cl E	1-25-13	1-28-13	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**CHLORIDE
 SM 4500-Cl E
 QUALITY CONTROL**

Matrix: Water

Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0128W1					
Chloride	ND	2.0	SM 4500 Cl E	1-28-13	1-28-13	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-176-05							
	ORIG	DUP						
Chloride	3.55	3.55	NA	NA	NA	NA	0	10

MATRIX SPIKE

Laboratory ID:	01-176-05							
	MS	MS		MS				
Chloride	57.4	50.0	3.55	108	94-125	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0128W1							
	SB	SB		SB				
Chloride	52.5	50.0	NA	105	92-119	NA	NA	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**CHLORIDE
 SM 4500-Cl E
 QUALITY CONTROL**

Matrix: Water

Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0125F1					
Chloride	ND	2.0	SM 4500 Cl E	1-25-13	1-28-13	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-176-02							
	ORIG	DUP						
Chloride	13.9	14.5	NA	NA	NA	NA	4	10

MATRIX SPIKE

Laboratory ID:	01-176-02							
	MS	MS		MS				
Chloride	68.5	50.0	13.9	109	94-125	NA	NA	

SPIKE BLANK

Laboratory ID:	SB0125F1							
	SB	SB		SB				
Chloride	49.3	50.0	NA	99	92-119	NA	NA	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

TOTAL LEAD
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

				Date	Date	
Analyte	Result	PQL	EPA Method	Prepared	Analyzed	Flags
Lab ID:	01-176-01					
Client ID:	CHEV-GW-MW9R-0120					
Lead	ND	1.0	200.8	1-28-13	1-29-13	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

TOTAL LEAD
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 1-28-13
Date Analyzed: 1-29-13

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0128WH1

Analyte	Method	Result	PQL
Lead	200.8	ND	1.0

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

**TOTAL LEAD
EPA 200.8
DUPLICATE QUALITY CONTROL**

Date Extracted: 1-28-13

Date Analyzed: 1-29-13

Matrix: Water

Units: ug/L (ppb)

Lab ID: 01-137-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	ND	ND	NA	1.0	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

**TOTAL LEAD
EPA 200.8
MS/MSD QUALITY CONTROL**

Date Extracted: 1-28-13

Date Analyzed: 1-29-13

Matrix: Water

Units: ug/L (ppb)

Lab ID: 01-137-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	100	91.0	91	91.4	91	0	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**TOTAL METALS
 EPA 6010C/7471B**

Matrix: Soil
 Units: mg/kg (ppm)

				Date	Date	
Analyte	Result	PQL	EPA Method	Prepared	Analyzed	Flags
Lab ID:	01-176-13					
Client ID:	CHEV-SOIL-MW20R-WELL					
Arsenic	ND	12	6010C	1-28-13	1-28-13	
Barium	66	2.9	6010C	1-28-13	1-28-13	
Cadmium	ND	0.59	6010C	1-28-13	1-28-13	
Chromium	34	0.59	6010C	1-28-13	1-28-13	
Lead	9.9	5.9	6010C	1-28-13	1-28-13	
Mercury	ND	0.29	7471B	1-28-13	1-28-13	
Selenium	ND	12	6010C	1-28-13	1-28-13	
Silver	ND	1.2	6010C	1-28-13	1-28-13	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

**TOTAL METALS
EPA 6010C
METHOD BLANK QUALITY CONTROL**

Date Extracted: 1-28-13
Date Analyzed: 1-28-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0128SM1

Analyte	Method	Result	PQL
Arsenic	6010C	ND	10
Barium	6010C	ND	2.5
Cadmium	6010C	ND	0.50
Chromium	6010C	ND	0.50
Lead	6010C	ND	5.0
Selenium	6010C	ND	10
Silver	6010C	ND	1.0

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

**TOTAL MERCURY
EPA 7471B
METHOD BLANK QUALITY CONTROL**

Date Extracted: 1-28-13
Date Analyzed: 1-28-13

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0128S1

Analyte	Method	Result	PQL
Mercury	7471B	ND	0.25

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**TOTAL METALS
 EPA 6010C
 DUPLICATE QUALITY CONTROL**

Date Extracted: 1-28-13

Date Analyzed: 1-28-13

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 01-141-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	ND	ND	NA	10	
Barium	44.6	43.3	3	2.5	
Cadmium	ND	ND	NA	0.50	
Chromium	21.3	24.9	16	0.50	
Lead	ND	ND	NA	5.0	
Selenium	ND	ND	NA	10	
Silver	ND	ND	NA	1.0	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

