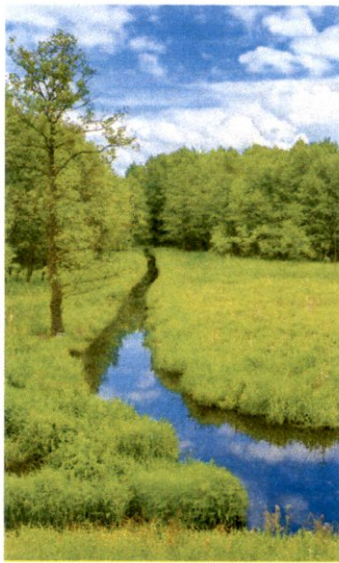


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Report

REVISED CONCEPTUAL SITE MODEL

Chevron Station 96489
1304 Airport Heights Drive
Anchorage, Alaska
ADEC File ID: 2100.26.066

Prepared for: Alaska Department of Environmental
Conservation

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Department of
Environmental Conservation

Conestoga-Rovers & Associates

14998 West 6th Avenue, Suite 800
Golden, Colorado 80401

March 2015 • 620916 • Report No. 23





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Prepared for:

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LIST OF ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation.
BTEX	benzene, toluene, ethylbenzene, and xylenes
COPCs	contaminants of potential concern
CRA	Conestoga-Rovers & Associates
CSM	conceptual site model
DRO	diesel range organics
ft bgs	feet below graded surface
GRO	gasoline range organics
mg/kg	milligrams per kilogram
mg/L	milligrams per Liter
PCB	polychlorinated biphenyls
PCE	tetrachloroethene
P.G.	Professional Geologist
RRO	residual range organics
TPH	total petroleum hydrocarbons
USTs	underground storage tanks
VOCs	volatile organic compounds

Section 1.0 Introduction

Conestoga-Rovers & Associates (CRA) is submitting this *Revised Conceptual Site Model* (CSM) to the Alaska Department of Environmental Conservation (ADEC) on behalf of Chevron Environmental Management Company (Chevron) for Chevron station 96489, located at 1304 Airport Heights Drive in Anchorage, Alaska (Figure 1). This Conceptual Site Model (CSM) was written in accordance with ADEC's October 2010 *Policy Guidance on Developing Conceptual Site Models* and ADEC's October 2012 *Vapor Intrusion Guidance for Contaminated Sites* with the purpose of describing and evaluating current and possible future spread of contamination in the environment.

Section 2.0 Site Background

2.1 Site Characterization

The site is an active Chevron-branded service station located at 1304 Airport Heights Drive on the southwest corner of Airport Heights Drive and Debarr Road in Anchorage, Alaska (Figure 1). The property's legal description is SAXTON BLOCK 1 LOT 14A. Site latitude and longitude are 61.209511° north and 149.823313° west. In 1998, five underground storage tanks (USTs), dispenser islands, and product piping were removed and replaced. Currently, station facilities include two USTs, dispenser islands, product piping and a station building with three auto service bays. Three onsite and three offsite groundwater monitoring wells are currently sampled semiannually. Site photos are presented as Appendix A. Site environmental history is presented as Appendix B.

2.2 Contaminants of Potential Concern and Cleanup Levels

Site contaminants of potential concern (COPCs) are gasoline range organics (GRO) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). ADEC Table C Groundwater Cleanup Levels (*Title 18 Alaska Administrative Code (AAC) 75.345*), ADEC Method Two Soil Cleanup Levels, Tables B1 and B2, under 40-inch zone, migration to groundwater (*Title 18 AAC 75.341*), and ADEC Target Levels for Deep Soil Gas (*Vapor Intrusion Guidance, Appendix F*) establish site groundwater, soil, and soil gas cleanup levels.

2.3 Site Hydrogeology

The site is located in south central Alaska, between the northern Knik Arm and the southern Turnagain Arm of the Cook Inlet. Cook Inlet is located approximately one and a half miles downgradient from the site. Historical static groundwater depths have ranged between 24.94 to 29.39 feet below graded surface (ft bgs) according to groundwater data from 1999 to present. Static groundwater depths ranged from 25.95 (MW-4) to 27.88 ft bgs (MW-11) on November 6, 2014. Groundwater flow was to the northwest with a gradient of 0.004, which is consistent with historical data.

Section 3.0 Release Information

3.1 Sources

Benzene, toluene, ethylbenzene, and xylenes (BTEX) and GRO are presumed to have originated from five former USTs and three fuel dispensers that were removed from the property as part of a station upgrade in 1998. Locations of impacted soil are presented on figure 2. Historical soil analytical results are presented in Table 1.

Gasoline USTs and fuel dispensers

The three 10,000-gallon gasoline USTs were reportedly in good condition upon removal with no visible cracks or holes. Hydrocarbon impacted soil was observed beneath the fill ports of T1 and T2 and the former dispenser islands. Hydrocarbon impact was confirmed with laboratory samples.

