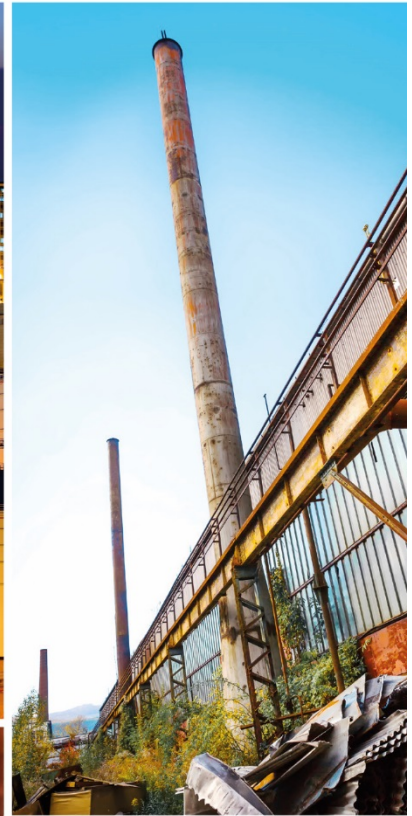
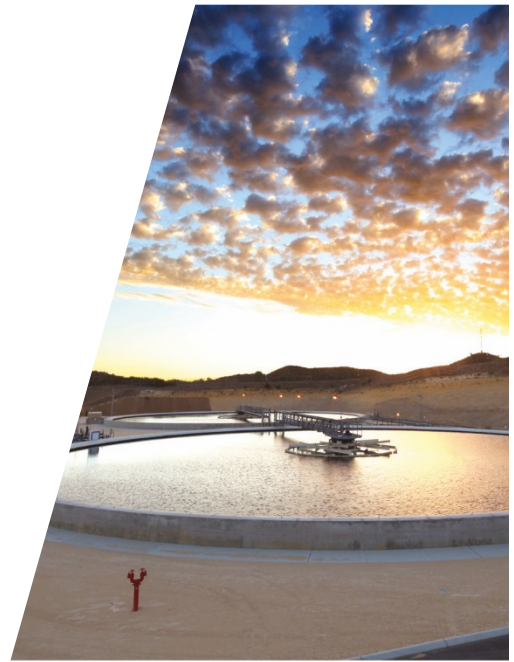




Annual 2018 Groundwater Monitoring Report

Former Unocal Station 5580 (Cline's Tesoro)
Chevron Site 306451
442 Gambell Street
Anchorage, Alaska
ADEC File ID: 2100.26.112
Hazard ID: 23368


Chevron Environmental
Management Company



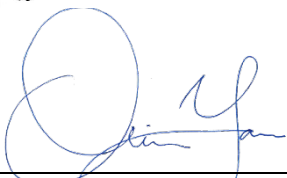


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Senior Project Geologist

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Acronyms and Abbreviations

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
BTEX	benzene, toluene, ethylbenzene, and total xylenes
COPCs	constituents of potential concern
CSM	conceptual site model
ft btoc	feet below top of casing
GAC	granular activated carbon
mg/L	milligrams per liter
No	number
P.G.	Professional Geologist
UST	underground storage tank
VOC	volatile organic compound

1. Introduction

GHD is submitting this *Annual 2018 Groundwater Monitoring Report* to the Alaska Department of Environmental Conservation (ADEC) on behalf of Chevron Environmental Management Company (Chevron) for former Unocal service station 5580 (Cline's Tesoro)/Chevron Site 306451. GHD conducted groundwater monitoring and sampling in accordance with the ADEC's August 2017 *Field Sampling Guidance*. Reporting was performed by GHD in accordance with ADEC's March 7, 2017 *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites*.

The project objective is to monitor current groundwater conditions to evaluate potential changes in dissolved-phase petroleum hydrocarbons.

1.1 Site Description and Background

The site is located at 442 Gambell Street in Anchorage, Alaska (Figure 1). The property's legal description is EAST ADDITION BLOCK 25B LOT 29A. The latitude and longitude are 61.217788° north and 149.871383° west. The site operated as Unocal service station 5580 from 1966 until 1987. The site is an active Tesoro branded service station consisting of a station building, office trailer, and one three chamber underground storage tank (UST), product dispensers and piping (Figure 2).

Land use surrounding the site is primarily commercial. Businesses are located north, south, east and west of the site.

Two groundwater monitoring wells are sampled annually (Figure 2). Site photographs are included in Appendix A.

1.2 Hydrogeology

The site is located in south central Alaska east of Cook Inlet. Ship Creek is located approximately ¼ mile north cross gradient of the site. Historical static groundwater depths have ranged between 31.83 and 38.07 feet below top of casing (ft btoc) according to groundwater data from 1988 to present. Static groundwater depths ranged from 35.67 (MW-1) to 37.26 ft btoc (MW-8) on September 6, 2018 (Figure 2). Groundwater flows to the northeast at a gradient of 0.01.

1.3 Conceptual Site Model

GHD completed a conceptual site model (CSM) for this site. Human health CSM scoping and graphics forms are included in Appendix B.

1.4 Constituents of Potential Concern - Cleanup Levels

Site constituents of potential concern (COPCs) are:

Table 1.1 Constituents of Potential Concern

COPCs	ADEC Cleanup Levels	
	Groundwater (mg/L)	Soil (mg/kg)
Benzene	0.0046	0.022
mg/L - milligrams per liter		
mg/kg - milligrams per kilogram		

ADEC Table C Groundwater Cleanup Levels (Title 18 Alaska Administrative Code (AAC) 75.345) and ADEC Method Two Soil Cleanup Levels, Tables B1 and B2, under 40-inch zone, migration to groundwater (Title 18 AAC 75.341) are the default site cleanup levels for groundwater and soil.

2. Groundwater Monitoring and Sampling

GHD gauged wells MW-1, MW-2, MW-3, MW-8, and MW-9 and sampled wells MW-8 and MW -9 on September 6, 2018. GHD conducted groundwater sampling using a low-flow purge technique. GHD's monitoring data package is presented in Appendix C.

2.1 Low-Flow Sampling

Prior to monitoring, each well was opened and the cap removed to allow groundwater levels to stabilize and equilibrate. Depth to groundwater and total well depth was measured and recorded with an electronic interface probe meter capable of 0.01 foot accuracy. A QED Sample Pro bladder pump with a self-contained compressor and control unit was used to purge groundwater from the well. Clean, disposable Teflon lined tubing and bladders were used to purge the well and collect samples to minimize the risk of volatile contaminant absorption by the sampling equipment. Drawdown of the water table was continuously monitored during purging with a water level meter and the flow rate of the pump was adjusted so that drawdown was limited to 0.3 feet. The intake of the pump was set as close as possible to the soil/groundwater interface and caution was exercised to ensure that the water table is within the screened interval of the well. Water quality parameters were continuously monitored during purging using a multi-parameter water quality meter equipped with a flow through cell and a turbidity meter. Water quality parameters were recorded every three to five minutes until a minimum of three (minimum of four if using temperature as an indicator) of the parameters listed below stabilized. A grab-groundwater sample was collected upon stabilization. Water quality parameters were considered stable when three successive readings were within the following ADEC limits:

- temperature: $\pm 3\%$ (minimum of $\pm 0.2^\circ\text{C}$),
- pH: ± 0.1
- conductivity: $\pm 3\%$
- redox potential: ± 10 millivolts
- dissolved oxygen: $\pm 10\%$

- turbidity: $\pm 10\%$

2.2 Data Quality

All field instruments were calibrated prior to each mobilization according to the manufacturer's specifications and calibration was checked and documented onsite on a daily basis. Field staff are trained in routine maintenance and operation of instrumentation. All reusable sampling equipment was decontaminated between sample points using a stiff brush and a solution of water and laboratory grade detergent. Equipment was rinsed twice in clean water and once with distilled or deionized water.

Groundwater samples, including one duplicate per ten samples collected, were decanted into clean containers supplied by the analytical laboratory, placed on ice in an insulated cooler and chilled to approximately 4°C (+/-2°C). The coolers were sealed and shipped to Eurofins Lancaster analytical laboratory under chain-of-custody. Laboratory data was qualified by a GHD chemist and an ADEC Laboratory Data Review checklist was completed.

2.3 Purged Groundwater Disposal

Approximately 3.5 gallons of purged groundwater not used for sampling was filtered through granular activated carbon (GAC) and purged to the ground surface in the ADEC approved GAC discharge area.

3. Results and Findings

3.1 Groundwater Analytical Methods

Collected groundwater samples were analyzed for one or more of the following:

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by method SW-846 8260

3.2 Groundwater Sampling Results

No BTEX was detected above ADEC Table C Groundwater Cleanup Levels in any collected sample. Based on the quality assurance/quality control review, the data submitted were judged to be acceptable for use with the qualifications noted. Current groundwater analytical results are presented in Table 1. Historical groundwater analytical results are presented in Table 2. The Eurofins laboratory analytical report is included as Appendix D. Petroleum hydrocarbon concentration graphs are presented in Appendix E. The ADEC Laboratory Data Review Checklist and memorandum are presented in Appendix F.

4. Conclusions and Recommendations

No BTEX was detected above ADEC cleanup levels in any sample and have been below ADEC cleanup levels since 1999. GHD will submit a Cleanup Complete request under separate cover.



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Oliver Yan

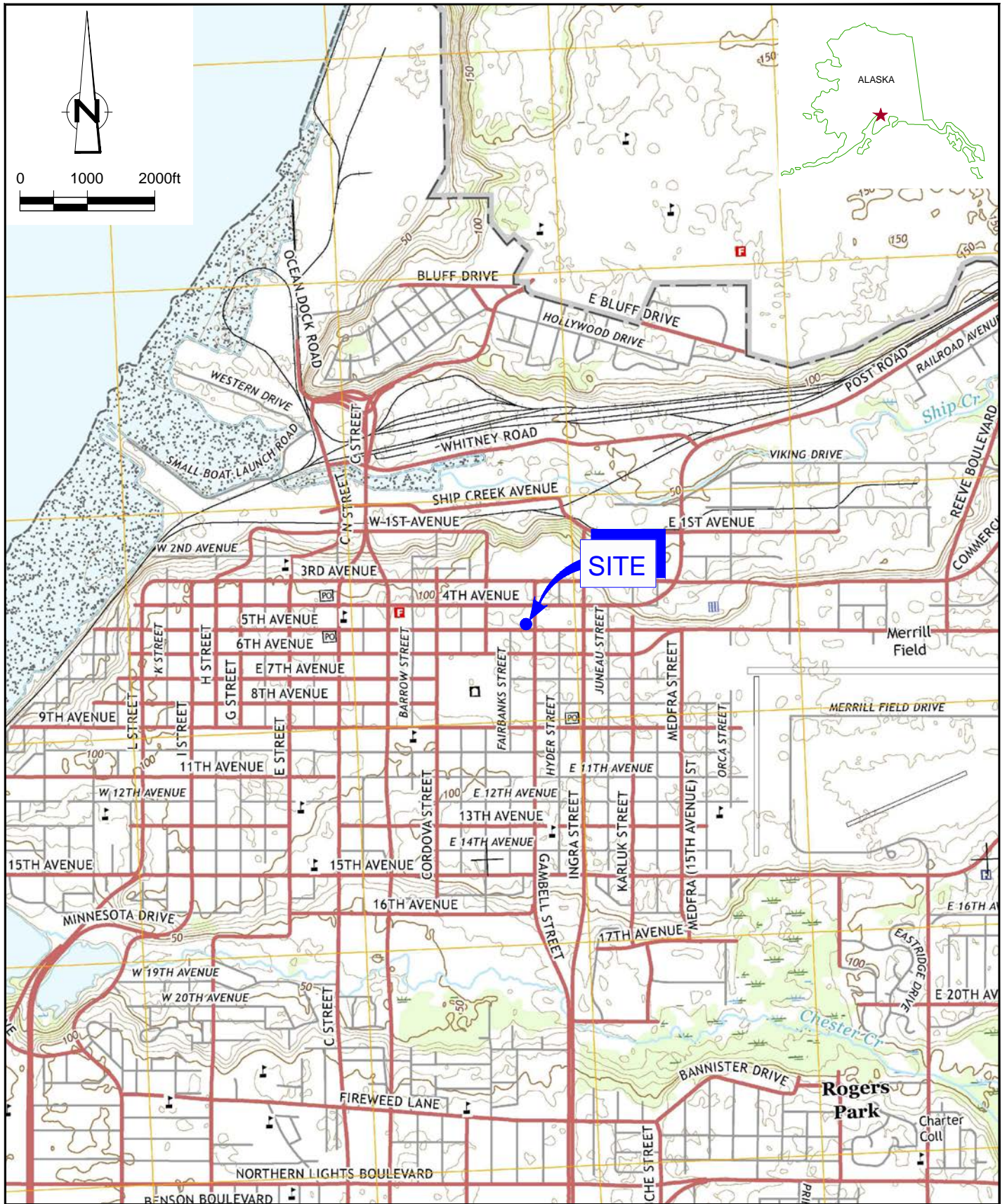
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Figures



SOURCE: USGS QUAD MAP; ANCHORAGE AK A-8 NW, 2016.