**TOTAL MERCURY
EPA 7471B
DUPLICATE QUALITY CONTROL**

Date Extracted: 1-28-13

Date Analyzed: 1-28-13

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 01-156-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	ND	ND	NA	0.25	

Date of Report: February 6, 2013
 Samples Submitted: January 25, 2013
 Laboratory Reference: 1301-176
 Project: 233-1896-107

**TOTAL METALS
 EPA 6010C
 MS/MSD QUALITY CONTROL**

Date Extracted: 1-28-13

Date Analyzed: 1-28-13

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 01-141-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	90.7	91	93.5	93	0	
Barium	100	140	95	158	113	12	
Cadmium	50.0	48.4	97	50.0	100	3	
Chromium	100	112	91	120	99	7	
Lead	250	239	96	248	99	3	
Selenium	100	90.0	90	93.4	93	4	
Silver	25.0	20.9	84	21.4	86	3	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

**TOTAL MERCURY
EPA 7471B
MS/MSD QUALITY CONTROL**

Date Extracted: 1-28-13

Date Analyzed: 1-28-13

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 01-156-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.500	0.468	94	0.457	91	2	

Date of Report: February 6, 2013
Samples Submitted: January 25, 2013
Laboratory Reference: 1301-176
Project: 233-1896-107

% MOISTURE

Date Analyzed: 1-28-13

Client ID	Lab ID	% Moisture
CHEV-SOIL-MW20R-WELL	01-176-13	15



Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



Analytical Resources, Incorporated
Analytical Chemists and Consultants

28 January 2013

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: Chevron
ARI Job No: WB17

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted six water samples on January 24, 2013. The samples were analyzed for ferrous iron as requested.

These analyses proceeded without incident of note.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file WB17

MDH/mdh

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

[illegible]

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



Cooler Receipt Form

ARI Client Onsite

Project Name CHENYON

COC No(s) NA

Delivered by Fed-Ex UPS Courier Hand Delivered Other Thunderdog

Assigned ARI Job No WB17

Tracking No NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO
 Were custody papers included with the cooler? YES NO
 Were custody papers properly filled out (ink, signed, etc) YES NO
 Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry) 4.6
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90877952

Cooler Accepted by AV Date 1/24/13 Time 1752

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
 What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: NA
 Was sufficient ice used (if appropriate)? YES NO
 Were all bottles sealed in individual plastic bags? YES NO
 Did all bottles arrive in good condition (unbroken)? YES NO
 Were all bottle labels complete and legible? YES NO
 Did the number of containers listed on COC match with the number of containers received? YES NO
 Did all bottle labels and tags agree with custody papers? YES NO
 Were all bottles used correct for the requested analyses? YES NO
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) YES NO
 Were all VOC vials free of air bubbles? NA YES NO
 Was sufficient amount of sample sent in each bottle? YES NO
 Date VOC Trip Blank was made at ARI... NA
 Was Sample Split by ARI NA YES Date/Time NA Equipment NA Split by NA

Samples Logged by AV Date 1/24/13 Time 1803

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By AV Date 1/24/13

			Small → "sm"
			Peabubbles → "pb"
			Large → "lg"
			Headspace → "hs"



ARI Job No: **WB17**
PC: Mark
VTSR: 01/24/13

Inquiry Number: NONE
Analysis Requested: 01/25/13
Contact: Baumeister, David
Client: OnSite Environmental, Inc.
Logged by: AV
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

Project #: 2331896107
Project: Chevron
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET DOC FLT FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
13-1812 WB17A	CHEV-GW-MW4R-0130														*						
13-1813 WB17B	CHEV-GW-MW13R-0130																				
13-1814 WB17C	CHEV-GW-MW22R-0110																				
13-1815 WB17D	CHEV-GW-MW25-0120																				
13-1816 WB17E	CHEV-GW-MW26R-0120																				
13-1817 WB17F	CHEV-GW-MW27-0080																				

* Lab to determine preservation

WB17A WB17B WB17C WB17D WB17E WB17F

Checked By AV Date 1/24/13

Sample ID Cross Reference Report



ARI Job No: WB17
Client: OnSite Environmental, Inc.
Project Event: 2331896107
Project Name: Chevron