Heating and Used Oil USTs

One 1,000-gallon heating oil UST and one, 1,000-gallon used oil UST were reportedly in good condition upon removal with no visible cracks or holes. Hydrocarbon impacted soil was observed in the bottom of both oil UST pits beneath the fill ports of the tanks. Hydrocarbon impact was confirmed with laboratory samples.

3.2 Release Mechanisms

The release mechanism describes how petroleum hydrocarbons were released from the source into the environment.

Leaks

No obvious signs of leaks from the USTs or the process piping were noted during the station upgrade. All UST's were reportedly in good condition with no visible signs of cracks or holes. Soil impacts observed during excavation indicate that leaks from the gasoline UST's and dispenser islands are a release mechanism.

Spills

No reports of spills have been recorded for the property, however, soil staining indicative of spills or overfilling was observed around the fill ports of the USTs and dispenser islands. Spills are presumed to be a release mechanism for this site based on soil impacts observed during excavation.

Section 4.0 Impacted and Exposure Media

The impacted media at a site is the environmental substance which a contaminant is in contact with. Potentially impacted media evaluated in this CSM includes soil, groundwater, surface water, sediment, air, and biota. Site media impacted by petroleum hydrocarbons are surface and subsurface soil.

Exposure media is the environmental substance a receptor is exposed to. Potential exposure media evaluated in this CSM include soil, groundwater, surface water, sediment, air, and biota. Exposure media on site are soil, groundwater, and air.

4.1 Soil

Known locations of on-site impacted soil are detailed below. The areas of impacted soil described below are based on current knowledge and take into account all known soil analytical data collected to this point. A site plan showing all referenced locations is presented as Figure 2. Historical soil analytical results are presented as Table 1.

Former gasoline UST and dispenser island area

The former gasoline UST pits are located on the northwest portion of the property. Native soil samples collected from the former UST pits and soil borings indicate the presence of GRO and BTEX above ADEC soil cleanup levels. The highest recorded concentration of GRO was observed in T2-F at 18 ft bgs (1,740 mg/kg) on September 11, 1998. The highest recorded concentration of benzene was observed in MW-4 at 27 ft bgs (2.19 mg/kg) on July 2, 1999. The highest recorded concentrations of toluene and ethylbenzene were observed in T2-F at 18 ft bgs (223 and 30.7 mg/kg, respectively) on September 11, 1998. The highest recorded concentration of xylenes was in T2-F at 13 ft bgs (510 mg/kg) on September 11, 1998.

Benzene was detected in shallow soil samples collected from beneath the former dispenser islands. The maximum detected concentration of benzene was observed in D-3 at 2 ft bgs (0.294 mg/kg) on September 29, 1998. No GRO, toluene, ethylbenzene, or xylenes were detected above ADEC soil cleanup levels in samples collected from beneath the former dispenser islands.

Lead was detected above laboratory method detection limits but below ADEC soil cleanup levels in all samples collected from the former gasoline UST pits and from beneath the former dispenser islands. The highest recorded concentration of lead was observed in D-2 at 2 ft bgs (31.2 mg/kg) on September 29, 1998. Several samples collected from the former UST pit and dispenser island area during the 1998 excavation did not meet data quality objectives for benzene analysis.

Former heating oil and used oil UST area

The former heating and used oil UST pits are located on the south side of the station building. No GRO, DRO, RRO, BTEX or PCBs were detected above ADEC cleanup levels in native soil samples collected

from the former heating and waste oil UST pits. The highest recorded concentrations of DRO, RRO, and PCBs were observed in UO-F at 9.5 ft bgs (14.4, 73.9, and 0.0656 mg/kg, respectively) on September 18, 1998. Several samples collected from the former heating and used oil UST area during the 1998 excavation did not meet data quality objectives for benzene.

Soil Vapor Probe-2 (SVP-2) area

Former SVP-2 is located approximately 20 feet south of the southern end of the current gasoline USTs. The highest recorded concentration of benzene was observed in SVP-2 at 25 ft bgs (0.29 mg/kg) on September 12, 2011. No toluene, ethylbenzene, or xylenes were detected above ADEC soil cleanup levels in native soil samples collected from SVP-2.

4.2 Groundwater

BTEX and GRO have historically been COPCs in groundwater. During the most recent groundwater sampling event in November 2014, no GRO, toluene, ethylbenzene, or xylenes were detected above ADEC Table C Groundwater Cleanup Levels. Benzene was detected above cleanup levels in wells MW-4 (0.012 mg/L) and MW-7 (0.0067 mg/L). Historical groundwater analytical results are presented in Table 2.

4.3 Surface Water

Surface water transport mechanisms may include water flow, sorption to and deposition of sediments, and biota uptake. Based on distance, local topography, and petroleum hydrocarbon concentrations in groundwater, surface water bodies are not likely to be impacted.

4.4 Sediment

Based on distance, local topography, and petroleum hydrocarbon concentrations in groundwater, sediments are not likely to be impacted.

4.5 Air

BTEX, GRO, DRO, and RRO in soil and groundwater have the potential to volatilize to air. Air is a potential exposure media.