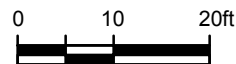
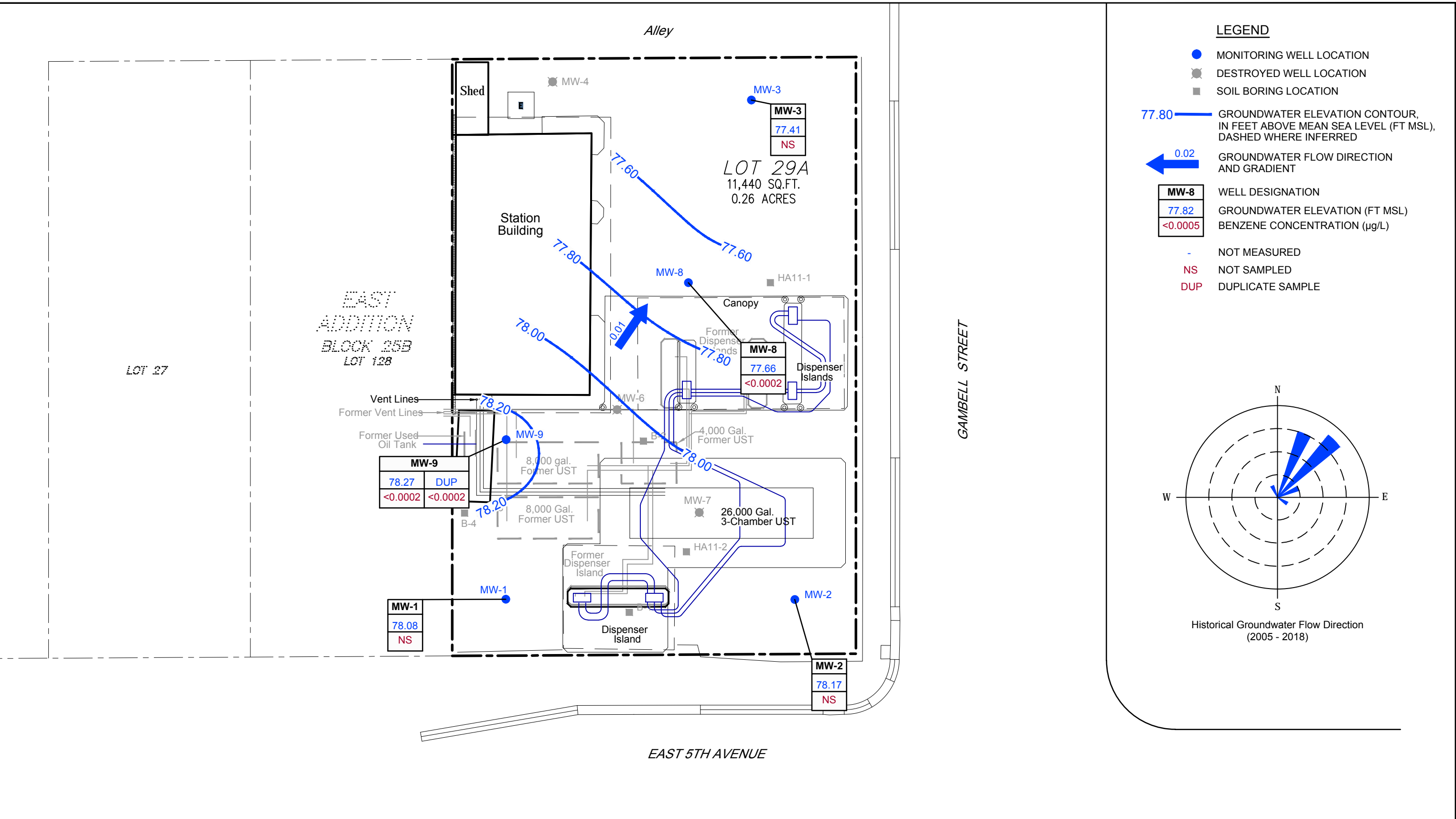
FORMER UNOCAL #5580/CLINE'S TESORO
 442 GAMBELL STREET
 ANCHORAGE, ALASKA

621048-940418

Oct 9, 2018

VICINITY MAP

FIGURE 1



FORMER UNOCAL #5580/CLINE'S TESORO
 442 GAMBELL STREET
 ANCHORAGE, ALASKA

GROUNDWATER ELEVATION CONTOUR AND PETROLEUM
 HYDROCARBON CONCENTRATION MAP - SEPTEMBER 6, 2018

621048-940418

Nov 13, 2018

FIGURE 2

Tables

Table 1

**Current Groundwater Analytical Results
Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska**

Location	Date	TOC	DTW	GWE	HYDROCARBONS		PRIMARY VOCS			
					DRO	GRO	Benzene	Toluene	Ethylbenzene	Total Xylenes
	Units	ft msl	ft btoc	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels					1.5	2.2	0.0046	1.1	0.015	0.19
MW-1	09/06/2018	113.75	35.67	78.08	--	--	--	--	--	--
MW-2	09/06/2018	114.56	36.39	78.17	--	--	--	--	--	--
MW-3	09/06/2018	114.38	36.97	77.41	--	--	--	--	--	--
MW-8	09/06/2018	114.92	37.26	77.66	--	--	<0.0002	<0.0002	<0.0002	<0.0005
MW-9	09/06/2018	115.28	37.01	78.27	--	--	<0.0002 / <0.0002	<0.0002 / <0.0002	<0.0002 / <0.0002	<0.0005 / <0.0005
Trip Blank	09/06/2018	--	--	--	--	--	<0.0002	<0.0002	<0.0002	<0.0005

Notes and Abbreviations

TOC = top of casing

DTW = depth to water

GWE = groundwater elevation

TPH = total petroleum hydrocarbons

DRO = diesel range organics by Alaska Series Method AK102

GRO = gasoline range organics by Alaska Series Method AK101

Benzene, toluene, ethylbenzene, and total xylenes by Environmental Protection Agency (EPA) Method 8021B or 8260B or SW-E46 8021B

Total Xylenes = Sum of m-, o-, and p-xylenes

VOC = volatile organic compounds by EPA Method 524.2

ADEC = Alaska Department of Environmental Conservation

^a = Levels established in ADEC Table C Groundwater Cleanup Levels (18 AAC 75.345)**BOLD** = Indicates concentration above the ADEC Table C Groundwater Cleanup Level

ft msl = feet above mean sea level

ft btoc = feet below top of casing

mg/L = milligrams per liter

J = Estimated value

- = Not measured / not analyzed

<x = Constituent not detected above x milligrams per liter

x / y = Sample results / blind duplicate results

Table 2

**Historical Groundwater Analytical Results
Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska**

Location	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCs						
					DRO	GRO	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Ethylene Dibromide	1,2-Dichloroethane	
	Units	ft msl	ft btoc	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels					1.5	2.2	1.1	0.0046	1.1	0.015	0.19	0.000075	0.0017	
MW-1	11/15/1986	97.95	34.43	63.52	--	--	0.96	<0.001	<0.001	<0.001	<0.001	--	--	
MW-1	10/10/1987	97.95	34.43	63.52	--	--	0.13	<0.001	<0.001	<0.001	<0.001	--	--	
MW-1	01/14/1988	97.95	34.22	63.73	--	--	0.13	<0.001	<0.001	<0.001	<0.001	--	--	
MW-1	05/02/1988	97.95	--	--	--	--	2.6	0.025	<0.0002	0.0002	0.0008	--	--	
MW-1	10/24/1988	97.95	33.95	64.00	--	--	--	<0.0002	<0.0002	<0.0002	<0.0006	--	--	
MW-1	04/27/1990	97.95	31.83	66.12	--	--	32.0	<0.001	0.001	<0.001	0.004	--	--	
MW-1	12/15/1992	97.95	--	--	--	--	--	--	--	--	--	--	--	
MW-1	12/05/1994	97.95	--	--	--	--	--	--	--	--	--	--	--	
MW-1	01/24/1996	97.95	--	--	--	--	--	--	--	--	--	--	--	
MW-1	05/22/1997	97.95	--	--	--	--	--	--	--	--	--	--	--	
MW-1	11/13/1997	97.95	--	--	--	--	--	--	--	--	--	--	--	
MW-1	12/18/1998	97.95	34.99	62.96	0.25	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	
MW-1	03/01/1999	97.95	35.16	62.79	<0.1	0.151	--	<0.0005	<0.0005	0.00918	0.0287	--	--	
MW-1	03/09/2005	98.27	34.36	63.91	7.1	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-1	09/19/2006	98.27	34.97	63.30	0.51	<0.01	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	
MW-1	06/28/2007	98.27	35.33	62.94	0.56	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-1	08/16/2007	98.27	35.45	62.82	0.13	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-1	06/03/2008	98.27	35.34	62.93	1.0	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-1	08/12/2008	113.75	35.31	78.44	0.1	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-1	06/18/2009	113.75	35.57	78.18	--	--	--	--	--	--	--	--	--	
MW-1	06/21/2010	113.75	35.82	77.93	--	--	--	--	--	--	--	--	--	
MW-1	08/07/2010	113.75	35.91	77.84	--	--	--	--	--	--	--	--	--	
MW-1	05/24/2011	113.75	36.24	77.51	--	--	--	--	--	--	--	--	--	
MW-1	09/20/2011	113.75	36.81	77.35	--	--	--	--	--	--	--	--	--	
MW-1	11/05/2012	113.75	35.33	78.42	--	--	--	--	--	--	--	--	--	
MW-1	11/05/2013	113.75	34.32	79.43	--	--	--	--	--	--	--	--	--	
MW-1	10/23/2015	113.75	34.95	78.80	--	--	--	--	--	--	--	--	--	
MW-1	07/28/2016	113.75	35.50	78.25	--	--	--	--	--	--	--	--	--	
MW-1	10/06/2017	113.75	35.51	78.24	--	--	--	--	--	--	--	--	--	
MW-1	09/06/2018	113.75	35.67	78.08	--	--	--	--	--	--	--	--	--	
MW-2	11/15/1986	98.83	35.50	63.33	--	--	0.56	--	--	--	--	--	--	
MW-2	10/10/1987	98.83	35.52	63.31	--	--	0.12	<0.001	<0.001	<0.001	<0.001	--	--	
MW-2	01/14/1988	98.83	35.32	63.51	--	--	0.14	<0.001	<0.001	<0.001	<0.001	--	--	
MW-2	05/02/1988	98.83	--	--	--	--	<0.5	<0.0002	<0.0002	<0.0002	<0.0006	--	--	
MW-2	10/24/1988	98.83	35.00	63.83	--	--	--	0.0004	0.0023	0.0004	0.0015	--	--	
MW-2	04/27/1990	98.83	32.01	66.82	--	--	26.0	<0.001	0.003	0.006	<0.001	--	--	
MW-2	12/15/1992	98.83	34.21	64.62	--	--	<1.0 / <1.0	<0.0003 / <0.0003	<0.0003 / <0.0003	<0.0003 / <0.0003	<0.0003 / <0.0003	--	--	
MW-2	12/05/1994	98.83	35.19	63.64	--	<0.1	<0.5	0.0006	<0.0005	<0.0005	<0.001	--	--	
MW-2	01/24/1996	98.83	35.82	63.01	0.33	<0.1	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	

Table 2
Historical Groundwater Analytical Results
Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska

Location	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCS						
					DRO	GRO	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Ethylene Dibromide	1,2-Dichloroethane	
	Units	ft msl	ft btoc	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels					1.5	2.2	1.1	0.0046	1.1	0.015	0.19	0.000075	0.0017	
MW-2	05/22/1997	98.83	36.51	62.32	<0.1	<0.05	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-2	11/13/1997	98.83	35.64	63.19	0.131	<0.05	--	0.00105	0.00246	<0.0005	0.0012	--	--	
MW-2	12/18/1998	98.83	36.20	62.63	0.242	<0.05	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-2	03/01/1999	98.83	36.54	62.29	0.107	<0.05	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-2	03/09/2005	98.83	35.85	62.98	<0.4	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-2	09/19/2006	98.83	36.34	62.49	<0.15	<0.01	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	
MW-2	06/28/2007	98.83	36.48	62.35	0.045 / 0.085	<0.01 / <0.01	--	<0.001 / <0.001	<0.001 / <0.001	<0.001 / <0.001	<0.002 / <0.002	--	--	
MW-2	08/16/2007	98.83	36.58	62.25	0.06	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-2	06/03/2008	98.83	36.49	62.34	0.03 / 0.03	<0.01 / <0.01	--	<0.001 / <0.001	<0.001 / <0.001	<0.001 / <0.001	<0.002 / <0.002	--	--	
MW-2	08/12/2008	114.73	36.47	78.26	<0.05	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-2	06/18/2009	114.73	36.71	78.02	--	--	--	--	--	--	--	--	--	
MW-2	06/21/2010	114.73	36.94	77.79	--	--	--	--	--	--	--	--	--	
MW-2	08/07/2010	114.73	37.05	77.68	--	--	--	--	--	--	--	--	--	
MW-2	05/24/2011	114.73	37.33	77.40	--	--	--	--	--	--	--	--	--	
MW-2	09/20/2011	114.73	37.55	77.18	--	--	--	--	--	--	--	--	--	
MW-2	11/05/2012	114.73	36.48	78.25	--	--	--	--	--	--	--	--	--	
MW-2	11/05/2013	114.73	35.41	79.32	--	--	--	--	--	--	--	--	--	
MW-2	10/23/2015	114.73	36.04	78.69	--	--	--	--	--	--	--	--	--	
MW-2	07/28/2016	114.73	36.55	78.18	--	--	--	--	--	--	--	--	--	
MW-2	10/06/2017	114.73	--	--	--	--	--	--	--	--	--	--	--	
MW-2	09/06/2018	114.56	36.39	78.17	--	--	--	--	--	--	--	--	--	
MW-3	11/15/1986	98.82	36.10	62.72	--	--	2.3	0.071 / 0.054	0.236 / 0.169	0.0077 / 0.0039	1.159 / 1.148	--	--	
MW-3	10/10/1987	98.83	35.52	63.31	--	--	0.1	0.0023	0.0038	<0.001	0.0473	--	--	
MW-3	01/14/1988	98.86	35.92	62.94	--	--	0.24	0.0052	0.0028	0.018	0.094	--	--	
MW-3	05/02/1988	98.86	--	--	--	--	0.8	0.033	<0.001	0.016	0.018	--	--	
MW-3	10/24/1988	98.86	35.59	63.27	--	--	--	0.028	0.042	0.120	0.530	--	--	
MW-3	04/27/1990	98.86	33.56	65.30	--	--	15.0	0.04	0.075	0.356	3.040	--	--	
MW-3	12/15/1992	98.86	34.80	64.06	--	--	<1.0	<0.0003	0.0056	0.110	0.600	--	--	
MW-3	12/05/1994	98.86	35.74	63.12	--	0.15	1.0	<0.0005	<0.0005	0.0058	0.016	--	--	
MW-3	01/24/1996	98.86	35.82	63.04	0.33 / 0.28	<0.1 / <0.1	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.001 / <0.001	--	--	
MW-3	05/22/1997	98.86	36.51	62.35	0.171	<0.05	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-3	11/13/1997	98.86	35.62	63.24	0.295	<0.05	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-3	12/18/1998	98.86	36.42	62.44	0.486	21.5	--	11.3	0.018	<0.01	<0.02	--	--	
MW-3	03/01/1999	98.86	36.54	62.32	0.289 / 0.44	2.55 / 2.7	--	1.39 / 1.29	<0.0005 / <0.01	<0.01 / 0.0138	0.0229 / 0.0154	--	--	
MW-3	03/09/2005	98.86	35.85	63.01	<0.4	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-3	09/19/2006	98.86	36.34	62.52	0.066	0.01	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	
MW-3	06/28/2007	98.86	36.69	62.17	0.21	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-3	08/16/2007	98.86	37.82	61.04	0.17	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-3	06/03/2008	98.86	36.72	62.14	0.087	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	

Table 2
Historical Groundwater Analytical Results
Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska

Location	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCs						
					DRO	GRO	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Ethylene Dibromide	1,2-Dichloroethane	
	Units	ft msl	ft btoc	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels					1.5	2.2	1.1	0.0046	1.1	0.015	0.19	0.000075	0.0017	
MW-3	08/12/2008	114.38	36.70	77.68	<0.051	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-3	06/18/2009	114.38	36.91	77.47	0.061 J / 0.27 J	<0.010 / <0.010	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	--	--	
MW-3	09/13/2009	114.38	36.97	77.41	0.060 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-3	06/21/2010	114.38	37.50	76.88	0.13 J / 0.26 J	<0.010 / <0.010	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	--	--	
MW-3	08/07/2010	114.38	37.30	77.08	0.12 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-3	03/06/2011	114.38	37.50	76.88	0.077 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-3	05/24/2011	114.38	--	--	--	--	--	--	--	--	--	--	--	
MW-3	09/20/2011	114.38	37.75	76.63	0.058 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-3	11/05/2012	114.38	36.68	77.70	0.15 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	<0.0000097 / <0.0000097	<0.0005 / <0.0005	
MW-3	11/05/2013	114.38	35.67	78.71	--	--	--	--	--	--	--	--	--	
MW-3	10/23/2015	114.38	36.31	78.07	--	--	--	--	--	--	--	--	--	
MW-3	07/28/2016	114.38	36.77	77.61	--	--	--	--	--	--	--	--	--	
MW-3	10/06/2017	114.38	36.84	77.54	--	--	--	--	--	--	--	--	--	
MW-3	09/06/2018	114.38	36.97	77.41	--	--	--	--	--	--	--	--	--	
MW-4	11/15/1986	98.13	35.31	62.82	--	--	5.7	0.0018	0.004	<0.001	0.0093	--	--	
MW-4	10/10/1987	98.13	--	--	--	--	0.29	<0.001	<0.001	<0.001	<0.001	--	--	
MW-4	01/15/1988	98.13	35.14	62.99	--	--	0.16	<0.001	0.0022	<0.001	<0.001	--	--	
MW-4	05/02/1988	98.13	--	--	--	--	0.6	2.700	0.036	0.180	0.820	--	--	
MW-4	10/24/1988	98.13	34.78	63.35	--	--	--	0.0004	0.0095	0.0013	0.0077	--	--	
MW-4	04/27/1990	98.13	32.79	65.34	--	--	12.0	0.001	<0.001	<0.001	<0.001	--	--	
MW-4	12/15/1992	98.13	34.75	63.38	--	--	<1.0	<0.0003	<0.0003	<0.0003	<0.0003	--	--	
MW-4	12/05/1994	98.13	34.98	63.15	--	<0.1	<0.5	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-4	01/24/1996	98.13	35.06	63.07	0.73	<0.1	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-4	05/22/1997	98.13	35.55	62.58	0.271	<0.05	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-4	11/13/1997	98.13	35.45	62.68	0.309	<0.05	--	<0.0005	0.000525	<0.0005	0.00155	--	--	
MW-4	12/18/1998	98.13	35.92	62.21	0.420	<0.05 / <0.05	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.001 / <0.001	--	--	
MW-4	03/01/1999	98.13	36.04	62.09	0.160	<0.05	--	<0.0005	0.00148	0.000549	0.00196	--	--	
MW-5	05/22/1997	98.61	35.65	62.96	0.18	6.170	--	1.750	0.806	0.0227	0.0368	--	--	
MW-5	07/08/1997	98.61	--	--	<0.0001	5.010	--	1.730	1.190	0.0226	0.0857	--	--	
MW-5	11/13/1997	98.61	35.30	63.31	0.163	2.110	--	0.547	0.442	0.0152	0.0645	--	--	
MW-5	12/18/1998	98.13	35.92	62.21	--	--	--	--	--	--	--	--	--	
MW-6	05/22/1997	99.06	36.28	62.78	0.647	0.318 / <0.05	--	0.0118 / <0.0005	0.00133 / <0.0005	0.000617 / <0.0005	0.0161 / <0.001	--	--	
MW-6	07/08/1997	99.06	--	--	0.129	0.0662 / 0.250	--	0.0107 / 0.0367	<0.0005 / 0.00149	<0.0005 / 0.000861	0.00555 / 0.022	--	--	
MW-6	11/13/1997	99.06	35.95	63.11	0.232	0.347	--	0.0969	0.00376	<0.0005	0.00926	--	--	
MW-6	12/18/1998	99.06	--	--	--	--	--	--	--	--	--	--	--	
MW-7	05/22/1997	98.83	35.96	62.87	0.185	<0.05	--	<0.0005	0.000759	<0.0005	<0.001	--	--	

Table 2
Historical Groundwater Analytical Results
Former Unocal #5580/ Cline's Tesoro
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Anchorage, Alaska

Location	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCS						
					DRO	GRO	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Ethylene Dibromide	1,2-Dichloroethane	
	Units	ft msl	ft btoc	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels					1.5	2.2	1.1	0.0046	1.1	0.015	0.19	0.000075	0.0017	
MW-7	07/08/1997	98.83	--	--	<0.1	<0.05	--	<0.0005	<0.0005	<0.0005	<0.001	--	--	
MW-7	11/13/1997	98.83	35.63	63.20	<0.1	<0.05	--	0.00470	<0.0005	<0.0005	<0.001	--	--	
MW-7	12/18/1998	98.83	--	--	--	--	--	--	--	--	--	--	--	
MW-8	03/09/2005	99.45	--	--	<0.4	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-8	09/19/2006	99.45	--	--	<0.12	<0.01	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	
MW-8	06/28/2007	99.45	37.02	62.43	<0.024	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-8	08/16/2007	99.45	37.14	62.31	0.028 / <0.023	<0.01 / <0.01	--	<0.001 / <0.001	<0.001 / <0.001	<0.001 / <0.001	<0.002 / <0.002	--	--	
MW-8	06/03/2008	99.45	37.04	62.41	0.024	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--	
MW-8	08/12/2008	114.92	37.01	77.91	<0.049 / <0.049	<0.01 / <0.01	--	<0.001 / <0.001	<0.001 / <0.001	<0.001 / <0.001	<0.002 / <0.002	--	--	
MW-8	06/18/2009	114.92	37.23	77.69	<0.048	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-8	09/13/2009	114.92	37.29	77.63	0.058 J / <0.049	<0.010 / <0.010	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	--	--	
MW-8	06/21/2010	114.92	37.16	77.76	<0.049	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-8	08/07/2010	114.92	37.59	77.33	0.20 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-8	03/06/2011	114.92	37.80	77.12	0.15 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-8	05/24/2011	114.92	37.90	77.02	0.22 J / 0.16 J	<0.010 / <0.010	--/--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	--	--	
MW-8	09/20/2011	114.92	38.07	76.85	<0.050 / <0.052	<0.010 / <0.010	--/--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	--	--	
MW-8	11/05/2012	114.92	36.98	77.94	<0.048	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-8	11/05/2013	114.92	35.98	78.94	--	--	--	--	--	--	--	--	--	
MW-8	11/07/2013	--	--	--	--	--	--	<0.00024	<0.00023	<0.00024	<0.00072	--	--	
MW-8	05/05/2014	114.92	35.81	79.11	--	--	--	<0.00015	<0.00011	<0.00016	<0.00040	--	--	
MW-8 ^{HS}	05/05/2014	114.92	35.81	79.11	--	--	--	<0.00015	<0.00011	<0.00016	<0.00040	--	--	
MW-8	10/23/2015	114.92	36.58	78.34	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	
MW-8	07/28/2016	114.92	37.09	77.83	0.026 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	
MW-8	10/06/2017	114.92	37.10	77.82	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	
MW-8	09/06/2018	114.92	37.26	77.66	--	--	--	<0.0002	<0.0002	<0.0002	<0.0005	<0.0003	<0.002	
MW-9	08/08/2010	115.28	37.36	77.92	0.12 J / 0.14 J	<0.010 / <0.010	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	--	--	
MW-9	03/06/2011	115.28	37.58	77.70	0.092 J / 0.072 J	<0.010 / <0.010	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	--	--	
MW-9	05/24/2011	115.28	37.69	77.59	0.13 J	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-9	09/20/2011	115.28	37.86	77.42	<0.048	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--	
MW-9	11/05/2012	115.28	36.76	78.52	<0.053 / <0.048**	<0.010 / <0.010	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	--	--	
MW-9	11/05/2013	115.28	35.74	79.54	--	--	--	--	--	--	--	--	--	
MW-9	11/07/2013	--	--	--	--	--	--	<0.00024 / <0.00024	<0.00023 / <0.00023	<0.00024 / <0.00024	<0.00072 / <0.00072	--	--	
MW-9	05/05/2014	115.28	35.57	79.71	--	--	--	<0.00015 / <0.00015	<0.00011 / <0.00011	<0.00016 / <0.00016	<0.00040 / <0.00040	--	--	
MW-9 ^{HS}	05/05/2014	115.28	35.57	79.71	--	--	--	<0.00015 / <0.00015	<0.00011 / <0.00011	<0.00016 / <0.00016	<0.00040 / <0.00040	--	--	
MW-9	10/23/2015	115.28	36.34	78.94	--	--	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	--	--	
MW-9	07/28/2016	115.28	36.87	78.41	<0.026 / < 0.026	<0.010 / <0.010	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	--	--	
MW-9	10/06/2017	115.28	36.88	78.40	--	--	--	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	--	--	
MW-9	09/06/2018	115.28	37.01	78.27	--	--	--	<0.0002 / <0.0002	<0.0002 / <0.0002	<0.0002 / <0.0002	<0.0005 / <0.0005	<0.0003 / <0.0003	<0.002 / <0.002	

Table 2
Historical Groundwater Analytical Results
Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska

Location	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCS					
					DRO	GRO	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Ethylene Dibromide	1,2-Dichloroethane
	Units	ft msl	ft btoc	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels					1.5	2.2	1.1	0.0046	1.1	0.015	0.19	0.000075	0.0017
Trip Blank	12/18/1998	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.001	--	--
Trip Blank	03/01/1999	--	--	--	--	<0.005	--	<0.0005	0.000742	<0.0005	<0.001	--	--
Trip Blank	08/16/2007	--	--	--	--	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--
Trip Blank	06/03/2008	--	--	--	--	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--
Trip Blank	08/12/2008	--	--	--	--	<0.01	--	<0.001	<0.001	<0.001	<0.002	--	--
Trip Blank	06/18/2009	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--
Trip Blank	09/13/2009	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--
Trip Blank	06/10/2010	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--
Trip Blank	08/07/2010	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--
Trip Blank	03/06/2011	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--
Trip Blank	05/24/2011	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--
Trip Blank	09/20/2011	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	--	--
Trip Blank	11/05/2012	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0015	<0.000097	<0.0005
Trip Blank	11/07/2013	--	--	--	--	--	--	<0.00024	<0.00023	<0.00024	<0.00072	--	--
Trip Blank	05/05/2014	--	--	--	--	--	--	<0.00015	<0.00011	<0.00016	<0.00040	--	--
Trip Blank	10/23/2015	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--
Trip Blank	07/28/2016	--	--	--	--	<0.010	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--
Trip Blank	10/06/2017	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--
Trip Blank	09/06/2018	--	--	--	--	--	--	<0.0002	<0.0002	<0.0002	<0.0005	<0.0003	<0.002

Table 2

**Historical Groundwater Analytical Results
Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska**

Location	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCS					
					DRO	GRO	TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Ethylene Dibromide	1,2-Dichloroethane
	Units	ft msl	ft btoc	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels					1.5	2.2	1.1	0.0046	1.1	0.015	0.19	0.000075	0.0017

Notes and Abbreviations

TOC = top of casing
 DTW = depth to water
 GWE = groundwater elevation
 TPH = total petroleum hydrocarbons
 DRO = diesel range organics by Alaska Series Method AK102
 GRO = gasoline range organics by Alaska Series Method AK101
 Benzene, toluene, ethylbenzene, and total xylenes by Environmental Protection Agency (EPA) Method 8021B or 8260B or SW-E46 8021B
 Total Xylenes = Sum of m-, o-, and p-xylenes
 VOC = volatile organic compounds by EPA Method 524.2
 ADEC = Alaska Department of Environmental Conservation
^a = Levels established in ADEC Table C Groundwater Cleanup Levels (18 AAC 75.345)
BOLD = Indicates concentration above the ADEC Table C Groundwater Cleanup Level
 ft msl = feet above mean sea level
 ft btoc = feet below top of casing
 mg/L = milligrams per liter
 J = Estimated value
 - = Not measured / not analyzed
 <x = Constituent not detected above x milligrams per liter
 x / y = Sample results / blind duplicate results
 **Due to labeling error, duplicate DRO result for MW-9 was reported by the lab as duplicate DRO result for MW-3.
 HS = collected via hydrasleeve

Appendix A Site Photos



1. View of Site facing North



2. View of Site facing Northeast



3. View of Site facing Southwest



4. View of Site facing West



FORMER UNOCAL #5580/CLINE'S TESORO
442 GAMBELL STREET
ANCHORAGE, ALASKA

SITE PHOTOGRAPHS

621048-95
Nov 29, 2017

Appendix B

ADEC Human Health Conceptual Site Model Scoping and Graphics Forms

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name:

File Number:

Completed by:

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources (*check potential sources at the site*)

- | | |
|---|--|
| <input checked="" type="checkbox"/> USTs | <input type="checkbox"/> Vehicles |
| <input type="checkbox"/> ASTs | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers |
| <input type="checkbox"/> Drums | <input type="checkbox"/> Other: <input type="text"/> |

Release Mechanisms (*check potential release mechanisms at the site*)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Spills | <input type="checkbox"/> Direct discharge |
| <input checked="" type="checkbox"/> Leaks | <input type="checkbox"/> Burning |
| | <input type="checkbox"/> Other: <input type="text"/> |

Impacted Media (*check potentially-impacted media at the site*)

- | | |
|---|--|
| <input type="checkbox"/> Surface soil (0-2 feet bgs*) | <input type="checkbox"/> Groundwater |
| <input checked="" type="checkbox"/> Subsurface soil (>2 feet bgs) | <input type="checkbox"/> Surface water |
| <input type="checkbox"/> Air | <input type="checkbox"/> Biota |
| <input type="checkbox"/> Sediment | <input type="checkbox"/> Other: <input type="text"/> |

Receptors (*check receptors that could be affected by contamination at the site*)

- | | |
|--|--|
| <input type="checkbox"/> Residents (adult or child) | <input checked="" type="checkbox"/> Site visitor |
| <input checked="" type="checkbox"/> Commercial or industrial worker | <input checked="" type="checkbox"/> Trespasser |
| <input checked="" type="checkbox"/> Construction worker | <input type="checkbox"/> Recreational user |
| <input type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer |
| <input type="checkbox"/> Subsistence consumer (i.e. eats wild foods) | <input type="checkbox"/> Other: <input type="text"/> |

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.)

If the box is checked, label this pathway complete:

Complete

Comments:

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future?

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future?

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods?

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)?

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.)