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. CHEV-GW-MW4R-0130	WB17A	13-1812	Water	01/24/13 10:12	01/24/13 17:52
2. CHEV-GW-MW13R-0130	WB17B	13-1813	Water	01/24/13 11:13	01/24/13 17:52
3. CHEV-GW-MW22R-0110	WB17C	13-1814	Water	01/24/13 12:50	01/24/13 17:52
4. CHEV-GW-MW25-0120	WB17D	13-1815	Water	01/24/13 09:15	01/24/13 17:52
5. CHEV-GW-MW26R-0120	WB17E	13-1816	Water	01/24/13 14:06	01/24/13 17:52
6. CHEV-GW-MW27-0080	WB17F	13-1817	Water	01/24/13 15:16	01/24/13 17:52



Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but $\geq$ the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is ≤ 5 times the Reporting Limit and the replicate control limit defaults to ± 1 RL instead of the normal 20% RPD

Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($<20\%$ RSD, $<20\%$ Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by $\geq 40\%$ RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**



Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting

SAMPLE RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water

Data Release Authorized: CJ 1-28-13

Reported: 01/28/13

Project: Chevron

Event: 2331896107

Date Sampled: 01/24/13

Date Received: 01/24/13

Client ID: CHEV-GW-MW4R-0130

ARI ID: 13-1812 WB17A

Analyte	Date Batch	Method	Units	RL	Sample
Ferrous Iron	01/24/13 012413#1	SM3500 FeD	mg/L	0.400	7.35

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water
Data Release Authorized: *W 1-28-17*
Reported: 01/28/13

Project: Chevron
Event: 2331896107
Date Sampled: 01/24/13
Date Received: 01/24/13

Client ID: CHEV-GW-MW13R-0130
ARI ID: 13-1813 WB17B

Analyte	Date Batch	Method	Units	RL	Sample
Ferrous Iron	01/24/13 012413#1	SM3500 FeD	mg/L	0.400	4.51

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water

Data Release Authorized: *W 1-28-13*

Reported: 01/28/13

Project: Chevron

Event: 2331896107

Date Sampled: 01/24/13

Date Received: 01/24/13

Client ID: CHEV-GW-MW22R-0110

ARI ID: 13-1814 WB17C

Analyte	Date Batch	Method	Units	RL	Sample
Ferrous Iron	01/24/13 012413#1	SM3500 FeD	mg/L	0.040	0.056

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water
Data Release Authorized: *W 1-28-13*
Reported: 01/28/13

Project: Chevron
Event: 2331896107
Date Sampled: 01/24/13
Date Received: 01/24/13

Client ID: CHEV-GW-MW25-0120
ARI ID: 13-1815 WB17D

Analyte	Date Batch	Method	Units	RL	Sample
Ferrous Iron	01/24/13 012413#1	SM3500 FeD	mg/L	0.400	5.71

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water

Data Release Authorized: *W 1-28-13*

Reported: 01/28/13

Project: Chevron

Event: 2331896107

Date Sampled: 01/24/13

Date Received: 01/24/13

Client ID: CHEV-GW-MW26R-0120

ARI ID: 13-1816 WB17E

Analyte	Date Batch	Method	Units	RL	Sample
Ferrous Iron	01/24/13 012413#1	SM3500 FeD	mg/L	0.040	0.395

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water
Data Release Authorized:
Reported: 01/28/13

LW 1-28-17

Project: Chevron
Event: 2331896107
Date Sampled: 01/24/13
Date Received: 01/24/13

Client ID: CHEV-GW-MW27-0080
ARI ID: 13-1817 WB17F

Analyte	Date Batch	Method	Units	RL	Sample
Ferrous Iron	01/24/13 012413#1	SM3500 FeD	mg/L	2.00	34.9

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water
Data Release Authorized: W 1-26-17
Reported: 01/28/13

Project: Chevron
Event: 2331896107
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Ferrous Iron	SM3500 FeD	01/24/13	mg/L	< 0.040 U	

LAB CONTROL RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water

Data Release Authorized: (✓) 1-28-17

Reported: 01/28/13

Project: Chevron

Event: 2331896107

Date Sampled: NA

Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Ferrous Iron SM3500 FeD	ICVL	01/24/13	mg/L	0.500	0.500	100.0%

REPLICATE RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water
Data Release Authorized:
Reported: 01/28/13

W 1-28-13

Project: Chevron
Event: 2331896107
Date Sampled: 01/24/13
Date Received: 01/24/13

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
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ARI ID: WB17A Client ID: CHEV-GW-MW4R-0130

Ferrous Iron	SM3500 FeD	01/24/13	mg/L	7.35	7.64	3.9%
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MS/MSD RESULTS-CONVENTIONALS
WB17-OnSite Environmental, Inc.



Matrix: Water

Data Release Authorized: *lw 1-28-17*

Reported: 01/28/13

Project: Chevron

Event: 2331896107

Date Sampled: 01/24/13

Date Received: 01/24/13

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: WB17A Client ID: CHEV-GW-MW4R-0130							
Ferrous Iron	SM3500 FeD	01/24/13	mg/L	7.35	11.0	4.00	91.2%



Analytical Resources, Incorporated
Analytical Chemists and Consultants

29 January 2013

David Baumeister
OnSite Environmental, Inc.
14648 NE 95th
Redmond, WA 98052

RE: Client Project: Chevron Property
ARI Job No: WA89

Dear David:

Please find enclosed the chain-of-custody (COC) record and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted six water samples on January 23, 2013. The samples were analyzed for ferrous iron as requested.

These analyses proceeded without incident of note.

An electronic copy of these reports will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file WA89

MDH/mdh

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

[illegible]

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Cooler Receipt Form

ARI Client an sta

Project Name chevron Property

COC No(s) _____ NA

Delivered by: Fed-Ex UPS C Courier Hand Delivered Other: _____

Assigned ARI Job No W A 89

Tracking No. _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc) YES NO

Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry) 28

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90877952

Cooler Accepted by TS Date 1-23-12 Time 1755

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) .. NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI. NA

Was Sample Split by ARI NA YES Date/Time _____ Equipment _____ Split by _____

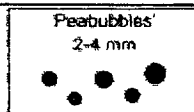
Samples Logged by TS Date 1-24-12 Time 733

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By _____ Date _____



Small → "sm"

Peabubbles → "pb"

Large → "lg"

Headspace → "hs"

Sample ID Cross Reference Report



ARI Job No: WA89
Client: OnSite Environmental, Inc.
Project Event: 2331896107
Project Name: Chevron Property

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. CHEV-GW-MW9R-0120	WA89A	13-1690	Water	01/23/13 14:45	01/23/13 17:55
2. CHEV-GW-MW10R-0110	WA89B	13-1691	Water	01/23/13 14:23	01/23/13 17:55
3. CHEV-GW-MW11-0800	WA89C	13-1692	Water	01/23/13 12:30	01/23/13 17:55
4. CHEV-GW-MW20R-0100	WA89D	13-1693	Water	01/23/13 09:15	01/23/13 17:55
5. CHEV-GW-MW11-0080	WA89E	13-1694	Water	01/23/13 12:15	01/23/13 17:55
6. CHEV-GW-MW21R-0120	WA89F	13-1695	Water	01/23/13 10:40	01/23/13 17:55



Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but $\geq$ the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is ≤ 5 times the Reporting Limit and the replicate control limit defaults to ± 1 RL instead of the normal 20% RPD

Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- * Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($<20\%$ RSD, $<20\%$ Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by $\geq 40\%$ RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**



Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting

INORGANICS ANALYSIS DATA SHEET
Ferrous Iron by Method SM3500 FeD



Data Release Authorized: 
Reported: 01/29/13
Date Received: 01/23/13
Page 1 of 1

QC Report No: WA89-OnSite Environmental, Inc.
Project: Chevron Property
2331896107

Client/ ARI ID	Date Sampled	Matrix	Analysis Date & Batch	RL	Result
CHEV-GW-MW9R-0120 WA89A 13-1690	01/23/13	Water	01/23/13 012313#1	2.00	34.2
CHEV-GW-MW10R-0110 WA89B 13-1691	01/23/13	Water	01/23/13 012313#1	2.00	40.8
CHEV-GW-MW11-0800 WA89C 13-1692	01/23/13	Water	01/23/13 012313#1	0.040	0.876
CHEV-GW-MW20R-0100 WA89D 13-1693	01/23/13	Water	01/23/13 012313#1	2.00	26.2
CHEV-GW-MW11-0080 WA89E 13-1694	01/23/13	Water	01/23/13 012313#1	0.040	0.668
CHEV-GW-MW21R-0120 WA89F 13-1695	01/23/13	Water	01/23/13 012313#1	0.400	6.45

Reported in mg/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
WA89-OnSite Environmental, Inc.



Matrix: Water
Data Release Authorized
Reported: 01/29/13

A handwritten signature in black ink, appearing to be 'M. J. ...', is written over the 'Data Release Authorized' text.