If all of the boxes are checked, label this pathway complete:

Incomplete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Are the contaminants in soil volatile (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminated soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures)

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed:

Comments:

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed:

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM₁₀). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed:

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed:

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.*)

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Former Unocal Station 5580 (Cline's Tesoro)/Chevron 306451
442 Gambell Street, Anchorage, AK

Instructions: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

Completed By: GHD Services, Inc.
 Date Completed: November 11, 2017

(1) Media	(2) Transport Mechanisms
<input type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i> <input type="checkbox"/> Migration to subsurface <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Runoff or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input checked="" type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Ground-water	<input type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Flow to surface water body <i>check surface water</i> <input type="checkbox"/> Flow to sediment <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Surface Water	<input type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Sedimentation <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Sediment	<input type="checkbox"/> Direct release to sediment <i>check sediment</i> <input type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3) Exposure Media	(4) Exposure Pathway/Route	(5) Current & Future Receptors						
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion <input type="checkbox"/> Dermal Absorption of Contaminants from Soil <input type="checkbox"/> Inhalation of Fugitive Dust	F	C/F	C/F	F			
<input type="checkbox"/> groundwater	<input type="checkbox"/> Ingestion of Groundwater <input type="checkbox"/> Dermal Absorption of Contaminants in Groundwater <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input type="checkbox"/> air	<input type="checkbox"/> Inhalation of Outdoor Air <input type="checkbox"/> Inhalation of Indoor Air <input type="checkbox"/> Inhalation of Fugitive Dust							
<input type="checkbox"/> surface water	<input type="checkbox"/> Ingestion of Surface Water <input type="checkbox"/> Dermal Absorption of Contaminants in Surface Water <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input type="checkbox"/> sediment	<input type="checkbox"/> Direct Contact with Sediment							
<input type="checkbox"/> biota	<input type="checkbox"/> Ingestion of Wild or Farmed Foods							

Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Residents (adults or children)
 Commercial or Industrial workers
 Site visitors, trespassers, or recreational users
 Construction workers
 Farmers or subsistence harvesters
 Subsistence consumers
 Other

Appendix C

Monitoring Data Package



DAILY FIELD REPORT

Project Name: CEMC 30451	GHD Project Manager: S. PRITCHARD	Field Rep: O. VAN / T. WEAVER
Project Number: 621048	Date: 09/06/18	Site Address: 442 GAMBELL STREET, ANCHORAGE, AK
Scope of Work: ANNUAL GW MONITORING/SAMPLING		Weather: CLOUDY ~ 55°F
Equipment: YSI-556 (0641223); MP-50; TULSA METAL WATER LEVEL (20170612); METER (06704)		

Time	Activity/Comments	SWA
0815	MOB TO FedEx & DROP OFF 91356 SAMPLES	
0840	PICKED UP MORE EQUIPMENT IN THE OFFICE; HEAD TO CEMC SITE	
0855	ARRIVE ONSITE; NOTIFY PM; CONDUCT TAILGATE SAFETY MEETING; NOTIFY STATION	
0908	START GAUGING WELLS	
0944	CALIBRATE EQUIPMENT	
0952	SET UP ON MW-9	
0957	START LOW FLOW PURGE PARAMETER MONITORING @ MW-9	
1025	COLLECT SAMPLE MW-9-W-180906 & DUP-1-W-180906 @ MW-9 ↳ DECON EQUIPMENT & FILTER PURGE THRU GAC (0.65 GAL)	
1035	SET UP @ MW-8 LOCATION; PURGE 3.5 GAL FROM INVESTIGATION WELLS	
1049	START LOW FLOW GW SAMPLING; COLLECT GW PARAMETERS	
1113	COLLECT MW-8-W-180906; DECON EQUIPMENT; PURGE 1.0 GAL THROUGH GAC	
1120	PURGE 1.35 GAL PCON WATER THROUGH GAC.	
1140	ARRIVE @ HOME DEPOT TO PICK UP COLD PATCH	
1149	HEAD BACK TO SITE	
1158	ARRIVE ONSITE; RE-PATCH WELL MW-3.	
1215	HEAD BACK TO OFFICE TO PACK SAMPLES; NOTIFY PM	
1236	ARRIVE @ OFFICE; PACK SAMPLES & MOB TO FedEx	
1250	DROP OFF SAMPLES & MOB TO JTT TO DROP OFF EQUIPMENT	
1309	STOP @ LAKE OTIS SYSTEM TO ENSURE STEEL RUNNING	
1314	DROP OFF RENTAL EQUIPMENT @ JTT & MOB BACK @ OFFICE	
1330	ARRIVE BACK @ OFFICE	
	<i>[Signature]</i> 9/6/18	

SWA Key:	A: Person or People	B: Equipment	C: Environmental
	D: Procedures/Processes/JSA-review/revise	E: Visitors	

Operational Mileage: Start End Total

Site Photographs: GAC Tracker: Disposal Log: N/A Lab COC Review:



Groundwater Sampling Form

Project No. 621048 PM Siobhan Pritchard Well ID MW-8 Date 9/6/18 Page 1 of 2

Site ID / Location 306451 / 442 Gambell Street, Anchorage, Alaska (ADEC File ID: 2100.26.12)

Screen Casing Well Material x PVC Sampled by T. Weaver
 Setting (ft-btoc) 34 Diameter (in.) 2" SS O. Yan

Static Water Level (ft-btoc) 37.26 Total Depth (ft-btoc) 42.88 Water Column / Gallons in Well 5.62/0.90 Sample ID MW-8-W-140906

Dup ID
 Sample Time 1113 Start End

No-Purge Method Sampler Length (in) <u>36</u> <input type="checkbox"/> Depth of Sample <u> </u> <u>30</u> <input type="checkbox"/> Low-Flow Sampling Weights <u> </u> Position <u> </u> Suspended <input type="checkbox"/> <u>Bottom</u> <input type="checkbox"/> Bottom set <input type="checkbox"/> Was a Lefflon Baler used to collect non volatile samples Yes <input type="checkbox"/> No <input type="checkbox"/>				Low Flow Method Pump type Bladder <input checked="" type="checkbox"/> Other <input type="checkbox"/> Pump Intake (ft-btoc) <u>38.04</u> Volumes Purged <u>1.0 GAL</u> Flow rate (ml/minute) <u>105-155</u> Purge Time: Start <u>1044</u> Did well Dewater? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> End <u>1111</u>			
--	--	--	--	--	--	--	--

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	Temp (°C)	Cond. (mS/cm) 3%	Dissolved Oxygen (mg/L) 10%	pH 0.1	Redox (mV) 10	Turbidity (NTU)	Additional notes
1049	5	155	37.27	0.1	10.30	0.570	8.45	6.41	211.7	28.58	LEAK
1054	10	105	37.27	0.25	9.73	0.585	6.58	5.86	240.0	13.02	" "
1059	15	105	37.27	0.45	9.93	0.597	6.04	6.06	229.1	13.85	" "
1104	20	105	37.27	0.6	9.53	0.608	5.53	6.12	225.0	8.34	" "
1109	25	105	37.27	0.75	9.50	0.608	5.57	6.17	221.0	9.40	" "

Constituents Sampled	Container	Number	Preservative
BTEX by 8260 <input checked="" type="checkbox"/>	40 mL vial	3	HCl
Full Scan VOCs by 8260 <input type="checkbox"/>			
HVOCs by 8260 <input type="checkbox"/>			
GRO by AK 101 <input type="checkbox"/>			
DRO by AK 102 <input type="checkbox"/>			
RRO by AK 103 <input type="checkbox"/>			
Lead by 6010 <input type="checkbox"/>			
PAHs by 8270 <input type="checkbox"/>			
Alkalinity by 2320B <input type="checkbox"/>			
Methane by RSK175 <input type="checkbox"/>			
Sulfate by EPA 300 <input type="checkbox"/>			
Nitrate/Nitrite by EPA 300 <input type="checkbox"/>			
Ferrous Iron <input type="checkbox"/>			

Well Casing Volumes

Gallons/Foot	1" = 0.04	1.5" = 0.09	2.5" = 0.26	3.5" = 0.50	6" = 1.47
	1.25" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65	

Field Test Results: Ferrous Iron mg/L Nitrate mg/L Other

Well Information
 Well Location: ON SITE Well Locked at Arrival: Yes / No
 Condition of Well: GOOD Well Locked at Departure: Yes / No
 Well Completion: Flush Mount / Stick Up

Additional Notes



Groundwater Sampling Form

Project No. 621048 PM Siobhan Pritchard Well ID MW-9 Date 9/6/18 Page 2 of 2

Site ID / Location 306451 / 442 Gambell Street, Anchorage, Alaska (ADEC File ID: 2100.26.12)
 Screen Casing Well Material x PVC Sampled by T. Weaver
 Setting (ft-btoc) 34 Diameter (in.) 2" SS O. Yan

Static Water Level (ft-btoc) 37.01 Total Depth (ft-btoc) 44.70 Water Column / Gallons in Well 7.69 / 11.23
 Sample ID MW-9-W-18
 Dup ID DUP-1-W-180906
 Sample Time 1025 Start End

No-Purge Method Sampler Length (in) <u>36</u> <input type="checkbox"/> Depth of Sample <u>30</u> <input type="checkbox"/> Weights <u> </u> Position <u> </u> Suspended <input type="checkbox"/> Bottom <input type="checkbox"/> Bottom set <input type="checkbox"/> Was 1 gallon Baler used to collect non volatile samples Yes <input type="checkbox"/> No <input type="checkbox"/>				Low Flow Method Pump type Bladder <input checked="" type="checkbox"/> Other <input type="checkbox"/> Pump Intake (ft-btoc) <u>37.83</u> Volumes Purged <u>0.6564</u> Flow rate (ml/minute) <u>90-110</u> Purge Time: Start <u>0957</u> Did well Dewater? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> End <u>1023</u>			
---	--	--	--	--	--	--	--

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	Temp (°C)	Cond. (mS/cm) 3%	Dissolved Oxygen (mg/L) 10%	pH 0.1	Redox (mV) 10	Turbidity (NTU)	Additional notes
1002	5	110	37.01	0.05	13.78	0.865	8.45	5.96	233.4	85.37	CLEAR
1007	10	110	37.02	0.2	11.24	0.768	6.61	5.36	268.9	39.07	" "
1012	15	90	37.01	0.35	10.80	0.748	5.71	5.41	264.3	28.90	" "
1017	20	90	37.01	0.45	10.67	0.748	5.30	5.55	255.6	16.27	" "
1022	25	90	37.01	0.5	10.84	0.742	5.09	5.49	241.8	16.08	" "

Constituents Sampled	Container	Number	Preservative
BTEX by 8260 <input checked="" type="checkbox"/>	40 mL vial	3	HCl
Full Scan VOCs by 8260 <input type="checkbox"/>			
HVOCs by 8260 <input type="checkbox"/>			
GRO by AK 101 <input type="checkbox"/>			
DRO by AK 102 <input type="checkbox"/>			
RRO by AK 103 <input type="checkbox"/>			
Lead by 6010 <input type="checkbox"/>			
PAHs by 8270 <input type="checkbox"/>			
Alkalinity by 2320B <input type="checkbox"/>			
Methane by RSK175 <input type="checkbox"/>			
Sulfate by EPA 300 <input type="checkbox"/>			
Nitrate/Nitrite by EPA 300 <input type="checkbox"/>			
Ferrous Iron <input type="checkbox"/>			

Well Casing Volumes

Gallons/Foot	1" = 0.04	1.5" = 0.09	2.5" = 0.26	3.5" = 0.50	6" = 1.47
	1.25" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65	

Field Test Results: Ferrous Iron mg/L Nitrate mg/L Other

Well Information

Well Location: ON SITE Well Locked at Arrival: Yes / No

Condition of Well: GOOD Well Locked at Departure: Yes / No

Well Completion: Flush Mount / Stick Up

Additional Notes

NO LOCK

**Field Data Record Form
Meter, Water Level
(QSF-251D)**

Page 1 of 1

Control number: 06784
 Date (mm/dd/yyyy): 09/06/12
 User (print name): T. WEAVER

Project number: 621098
 Project name: 306151

Location: 442 CANAL ST
ANCHORAGE, AK

Additional equipment control numbers and descriptions: _____

Field procedure before use:

	Check when completed
• Check for broken or missing parts.	<input checked="" type="checkbox"/>
• Check battery	<input checked="" type="checkbox"/>
• Check operation of buzzer.	<input checked="" type="checkbox"/>
• Check operation of signal light.	<input checked="" type="checkbox"/>
• Test probe in water to ensure unit operates, both visually and audibly.	<input checked="" type="checkbox"/>
• Check cable.	<input checked="" type="checkbox"/>

Filing: Field file

Signature: *T. Weaver*

Field Data Record Form
Meter, Turbidity (Portable), HF Scientific
(QSF-249D)

Page 1 of 1

Control number: 201706123 (TIT EQUIPMENT) Project number: 621048
 Date (mm/dd/yyyy): 09/06/18 Project name: CERC 306451
 User (print name): T. WEAVER Location: 442 GAMBELL STREET,
ANCHORAGE, AK

Additional equipment control numbers and descriptions:

<u>1000 NTU</u>	<u>10 NTU</u>	<u>0.02 NTU</u>
<u>LOT: 80303</u>	<u>LOT: 72262</u>	<u>LOT: 80301</u>
<u>EXP: MAR 2020</u>	<u>EXP: 3/2020</u>	<u>EXP: MAR 2020</u>
<u>PROCAL</u>	<u>HF SCIENTIFIC</u>	<u>PROCAL</u>

Field procedure before use:

	Check when completed
• Turn the DRT-15CE to the 0-10 range.	<input checked="" type="checkbox"/>
• Check outside of reference standard bottles for cleanliness, no condensation, surface scratches, or finger smudges.	<input checked="" type="checkbox"/>
• Insert the reference standard and index.	<input checked="" type="checkbox"/>
• Adjust the Reference Adjust in the appropriate direction to cause the display to read 0.02 NTU.	<input checked="" type="checkbox"/>
• The unity is now ready to use on any range.	
<p>Note: Condensation, surface scratches, finger smudges, and dirt on outside of sample bottles affects meter readings.</p>	

Filing: Field file

Signature: T. Weaver

Field Data Record Form
Meter, PH/Cond./Temp./DO/ORP/ Salinity/Flow Cell,
YSI 556 MPS
(QSF-483D)

Control number: _____
 Date (mm/dd/yyyy): 09/06/18
 User (print name): _____

(TITEN RENAL)

Project number: 621048
 Project name: 306151

Location: 442 GAMMEL ST
TN. CHORRAGE, ALA

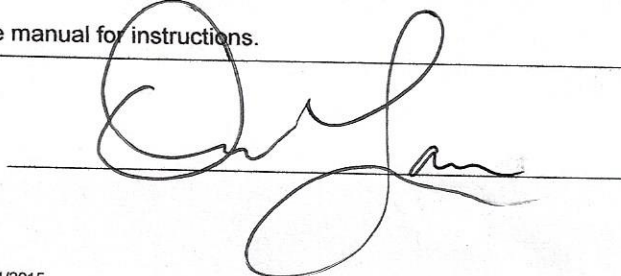
Calibration solution(s):	pH 7.0	pH 4.0	DO	CONDUCTIVITY
Lot #(s):	VTI	VV34	2079	WX1
Supplier(s):	OAKTON	OAKTON	HANNA	OAKTON
Expiration date(s):	05/2019	05/2019	10/2022	03/2020

Additional information: _____

Field procedure before use:

	Check when completed
<ul style="list-style-type: none"> Check kit contents. Check pH 7 buffer reading. Calibrate if greater than ± 0.2. <p>PH is a two point calibration but always start with the seven standard.</p> <ul style="list-style-type: none"> Fill calibration cup with pH 7.0 buffer and attach to probe with probes facing down. Press Esc to enter into main menu and use down arrow key to highlight calibration menu. Press \downarrow key to accept. Use \downarrow key to highlight pH symbol and press enter \downarrow. Select 2 point calibration and use number pad to enter 7.0 and push \downarrow to accept value. Push \downarrow again to calibrate. Repeat these steps to calibrate your pH value to 4.0 or 10.0. Press Esc to return to the calibration screen. <p>Check conductivity standard near the expected range. Calibrate if greater than $\pm 0.5\%$.</p> <p>Conductivity is a one point calibration.</p> <ul style="list-style-type: none"> Fill calibration cup with 1.413 mS standard and attach to probe with probes facing up. Press Esc to return to the calibration screen. Use the \uparrow or \downarrow to select SpC and press \downarrow Use the number key pad to enter 1.413 and push \downarrow to accept value. Push \downarrow again to calibrate. <p>Check ORP standard:</p> <ul style="list-style-type: none"> Press Esc to return to the calibration screen. Use the \uparrow or \downarrow to select ORP and press \downarrow Use the number key pad to enter the value and push \downarrow to accept. Push \downarrow again to calibrate. <p>To calibrate DO, see manual for instructions.</p>	<p><input checked="" type="checkbox"/> Reading <u>6.80</u></p> <p>Calibrated Y <input checked="" type="checkbox"/> (N)</p> <p>Reading <u>3.98</u></p> <p>Standard <u>1.413</u> Reading <u>1.410</u></p> <p>Calibrated Y <input checked="" type="checkbox"/> (N)</p> <p>Standard <u>290</u> mV Reading <u>292.2</u> mV</p> <p>Calibrated Y <input checked="" type="checkbox"/> (N)</p>

Filing: Field file

Signature: 



Portable GAC Volume Tracking Log

Site ID	Project No.	Date	Volume Filtered through GAC (gallons)	Filter location description
92609	620911	6/11/18	6.35 GAL	CENTER OF SITE IN THE VICINITY OF MW-3/MW-6 PLANTER AREA
92609	620911	6/12/18	4.35 GAL	" "
95414	062327	6/18/18	5.10 GAL	PURGED THROUGH PLANTER NEAR MW-3/MW-2 AT CENTER OF SITE
95414	062327	6/19/18	6.30 GAL	PLANTER UPGRADIENT OF MW-10, PLANTER/SIDE OF SITE, EAST OF MW-5.
351860	065008	6/19/18	5.50 GAL	PLANTER WESTERN SIDE OF SITE.
351860	065004	6/20/18	6.10 GAL	SOUTH WEST SIDE OF SITE
211078	622233	7/12/18	4.20 GAL	CENTER OF SITE
95414	062327	08/08/18	4.10 GAL	PURGE WATER THROUGH GAC AT PLANTER AREA BETWEEN CHEVON/ARCTIC ROAD RUNNING
95414	062327	08/08/18	3.40 GAL	↓
306447	082676	08/09/18	4.40 GAL	PLANTER BETWEEN SITE (UPGRADIENT).
211081	062324	08/20/18	0.9 GAL	PLANTER NE OF STATION
211079	065003	08/20/18	5.15 GAL	FENCED AREA BEHIND MARKET
211083	065004	08/21/18	12.1 GAL	GRASS SW OF ALSTATE
211079	065003	9/22/18	4.2 GAL	FENCED AREA BEHIND MARKET
91518	062325	9/28/18	6.1 GAL	PLANTER SOUTH OF WENDY'S
90430	065001	8/29/18	8.1 GAL	CENTER OF THE SITE (BETWEEN MW-7/MW-5K)
92555	062326	8/30/18	6.7 GAL	PLANTER ALONG 9TH AVENUE, FIX IT SITE
92555	062326	8/31/18	6.75 GAL	PLANTER CENTER AND CENTER OF SITE.
91252	622059	9/4/18	11 GAL	PLANTER EAST OF SITE (UPGRADIENT) BY STATION SIGN.
91356	622232	9/5/18	6.8 GAL	PLANTER AREA BY THE CHEVON STATION; BY STATION BUILDING
306451	621048	9/6/18	3.5 GAL	SOUTH OF STATION BUILDING

Appendix D

Laboratory Analytical Report



ANALYSIS REPORT

Prepared by:

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

Prepared for:

ChevronTexaco
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

Report Date: September 19, 2018 12:41

Project: 306451

Account #: 10880
Group Number: 1984723
PO Number: 0015281772
Release Number: CARRIER
State of Sample Origin: AK

Electronic Copy To Chevron
Electronic Copy To GHD
Electronic Copy To GHD
Electronic Copy To GHD
Electronic Copy To GHD

Attn: GHD EDD
Attn: Jeffrey Cloud
Attn: Sarah Gillette
Attn: Siobhan Pritchard
Attn: GHD EDF

Respectfully Submitted,



Megan A. Moeller
Senior Specialist

(717) 556-7261

To view our laboratory's current scopes of accreditation please go to <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. Historical copies may be requested through your project manager.



SAMPLE INFORMATION

<u>Client Sample Description</u>	<u>Sample Collection Date/Time</u>	<u>ELLE#</u>
MW-9-W-180906 Grab Groundwater	09/06/2018 10:25	9791844
MW-8-W-180906 Grab Groundwater	09/06/2018 11:13	9791845
Dup-1-W-180906 Grab Groundwater	09/06/2018	9791846
QA-1-W-180906 Water	09/06/2018	9791847

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

Project Name: 306451
ELLE Group #: 1984723

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below.

Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set.

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

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

No additional comments are necessary.

Sample Description: MW-9-W-180906 Grab Groundwater
Facility# 306451
442 Gambell Street - Anchorage, AK

ChevronTexaco
ELLE Sample #: WW 9791844
ELLE Group #: 1984723
Matrix: Groundwater

Project Name: 306451

Submission Date/Time: 09/07/2018 10:10
Collection Date/Time: 09/06/2018 10:25

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles			mg/l	mg/l	mg/l	
10335	Acetone	67-64-1	N.D.	0.0008	0.020	1
10335	Benzene	71-43-2	N.D.	0.0002	0.001	1
10335	Bromodichloromethane	75-27-4	N.D.	0.0002	0.001	1
10335	Bromoform	75-25-2	N.D.	0.002	0.005	1
10335	Bromomethane	74-83-9	N.D.	0.0005	0.001	1
10335	2-Butanone	78-93-3	N.D.	0.001	0.010	1
10335	Carbon Disulfide	75-15-0	N.D.	0.0003	0.005	1
10335	Carbon Tetrachloride	56-23-5	N.D.	0.0002	0.001	1
10335	Chlorobenzene	108-90-7	N.D.	0.0002	0.001	1
10335	Chloroethane	75-00-3	N.D.	0.0003	0.001	1
10335	Chloroform	67-66-3	0.002	0.0002	0.001	1
10335	Chloromethane	74-87-3	N.D.	0.0003	0.001	1
10335	Cyclohexane	110-82-7	N.D.	0.002	0.005	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.001	0.005	1
10335	Dibromochloromethane	124-48-1	N.D.	0.0004	0.001	1
10335	1,2-Dibromoethane	106-93-4	N.D.	0.0003	0.001	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.	0.0002	0.005	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.	0.0002	0.005	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.	0.0002	0.005	1
10335	Dichlorodifluoromethane	75-71-8	N.D.	0.0003	0.001	1
10335	1,1-Dichloroethane	75-34-3	N.D.	0.0002	0.001	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.002	0.005	1
10335	1,1-Dichloroethene	75-35-4	N.D.	0.0002	0.001	1
10335	cis-1,2-Dichloroethene	156-59-2	N.D.	0.0002	0.001	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.	0.0002	0.001	1
10335	1,2-Dichloropropane	78-87-5	N.D.	0.0002	0.001	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.0002	0.001	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.0002	0.001	1
10335	Ethylbenzene	100-41-4	N.D.	0.0002	0.001	1
10335	Freon 113	76-13-1	N.D.	0.002	0.010	1
10335	2-Hexanone	591-78-6	N.D.	0.003	0.010	1
10335	Isopropylbenzene	98-82-8	N.D.	0.0003	0.005	1
10335	Methyl Acetate	79-20-9	N.D.	0.0006	0.005	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.0002	0.001	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.	0.0005	0.010	1
10335	Methylcyclohexane	108-87-2	N.D.	0.0002	0.005	1
10335	Methylene Chloride	75-09-2	N.D.	0.0002	0.001	1
10335	Styrene	100-42-5	N.D.	0.0002	0.005	1
10335	1,1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.0002	0.001	1
10335	Tetrachloroethene	127-18-4	N.D.	0.0002	0.001	1
10335	Toluene	108-88-3	N.D.	0.0002	0.001	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-9-W-180906 Grab Groundwater
Facility# 306451
442 Gambell Street - Anchorage, AK

ChevronTexaco
ELLE Sample #: WW 9791844
ELLE Group #: 1984723
Matrix: Groundwater

Project Name: 306451

Submission Date/Time: 09/07/2018 10:10
Collection Date/Time: 09/06/2018 10:25

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260B	mg/l	mg/l	mg/l	
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.0004	0.005	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.	0.0002	0.001	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.	0.0002	0.001	1
10335	Trichloroethene	79-01-6	N.D.	0.0002	0.001	1
10335	Trichlorofluoromethane	75-69-4	0.0004 J	0.0004	0.001	1
10335	Vinyl Chloride	75-01-4	N.D.	0.0004	0.001	1
10335	Xylene (Total)	1330-20-7	N.D.	0.0005	0.005	1

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs	SW-846 8260B	1	N182603AA	09/18/2018 00:33	Kevin D Kelly	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N182603AA	09/18/2018 00:33	Kevin D Kelly	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-8-W-180906 Grab Groundwater
Facility# 306451
442 Gambell Street - Anchorage, AK

ChevronTexaco
ELLE Sample #: WW 9791845
ELLE Group #: 1984723
Matrix: Groundwater

Project Name: 306451

Submission Date/Time: 09/07/2018 10:10
Collection Date/Time: 09/06/2018 11:13

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles			mg/l	mg/l	mg/l	
10335	Acetone	67-64-1	0.001 J	0.0008	0.020	1
10335	Benzene	71-43-2	N.D.	0.0002	0.001	1
10335	Bromodichloromethane	75-27-4	N.D.	0.0002	0.001	1
10335	Bromoform	75-25-2	N.D.	0.002	0.005	1
10335	Bromomethane	74-83-9	N.D.	0.0005	0.001	1
10335	2-Butanone	78-93-3	N.D.	0.001	0.010	1
10335	Carbon Disulfide	75-15-0	N.D.	0.0003	0.005	1
10335	Carbon Tetrachloride	56-23-5	N.D.	0.0002	0.001	1
10335	Chlorobenzene	108-90-7	N.D.	0.0002	0.001	1
10335	Chloroethane	75-00-3	N.D.	0.0003	0.001	1
10335	Chloroform	67-66-3	0.0008 J	0.0002	0.001	1
10335	Chloromethane	74-87-3	N.D.	0.0003	0.001	1
10335	Cyclohexane	110-82-7	N.D.	0.002	0.005	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.001	0.005	1
10335	Dibromochloromethane	124-48-1	N.D.	0.0004	0.001	1
10335	1,2-Dibromoethane	106-93-4	N.D.	0.0003	0.001	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.	0.0002	0.005	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.	0.0002	0.005	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.	0.0002	0.005	1
10335	Dichlorodifluoromethane	75-71-8	N.D.	0.0003	0.001	1
10335	1,1-Dichloroethane	75-34-3	N.D.	0.0002	0.001	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.002	0.005	1
10335	1,1-Dichloroethene	75-35-4	N.D.	0.0002	0.001	1
10335	cis-1,2-Dichloroethene	156-59-2	N.D.	0.0002	0.001	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.	0.0002	0.001	1
10335	1,2-Dichloropropane	78-87-5	N.D.	0.0002	0.001	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.0002	0.001	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.0002	0.001	1
10335	Ethylbenzene	100-41-4	N.D.	0.0002	0.001	1
10335	Freon 113	76-13-1	N.D.	0.002	0.010	1
10335	2-Hexanone	591-78-6	N.D.	0.003	0.010	1
10335	Isopropylbenzene	98-82-8	N.D.	0.0003	0.005	1
10335	Methyl Acetate	79-20-9	N.D.	0.0006	0.005	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.0002	0.001	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.	0.0005	0.010	1
10335	Methylcyclohexane	108-87-2	N.D.	0.0002	0.005	1
10335	Methylene Chloride	75-09-2	N.D.	0.0002	0.001	1
10335	Styrene	100-42-5	N.D.	0.0002	0.005	1
10335	1,1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.0002	0.001	1
10335	Tetrachloroethene	127-18-4	N.D.	0.0002	0.001	1
10335	Toluene	108-88-3	N.D.	0.0002	0.001	1

*=This limit was used in the evaluation of the final result

Sample Description: MW-8-W-180906 Grab Groundwater
Facility# 306451
442 Gambell Street - Anchorage, AK

ChevronTexaco
ELLE Sample #: WW 9791845
ELLE Group #: 1984723
Matrix: Groundwater

Project Name: 306451

Submission Date/Time: 09/07/2018 10:10
Collection Date/Time: 09/06/2018 11:13

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260B	mg/l	mg/l	mg/l	
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.0004	0.005	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.	0.0002	0.001	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.	0.0002	0.001	1
10335	Trichloroethene	79-01-6	N.D.	0.0002	0.001	1
10335	Trichlorofluoromethane	75-69-4	0.0006 J	0.0004	0.001	1
10335	Vinyl Chloride	75-01-4	N.D.	0.0004	0.001	1
10335	Xylene (Total)	1330-20-7	N.D.	0.0005	0.005	1

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs	SW-846 8260B	1	N182603AA	09/18/2018 00:57	Kevin D Kelly	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N182603AA	09/18/2018 00:57	Kevin D Kelly	1

*=This limit was used in the evaluation of the final result

Sample Description: Dup-1-W-180906 Grab Groundwater
Facility# 306451
442 Gambell Street - Anchorage, AK

ChevronTexaco
ELLE Sample #: WW 9791846
ELLE Group #: 1984723
Matrix: Groundwater