Project: Chevron Property
Event: 2331896107
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	Blank
Ferrous Iron	01/23/13 18:30	mg/L	< 0.040 U

LAB CONTROL RESULTS-CONVENTIONALS
WA89-OnSite Environmental, Inc.



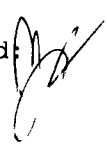
Matrix: Water
Data Release Authorized: 
Reported: 01/29/13

Project: Chevron Property
Event: 2331896107
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	LCS	Spike Added	Recovery
Ferrous Iron	01/23/13 18:30	mg/L	0.498	0.500	99.6%

REPLICATE RESULTS-CONVENTIONALS
WA89-OnSite Environmental, Inc.



Matrix: Water
Data Release Authorized: 
Reported: 01/29/13

Project: Chevron Property
Event: 2331896107
Date Sampled: 01/23/13
Date Received: 01/23/13

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: WA89A Client ID: CHEV-GW-MW9R-0120					
Ferrous Iron	01/23/13	mg/L	34.2	34.3	0.3%

MS/MSD RESULTS-CONVENTIONALS
WA89-OnSite Environmental, Inc.



Matrix: Water
Data Release Authorized
Reported: 01/29/13

A handwritten signature in black ink, appearing to be 'J. Smith' or similar, written over the 'Data Release Authorized' text.

Project: Chevron Property
Event: 2331896107
Date Sampled: 01/23/13
Date Received: 01/23/13

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: WA89A Client ID: CHEV-GW-MW9R-0120						
Ferrous Iron	01/23/13	mg/L	34.2	40.8	8.00	82.5%



M Onsite
Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 2

Turnaround Request
(in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
(TPH analysis 5 Days)
☐ (other)

Laboratory Number:

01-176

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☒ Standard (7 Days)
(TPH analysis 5 Days)

☐ (other)

Company: **PARAMETRIX**
Project Number: **233-1896-107**
Project Name: **FORMER CHEVRON PROPERTY**
Project Manager: **DAVID DINKVHN**
Sampled by: **W. HARVEY**

Lab ID: **1** Sample Identification: **CHEV-GW-MW9R-04300120** Date Sampled: **1-23-13** Time Sampled: **1459** Matrix: **GW**

Number of Containers		Laboratory Number:	
NWTPH-HCID	X	NWTPH-Gx/BTEX	X
DISSOLVED METALS-Mn	X	NWTPH-Gx DISSOLVED METHANE	X
NWTPH-Gx/BTEX	X	NWTPH-Dx/LC	X
Volatiles 8260B	X	Volatiles 8260B NITRATE SULFATE	X
ALKALINITY, CHLORIDE	X	Halogenated Volatiles 8260B	X
TOTAL LEAD	X	Semivolatiles 8270D/SIM	X
DISSOLVED LEAD	X	PAHs 8270D/SIM (low-level)	
PCBs 8082		Organochlorine Pesticides 8081A	
Organophosphorus Pesticides 8270D/SIM		Chlorinated Acid Herbicides 8151A	
Total PCRA / MTCA Metals (circle one)		TCLP Metals	
HEM (oil and grease) 1664		% Moisture	

% Moisture

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Test Results	Comments/Special Instructions
1	CHEV-GW-MW9R-04300120	1-23-13	1459	GW	13	X	
2	CHEV-GW-MW10R-0116	1-23-13	1433		11	X	
3	CHEV-GW-MW4R-0130	1-24-13	1012		11	X	
4	CHEV-GW-MW11-0080	1-23-13	1215		11	X	
5	CHEV-GW-MW11-0800	1-23-13	1230		11	X	
6	CHEV-GW-MW13R-0130	1-24-13	1113		11	X	
7	CHEV-GW-MW20R-0100	1-23-13	0915		11	X	
8	CHEV-GW-MW21R-0120	1-23-13	1040		11	X	
9	CHEV-GW-MW22R-0110	1-24-13	1250		11	X	
10	CHEV-GW-MW25-0120	1-24-13	0915		11	X	

Signature

Company

Date

Time

Comments/Special Instructions

[Signature]

PARAMETRIX

1-25-13

0855

Elm EDD

[Signature]

Munderdog Del.

1-25-13

* Ferrous Iron Subcontracted directly to API

[Signature]

Munderdog Del.

1-25-13

10:30

[Signature]

Onsite

1-25-13

1030

[Signature]

Onsite

1-25-13

1030

[Signature]

Onsite

1-25-13

1030

[Signature]

Onsite

1-25-13

1030

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐

Chromatograms with final report ☐

FIELD FILTERED



2

[illegible]