Project Name: 306451

Submission Date/Time: 09/07/2018 10:10
Collection Date/Time: 09/06/2018

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260B	mg/l	mg/l	mg/l	
10335	Acetone	67-64-1	N.D.	0.0008	0.020	1
10335	Benzene	71-43-2	N.D.	0.0002	0.001	1
10335	Bromodichloromethane	75-27-4	N.D.	0.0002	0.001	1
10335	Bromoform	75-25-2	N.D.	0.002	0.005	1
10335	Bromomethane	74-83-9	N.D.	0.0005	0.001	1
10335	2-Butanone	78-93-3	N.D.	0.001	0.010	1
10335	Carbon Disulfide	75-15-0	N.D.	0.0003	0.005	1
10335	Carbon Tetrachloride	56-23-5	N.D.	0.0002	0.001	1
10335	Chlorobenzene	108-90-7	N.D.	0.0002	0.001	1
10335	Chloroethane	75-00-3	N.D.	0.0003	0.001	1
10335	Chloroform	67-66-3	0.002	0.0002	0.001	1
10335	Chloromethane	74-87-3	N.D.	0.0003	0.001	1
10335	Cyclohexane	110-82-7	N.D.	0.002	0.005	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.001	0.005	1
10335	Dibromochloromethane	124-48-1	N.D.	0.0004	0.001	1
10335	1,2-Dibromoethane	106-93-4	N.D.	0.0003	0.001	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.	0.0002	0.005	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.	0.0002	0.005	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.	0.0002	0.005	1
10335	Dichlorodifluoromethane	75-71-8	N.D.	0.0003	0.001	1
10335	1,1-Dichloroethane	75-34-3	N.D.	0.0002	0.001	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.002	0.005	1
10335	1,1-Dichloroethene	75-35-4	N.D.	0.0002	0.001	1
10335	cis-1,2-Dichloroethene	156-59-2	N.D.	0.0002	0.001	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.	0.0002	0.001	1
10335	1,2-Dichloropropane	78-87-5	N.D.	0.0002	0.001	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.0002	0.001	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.0002	0.001	1
10335	Ethylbenzene	100-41-4	N.D.	0.0002	0.001	1
10335	Freon 113	76-13-1	N.D.	0.002	0.010	1
10335	2-Hexanone	591-78-6	N.D.	0.003	0.010	1
10335	Isopropylbenzene	98-82-8	N.D.	0.0003	0.005	1
10335	Methyl Acetate	79-20-9	N.D.	0.0006	0.005	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.0002	0.001	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.	0.0005	0.010	1
10335	Methylcyclohexane	108-87-2	N.D.	0.0002	0.005	1
10335	Methylene Chloride	75-09-2	N.D.	0.0002	0.001	1
10335	Styrene	100-42-5	N.D.	0.0002	0.005	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.0002	0.001	1
10335	Tetrachloroethene	127-18-4	N.D.	0.0002	0.001	1
10335	Toluene	108-88-3	N.D.	0.0002	0.001	1

*=This limit was used in the evaluation of the final result

Sample Description: Dup-1-W-180906 Grab Groundwater
Facility# 306451
442 Gambell Street - Anchorage, AK

ChevronTexaco
ELLE Sample #: WW 9791846
ELLE Group #: 1984723
Matrix: Groundwater

Project Name: 306451

Submittal Date/Time: 09/07/2018 10:10
Collection Date/Time: 09/06/2018

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260B	mg/l	mg/l	mg/l	
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.0004	0.005	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.	0.0002	0.001	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.	0.0002	0.001	1
10335	Trichloroethene	79-01-6	N.D.	0.0002	0.001	1
10335	Trichlorofluoromethane	75-69-4	N.D.	0.0004	0.001	1
10335	Vinyl Chloride	75-01-4	N.D.	0.0004	0.001	1
10335	Xylene (Total)	1330-20-7	N.D.	0.0005	0.005	1

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs	SW-846 8260B	1	N182603AA	09/18/2018 01:20	Kevin D Kelly	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N182603AA	09/18/2018 01:20	Kevin D Kelly	1

*=This limit was used in the evaluation of the final result

Sample Description: QA-1-W-180906 Water
Facility# 306451
442 Gambell Street - Anchorage, AK

ChevronTexaco
ELLE Sample #: WW 9791847
ELLE Group #: 1984723
Matrix: Water

Project Name: 306451

Submission Date/Time: 09/07/2018 10:10
Collection Date/Time: 09/06/2018

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles			mg/l	mg/l	mg/l	
10335	Acetone	67-64-1	0.001 J	0.0008	0.020	1
10335	Benzene	71-43-2	N.D.	0.0002	0.001	1
10335	Bromodichloromethane	75-27-4	N.D.	0.0002	0.001	1
10335	Bromoform	75-25-2	N.D.	0.002	0.005	1
10335	Bromomethane	74-83-9	N.D.	0.0005	0.001	1
10335	2-Butanone	78-93-3	N.D.	0.001	0.010	1
10335	Carbon Disulfide	75-15-0	N.D.	0.0003	0.005	1
10335	Carbon Tetrachloride	56-23-5	N.D.	0.0002	0.001	1
10335	Chlorobenzene	108-90-7	N.D.	0.0002	0.001	1
10335	Chloroethane	75-00-3	N.D.	0.0003	0.001	1
10335	Chloroform	67-66-3	N.D.	0.0002	0.001	1
10335	Chloromethane	74-87-3	N.D.	0.0003	0.001	1
10335	Cyclohexane	110-82-7	N.D.	0.002	0.005	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.001	0.005	1
10335	Dibromochloromethane	124-48-1	N.D.	0.0004	0.001	1
10335	1,2-Dibromoethane	106-93-4	N.D.	0.0003	0.001	1
10335	1,2-Dichlorobenzene	95-50-1	N.D.	0.0002	0.005	1
10335	1,3-Dichlorobenzene	541-73-1	N.D.	0.0002	0.005	1
10335	1,4-Dichlorobenzene	106-46-7	N.D.	0.0002	0.005	1
10335	Dichlorodifluoromethane	75-71-8	N.D.	0.0003	0.001	1
10335	1,1-Dichloroethane	75-34-3	N.D.	0.0002	0.001	1
10335	1,2-Dichloroethane	107-06-2	N.D.	0.002	0.005	1
10335	1,1-Dichloroethene	75-35-4	N.D.	0.0002	0.001	1
10335	cis-1,2-Dichloroethene	156-59-2	N.D.	0.0002	0.001	1
10335	trans-1,2-Dichloroethene	156-60-5	N.D.	0.0002	0.001	1
10335	1,2-Dichloropropane	78-87-5	N.D.	0.0002	0.001	1
10335	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.0002	0.001	1
10335	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.0002	0.001	1
10335	Ethylbenzene	100-41-4	N.D.	0.0002	0.001	1
10335	Freon 113	76-13-1	N.D.	0.002	0.010	1
10335	2-Hexanone	591-78-6	N.D.	0.003	0.010	1
10335	Isopropylbenzene	98-82-8	N.D.	0.0003	0.005	1
10335	Methyl Acetate	79-20-9	N.D.	0.0006	0.005	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.0002	0.001	1
10335	4-Methyl-2-pentanone	108-10-1	N.D.	0.0005	0.010	1
10335	Methylcyclohexane	108-87-2	N.D.	0.0002	0.005	1
10335	Methylene Chloride	75-09-2	N.D.	0.0002	0.001	1
10335	Styrene	100-42-5	N.D.	0.0002	0.005	1
10335	1,1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.0002	0.001	1
10335	Tetrachloroethene	127-18-4	N.D.	0.0002	0.001	1
10335	Toluene	108-88-3	N.D.	0.0002	0.001	1

*=This limit was used in the evaluation of the final result

Sample Description: QA-1-W-180906 Water
Facility# 306451
442 Gambell Street - Anchorage, AK

ChevronTexaco
ELLE Sample #: WW 9791847
ELLE Group #: 1984723
Matrix: Water

Project Name: 306451

Submittal Date/Time: 09/07/2018 10:10
Collection Date/Time: 09/06/2018

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260B	mg/l	mg/l	mg/l	
10335	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.0004	0.005	1
10335	1,1,1-Trichloroethane	71-55-6	N.D.	0.0002	0.001	1
10335	1,1,2-Trichloroethane	79-00-5	N.D.	0.0002	0.001	1
10335	Trichloroethene	79-01-6	N.D.	0.0002	0.001	1
10335	Trichlorofluoromethane	75-69-4	N.D.	0.0004	0.001	1
10335	Vinyl Chloride	75-01-4	N.D.	0.0004	0.001	1
10335	Xylene (Total)	1330-20-7	N.D.	0.0005	0.005	1

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs	SW-846 8260B	1	N182603AA	09/17/2018 23:24	Kevin D Kelly	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N182603AA	09/17/2018 23:24	Kevin D Kelly	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: ChevronTexaco
Reported: 09/19/2018 12:41

Group Number: 1984723

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

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

Method Blank

Analysis Name	Result	MDL**	LOQ
	mg/l	mg/l	mg/l
Batch number: N182603AA	Sample number(s): 9791844-9791847		
Acetone	N.D.	0.0008	0.020
Benzene	N.D.	0.0002	0.001
Bromodichloromethane	N.D.	0.0002	0.001
Bromoform	N.D.	0.002	0.005
Bromomethane	N.D.	0.0005	0.001
2-Butanone	N.D.	0.001	0.010
Carbon Disulfide	N.D.	0.0003	0.005
Carbon Tetrachloride	N.D.	0.0002	0.001
Chlorobenzene	N.D.	0.0002	0.001
Chloroethane	N.D.	0.0003	0.001
Chloroform	N.D.	0.0002	0.001
Chloromethane	N.D.	0.0003	0.001
Cyclohexane	N.D.	0.002	0.005
1,2-Dibromo-3-chloropropane	N.D.	0.001	0.005
Dibromochloromethane	N.D.	0.0004	0.001
1,2-Dibromoethane	N.D.	0.0003	0.001
1,2-Dichlorobenzene	N.D.	0.0002	0.005
1,3-Dichlorobenzene	N.D.	0.0002	0.005
1,4-Dichlorobenzene	N.D.	0.0002	0.005
Dichlorodifluoromethane	N.D.	0.0003	0.001
1,1-Dichloroethane	N.D.	0.0002	0.001
1,2-Dichloroethane	N.D.	0.002	0.005
1,1-Dichloroethene	N.D.	0.0002	0.001
cis-1,2-Dichloroethene	N.D.	0.0002	0.001
trans-1,2-Dichloroethene	N.D.	0.0002	0.001
1,2-Dichloropropane	N.D.	0.0002	0.001
cis-1,3-Dichloropropene	N.D.	0.0002	0.001
trans-1,3-Dichloropropene	N.D.	0.0002	0.001
Ethylbenzene	N.D.	0.0002	0.001
Freon 113	N.D.	0.002	0.010
2-Hexanone	N.D.	0.003	0.010
Isopropylbenzene	N.D.	0.0003	0.005
Methyl Acetate	N.D.	0.0006	0.005
Methyl Tertiary Butyl Ether	N.D.	0.0002	0.001
4-Methyl-2-pentanone	N.D.	0.0005	0.010
Methylcyclohexane	N.D.	0.0002	0.005
Methylene Chloride	N.D.	0.0002	0.001
Styrene	N.D.	0.0002	0.005
1,1,1,2-Tetrachloroethane	N.D.	0.0002	0.001

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco
Reported: 09/19/2018 12:41

Group Number: 1984723

Method Blank (continued)

Analysis Name	Result	MDL**	LOQ
	mg/l	mg/l	mg/l
Tetrachloroethene	N.D.	0.0002	0.001
Toluene	N.D.	0.0002	0.001
1,2,4-Trichlorobenzene	N.D.	0.0004	0.005
1,1,1-Trichloroethane	N.D.	0.0002	0.001
1,1,2-Trichloroethane	N.D.	0.0002	0.001
Trichloroethene	N.D.	0.0002	0.001
Trichlorofluoromethane	N.D.	0.0004	0.001
Vinyl Chloride	N.D.	0.0004	0.001
Xylene (Total)	N.D.	0.0005	0.005

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	mg/l	mg/l	mg/l	mg/l					
Batch number: N182603AA	Sample number(s): 9791844-9791847								
Acetone	0.150	0.175	0.150	0.177	117	118	54-157	1	30
Benzene	0.0200	0.0220	0.0200	0.0225	110	112	80-120	2	30
Bromodichloromethane	0.0200	0.0193	0.0200	0.0197	97	98	71-120	2	30
Bromoform	0.0200	0.0159	0.0200	0.0160	79	80	51-120	1	30
Bromomethane	0.0200	0.0178	0.0200	0.0180	89	90	53-128	1	30
2-Butanone	0.150	0.132	0.150	0.136	88	91	59-135	3	30
Carbon Disulfide	0.0200	0.0186	0.0200	0.0187	93	93	65-128	0	30
Carbon Tetrachloride	0.0200	0.0193	0.0200	0.0194	96	97	64-134	1	30
Chlorobenzene	0.0200	0.0223	0.0200	0.0229	112	114	80-120	2	30
Chloroethane	0.0200	0.0198	0.0200	0.0205	99	103	55-123	4	30
Chloroform	0.0200	0.0210	0.0200	0.0215	105	108	80-120	2	30
Chloromethane	0.0200	0.0174	0.0200	0.0175	87	88	56-121	1	30
Cyclohexane	0.0200	0.0165	0.0200	0.0167	82	84	68-126	2	30
1,2-Dibromo-3-chloropropane	0.0200	0.0176	0.0200	0.0168	88	84	47-131	5	30
Dibromochloromethane	0.0200	0.0192	0.0200	0.0195	96	97	71-120	1	30
1,2-Dibromoethane	0.0200	0.0206	0.0200	0.0215	103	107	77-120	4	30
1,2-Dichlorobenzene	0.0200	0.0216	0.0200	0.0217	108	108	80-120	1	30
1,3-Dichlorobenzene	0.0200	0.0209	0.0200	0.0213	105	107	80-120	2	30
1,4-Dichlorobenzene	0.0200	0.0219	0.0200	0.0219	109	109	80-120	0	30
Dichlorodifluoromethane	0.0200	0.0120	0.0200	0.0118	60	59	41-127	2	30
1,1-Dichloroethane	0.0200	0.0207	0.0200	0.0210	104	105	80-120	1	30
1,2-Dichloroethane	0.0200	0.0210	0.0200	0.0213	105	106	73-124	1	30
1,1-Dichloroethene	0.0200	0.0220	0.0200	0.0222	110	111	80-131	1	30
cis-1,2-Dichloroethene	0.0200	0.0216	0.0200	0.0221	108	111	80-120	3	30
trans-1,2-Dichloroethene	0.0200	0.0216	0.0200	0.0215	108	107	80-120	1	30
1,2-Dichloropropane	0.0200	0.0217	0.0200	0.0224	108	112	80-120	3	30

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: ChevronTexaco
Reported: 09/19/2018 12:41

Group Number: 1984723

LCS/LCSD (continued)

Analysis Name	LCS Spike Added mg/l	LCS Conc mg/l	LCSD Spike Added mg/l	LCSD Conc mg/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
cis-1,3-Dichloropropene	0.0200	0.0188	0.0200	0.0191	94	96	75-120	2	30
trans-1,3-Dichloropropene	0.0200	0.0188	0.0200	0.0192	94	96	67-120	2	30
Ethylbenzene	0.0200	0.0213	0.0200	0.0217	107	108	80-120	2	30
Freon 113	0.0200	0.0192	0.0200	0.0193	96	96	73-139	1	30
2-Hexanone	0.100	0.0901	0.100	0.0921	90	92	56-135	2	30
Isopropylbenzene	0.0200	0.0201	0.0200	0.0207	101	104	80-120	3	30
Methyl Acetate	0.0200	0.0200	0.0200	0.0199	100	100	54-136	1	30
Methyl Tertiary Butyl Ether	0.0200	0.0176	0.0200	0.0181	88	90	69-122	3	30
4-Methyl-2-pentanone	0.100	0.0862	0.100	0.0887	86	89	62-133	3	30
Methylcyclohexane	0.0200	0.0165	0.0200	0.0167	82	84	67-121	1	30
Methylene Chloride	0.0200	0.0215	0.0200	0.0217	108	109	80-120	1	30
Styrene	0.0200	0.0199	0.0200	0.0202	99	101	80-120	2	30
1,1,2,2-Tetrachloroethane	0.0200	0.0222	0.0200	0.0228	111	114	72-120	3	30
Tetrachloroethene	0.0200	0.0206	0.0200	0.0210	103	105	80-120	2	30
Toluene	0.0200	0.0220	0.0200	0.0222	110	111	80-120	1	30
1,2,4-Trichlorobenzene	0.0200	0.0170	0.0200	0.0168	85	84	63-120	1	30
1,1,1-Trichloroethane	0.0200	0.0197	0.0200	0.0199	98	100	67-126	1	30
1,1,2-Trichloroethane	0.0200	0.0223	0.0200	0.0231	112	116	80-120	4	30
Trichloroethene	0.0200	0.0210	0.0200	0.0214	105	107	80-120	2	30
Trichlorofluoromethane	0.0200	0.0186	0.0200	0.0191	93	96	55-135	3	30
Vinyl Chloride	0.0200	0.0181	0.0200	0.0180	91	90	56-120	1	30
Xylene (Total)	0.0600	0.0642	0.0600	0.0652	107	109	80-120	2	30

Surrogate Quality Control

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

Analysis Name: TCL 4.3 VOCs
Batch number: N182603AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9791844	103	111	101	87
9791845	103	110	101	85
9791846	103	110	102	86
9791847	103	108	102	87
Blank	100	107	102	87
LCS	96	104	105	97
LCSD	96	103	104	96
Limits:	80-120	80-120	80-120	80-120

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody



Lancaster Laboratories

Acct. # 10000

For Eurofins Lancaster Laboratories use only
 Group # 1004723 Sample # 1791844-47
Instructions on reverse side correspond with circled numbers.

1 Client Information			4 Matrix			5 Analyses Requested										6 Remarks								
Facility # <u>CHEVRON 306451</u>		WBS <u>08.02</u>	<input type="checkbox"/> Sediment <input checked="" type="checkbox"/> Potable <input type="checkbox"/> Ground <input type="checkbox"/> NPDES <input type="checkbox"/> Surface <input type="checkbox"/> Oil <input type="checkbox"/> Air	<input type="checkbox"/> Soil <input type="checkbox"/> Water <input type="checkbox"/> Composite	Total Number of Containers <input checked="" type="checkbox"/> BTEX + MTBE <input type="checkbox"/> 8021 <input type="checkbox"/> 8260 <input type="checkbox"/> Naphth 8260 full scan Oxygenates TPH-GRO 8015 <input type="checkbox"/> 8260 <input type="checkbox"/> TPH-DRO Silica Gel Cleanup <input type="checkbox"/> Lead Total <input type="checkbox"/> Diss. <input type="checkbox"/> Method VPH <input type="checkbox"/> EPH <input type="checkbox"/> Method	SCR #: _____										<input type="checkbox"/> Results in Dry Weight <input type="checkbox"/> J value reporting needed <input type="checkbox"/> Must meet lowest detection limits possible for 8260 compounds <input type="checkbox"/> 8021 MTBE Confirmation <input type="checkbox"/> Confirm MTBE + Naphthalene <input type="checkbox"/> Confirm highest hit by 8260 <input type="checkbox"/> Confirm all hits by 8260 <input type="checkbox"/> Run ___ oxy's on highest hit <input type="checkbox"/> Run ___ oxy's on all hits								
Site Address <u>442 GAMBELL STREET, ANCHORAGE, AK</u>		Chevron PM <u>ERIC HEYRICK</u>				Lead Consultant <u>GHD</u>																		
Consultant/Office <u>5610 SILVERADO WAY, JTE A2, ANCHORAGE, AK</u>		Consultant Project Mgr. <u>SOBHAN PRITCHARD</u>				Consultant Phone # <u>(726) 974-0963</u>																		
Sampler <u>O. YAN/T. WEAVER</u>		3																						
2 Sample Identification		Collected				Grab	Composite																	
Date	Time																							
<u>MW-9-W-180906</u>	<u>9/6/18</u>	<u>1025</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>3</u>	<input checked="" type="checkbox"/>																	email results to: sibhan.pritchard@ghd.com
<u>MW-8-W-180906</u>	<u>9/6/18</u>	<u>1113</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>3</u>	<input checked="" type="checkbox"/>																	
<u>Dup-1-W-180906</u>	<u>9/6/18</u>	<u>-</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>3</u>	<input checked="" type="checkbox"/>																	
<u>OA-1-W-180906</u>	<u>-</u>	<u>-</u>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<u>2</u>	<input checked="" type="checkbox"/>																	
7 Turnaround Time Requested (TAT) (please circle)			Relinquished by <u>[Signature]</u>		Date <u>09/6/18</u>	Time <u>1230</u>	Received by <u>[Signature]</u>		Date	Time	9													
Standard 5 day 4 day 72 hour 48 hour 24 hour			Relinquished by _____		Date	Time	Received by _____		Date	Time														
8 Data Package (circle if required)		EDD (circle if required)		Relinquished by Commercial Carrier:			Received by <u>[Signature]</u>		Date <u>9-7-18</u>	Time <u>1010</u>														
Type I - Full		Alaska/Type III		UPS _____ FedEx <input checked="" type="checkbox"/> Other _____			Custody Seals Intact?		Yes <input checked="" type="checkbox"/> No															
Type VI (Raw Data)		Other: _____		Temperature Upon Receipt <u>1.1</u> °C																				



Client: GHD

Delivery and Receipt Information

Delivery Method:	<u>Fed Ex</u>	Arrival Timestamp:	<u>09/07/2018 10:10</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>AK</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace \geq 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCI
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Melvin Sanchez (8943) at 14:29 on 09/07/2018

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

<u>Cooler #</u>	<u>Thermometer ID</u>	<u>Corrected Temp</u>	<u>Therm. Type</u>	<u>Ice Type</u>	<u>Ice Present?</u>	<u>Ice Container</u>	<u>Elevated Temp?</u>
1	DT146	1.1	DT	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

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

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
C	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	µg	microgram(s)
lb.	pound(s)	µL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

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

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

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

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Data Qualifiers

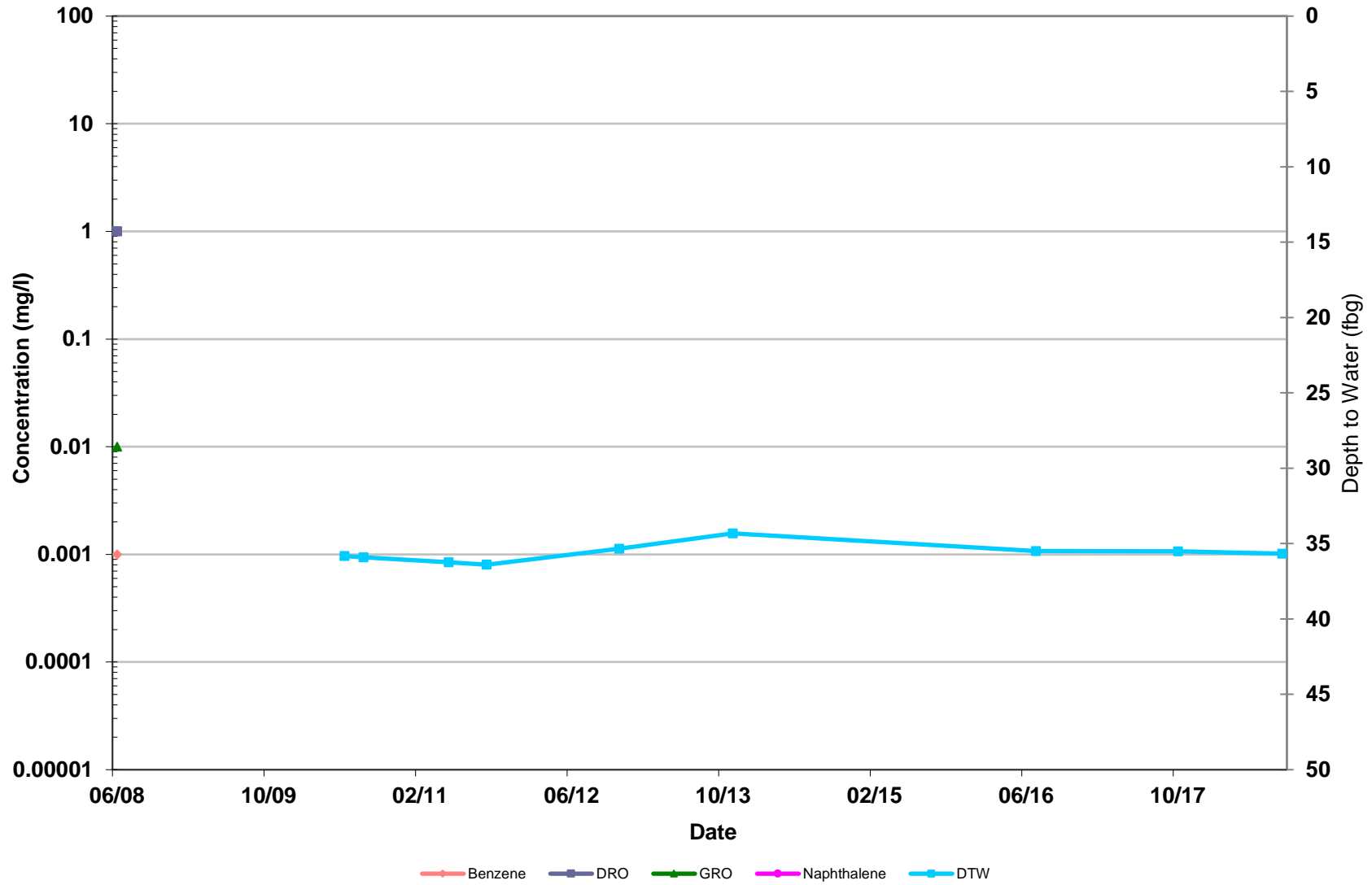
Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
P^	Concentration difference between the primary and confirmation column $> 40\%$. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Appendix E

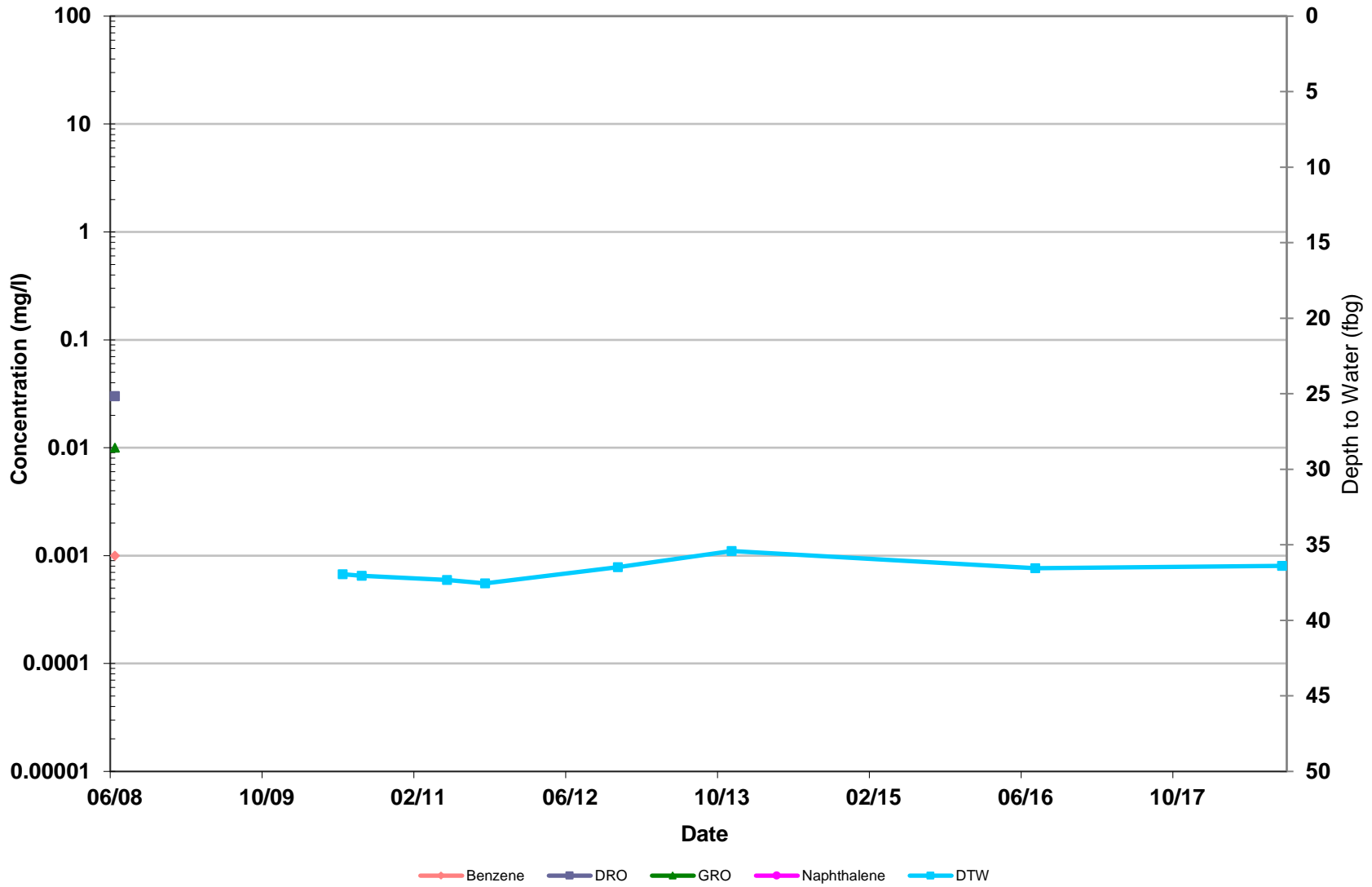
Petroleum Hydrocarbon Concentration Graphs

MW-1



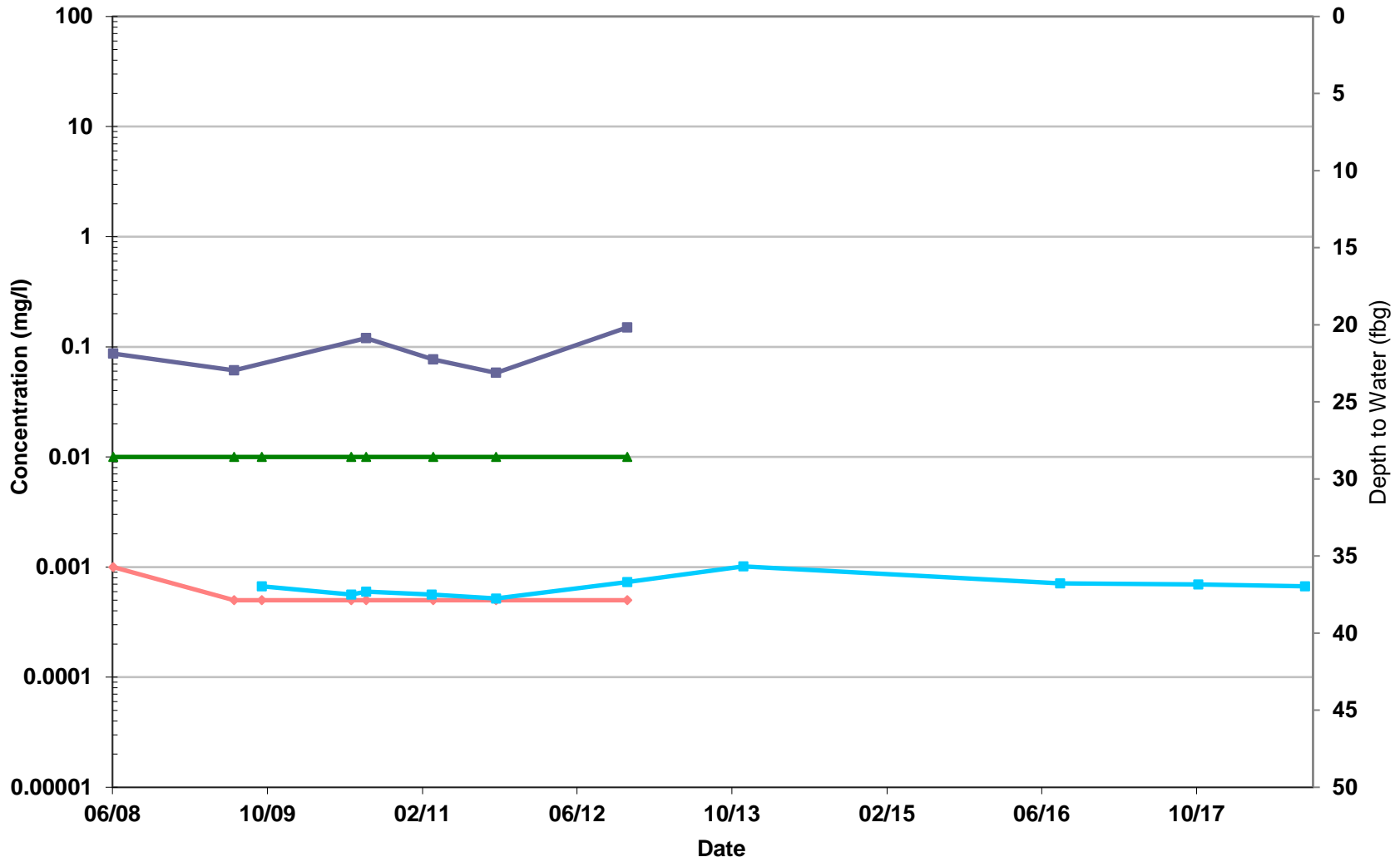
Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska

MW-2



Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska

MW-3

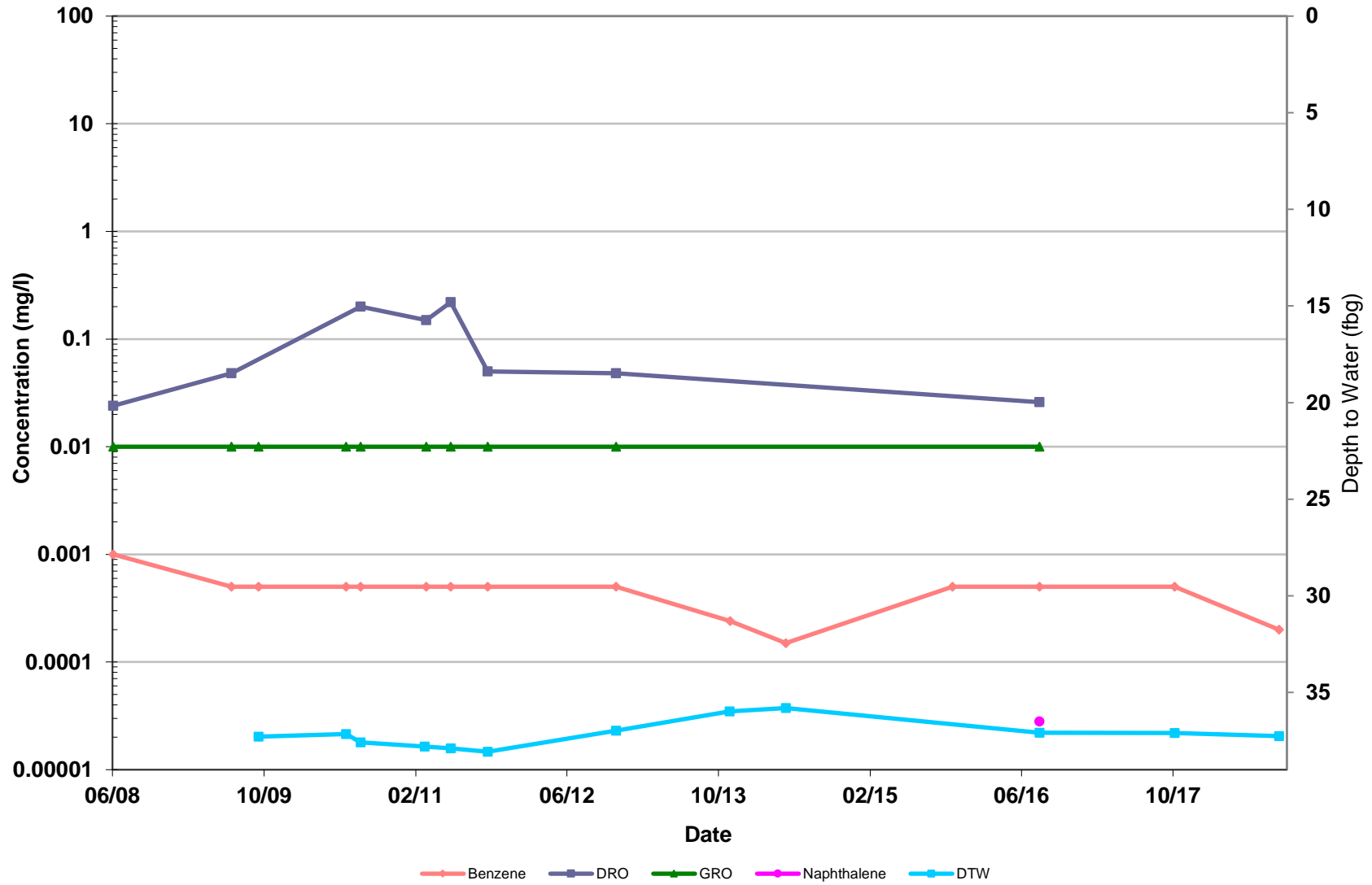


— Benzene — DRO — GRO — Naphthalene — DTW



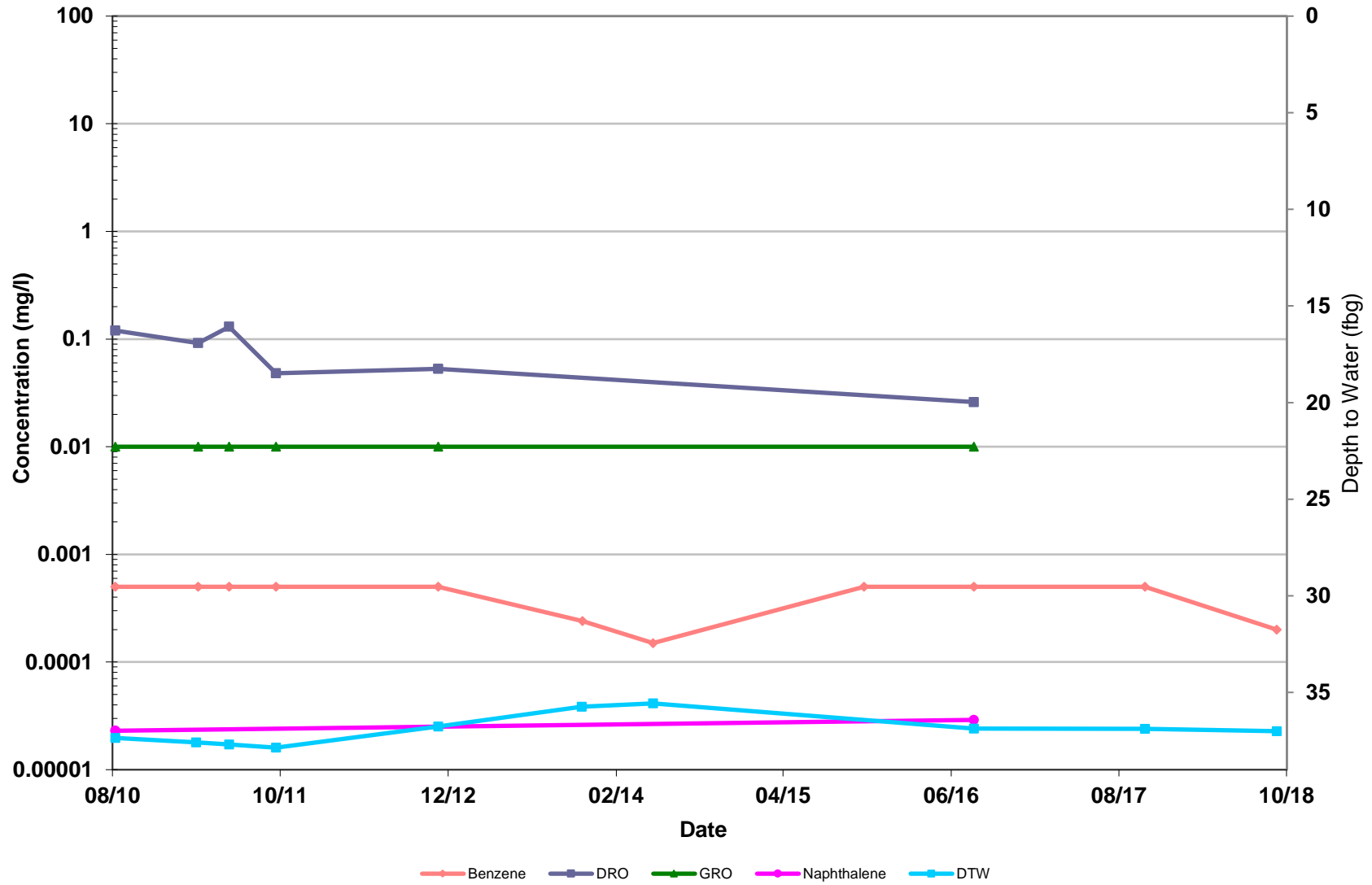
Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska

MW-8



Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska

MW-9



Former Unocal #5580/ Cline's Tesoro
442 Gambell Street
Anchorage, Alaska

Appendix F

ADEC Laboratory Data Review Checklist and Memorandum

Laboratory Data Review Checklist

Completed by:

J Cloud

Title:

Project Chemist

Date:

October 03, 2018

CS Report Name:

Annual 2018 Groundwater
Monitoring Report

Report Date:

September 19, 2018

Consultant Firm:

GHD Services Inc.

Laboratory Name:

Eurofins Lancaster Laboratories Environmental

Laboratory Report Number:

1984723

ADEC File Number:

2100.26.112

Hazard Identification Number:

23368

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No Comments:

Samples not transferred

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No Comments:

b. Correct analyses requested?

Yes No Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No Comments:

No discrepancies

e. Data quality or usability affected?

Comments:

None

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

No discrepancies

c. Were all corrective actions documented?

Yes No

Comments:

No discrepancies

d. What is the effect on data quality/usability according to the case narrative?

Comments:

None

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

b. All applicable holding times met?

Yes No

Comments:

c. All soils reported on a dry weight basis?

Yes No

Comments:

No soils

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No

Comments:

e. Data quality or usability affected?

Comments:

None

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

Yes No

Comments:

iii. If above LOQ, what samples are affected?

Comments:

No affected samples

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

No affected samples

v. Data quality or usability affected?

Comments:

None

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No

Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No

Comments:

No metals/inorganics

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

No affected samples

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No Comments:

No affected samples

vii. Data quality or usability affected?

Comments:

None

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No Comments:

No failed surrogates

iv. Data quality or usability affected?

Comments:

None

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and cooler?

Yes No

Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
(If not, a comment explaining why must be entered below)

Yes No

Comments:

iii. All results less than LOQ?

Yes No

Comments:

Acetone was detected at a low concentration

iv. If above LOQ, what samples are affected?

Comments:

MW-8

v. Data quality or usability affected?

Comments:

The acetone result for sample MW-8 was qualified as non-detect due to contamination as evidenced by the blank

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

- iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No Comments:

- iv. Data quality or usability affected?

Comments:

- f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)

Yes No Not Applicable

- i. All results less than LOQ?

Yes No Comments:

- ii. If above LOQ, what samples are affected?

Comments:

- iii. Data quality or usability affected?

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

- a. Defined and appropriate?

Yes No Comments:



Memorandum

October 9, 2018

To: ADEC Ref. No.: 621048

From: Jeffrey Cloud  Tel: 206-914-3141

CC: Siobhan Pritchard

**Subject: QA/QC Review
ChevronTexaco Site 306451
Job # 1984723
September 2018**

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in Anchorage, Alaska during September 2018. Samples were submitted to Eurofins Lancaster Laboratories Environmental, located in Lancaster, Pennsylvania.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody form, finished report forms, method blank data, recovery data from surrogate spikes, laboratory control samples and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical method and applicable guidance from the document entitled "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review", USEPA 540-R-08-01, June 2008 subsequently referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criterion and sample preservation requirements for the analysis are summarized in the method. The sample chain of custody document and analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

All samples were properly preserved, delivered on ice and stored by the laboratory at the required temperature (0-6°C).



3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries

In accordance with the method employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compound (VOC) analysis were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against the control limits. All surrogate recoveries met the associated criteria.

5. Laboratory Control Sample Analyses

Laboratory control samples (LCS)/laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the method employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS/LCSD contained all analytes of interest. All LCS/LCSD recoveries and RPDs were within associated control limits, demonstrating acceptable analytical accuracy and precision.

6. Field QA/QC Samples

The field QA/QC consisted of one trip blank sample and one field duplicate sample set.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank was submitted to the laboratory for analysis. All results were non-detect for the analytes of interest



with the exception of acetone present at a low concentration. The acetone result for sample MW-8 was qualified as non-detect due to contamination as evidenced by the blank.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample was collected and submitted "blind" to the laboratory. The RPDs associated with the duplicate sample must be less than 50 percent. If the reported concentration in both the investigative sample and its duplicate is less than five times the reporting limit (RL), the evaluation criterion is one times the RL value.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

7. Analyte Reporting

Non-detect data were reported down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were reported as estimated (J).

8. Conclusion

Based on the assessment detailed in the foregoing, the summarized data are acceptable with the specific qualification noted herein.