4.6 Biota

Release of petroleum hydrocarbons in site soil was not in the root zone for plants or burrowing depth for animals. Biota impact or exposure is not likely.

Section 5.0 Exposure Pathways

5.1 Direct Contact

Incidental Soil Ingestion

Petroleum hydrocarbons have been detected in surface soil between 0 and 15 ft bgs. The incidental soil ingestion exposure pathway is complete.

Dermal Absorption of Contaminants from Soil

PCBs have been detected in surface soil between 0 and 15 ft bgs and are included in Appendix B of ADEC's 2010 *Policy Guidance on Developing Conceptual Site Models*. The dermal absorption of contaminants from soil exposure pathway is complete, but insignificant.

The only confirmed presence of PCBs was recorded in the Used Oil UST pit in sample UO-F at 9.5 ft bgs (0.656 mg/kg). This concentration is less than 1/10 of the Table B1 Method Two-Soil Cleanup Levels Table, Under 40 inch zone, direct contact cleanup level which renders this pathway insignificant according to section 3.1 of ADEC's 2010 *Guidance on Developing Conceptual Site Models*.

5.2 Ingestion

Ingestion of Groundwater

Contaminants have been detected in site groundwater and may be used as a current or future drinking water source. The ingestion of groundwater is a complete exposure pathway.

Ingestion of Surface Water

Contaminants have not been detected and are not expected to be detected in surface water. Potentially affected surface water bodies are not currently used, and are not reasonably expected to be used in the future, as a drinking water source. Ingestion of surface water is an incomplete exposure pathway.

Ingestion of Wild and Farmed Foods

PCBs and lead have been detected in site soil samples and are included in Appendix C of the ADEC's October 2010 *Policy Guidance on Developing Conceptual Site Models*. These site contaminants are located where they would have the potential to be absorbed by biota and do have the potential to bioaccumulate.

The site, however, is not in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed food. The ingestion of wild and farmed foods is an incomplete exposure pathway.

5.3 Inhalation

Inhalation of Outdoor Air

Contaminants included in Appendix D of the ADEC's October 2010 *Policy Guidance on Developing Conceptual Site Models* have been detected in surface soil between 0 and 15 ft bgs. Inhalation of outdoor air is a complete exposure pathway.

Inhalation of Indoor Air

An occupied station building is located within 30 feet of petroleum contamination and the volatile compounds present in soil are included in Appendix D of the ADEC's October 2010 *Policy Guidance on Developing Conceptual Site Models*. However, soil vapor samples collected from soil vapor probes near the station building demonstrated that VOC migration to the surface is not occurring. The inhalation of indoor air is an incomplete exposure pathway.

5.4 Additional Exposure Pathways

No additional exposure pathways were identified.

Section 6.0 Human Receptors

Potential human receptors are selected based on the present and future locations and activities of people using the site.

6.1 Residents (Adult or Child)

No known drinking water wells exist in the area of the site. Occupied residences are greater than 30 feet from petroleum contamination and greater than 100 feet from non-petroleum contamination. Area residents are not reasonably expected to be exposed to any site contaminants. Residents are not current or future receptors.

6.2 Commercial or Industrial Workers

Contaminants included in Appendix D of the ADEC's October 2010 *Policy Guidance on Developing Conceptual Site Models* have been detected in surface soil between 0 and 15 ft bgs. Commercial or industrial workers are current and future potential receptors.

6.3 Construction Workers

Contaminants included in Appendix D of the ADEC's October 2010 *Policy Guidance on Developing Conceptual Site Models* have been detected in surface soil between 0 and 15 ft bgs. Construction workers are current and future potential receptors.

6.4 Subsistence Harvester and Consumer

The Cook Inlet is located approximately two miles downgradient of the site and is regularly used for sport and subsistence fishing; however surface water is an incomplete exposure pathway. Subsistence harvesters and consumers are not current or future receptors.

6.5 Site Visitors, Trespassers, and Recreational Users

Contaminants included in Appendix D of the ADEC's October 2010 *Policy Guidance on Developing Conceptual Site Models* have been detected in surface soil between 0 and 15 ft bgs. Site visitors, trespassers, and recreational users are current and future receptors.

Section 7.0 Conclusions

Incidental soil ingestion, dermal absorption of contaminants from soil, ingestion of groundwater, and inhalation of outdoor air were identified as complete exposure pathways. Commercial workers, construction workers, site visitors, trespassers, and recreational users are considered current and future potential receptors.

Section 8.0 References

Alaska Department of Environmental Conservation, October 2010, *Policy Guidance on Developing Conceptual Site Models*.

Alaska Department of Environmental Conservation, October 2012, *Vapor Intrusion Guidance for Contaminated Sites*.

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SECOR International Incorporated, May 4, 1999, *Well Abandonment and Removal of USTs and Product Lines*.

SECOR International Incorporated, September 7, 1999, *Site Assessment Report*.

SECOR International Incorporated, April 18, 2001, *Site Assessment Report*.

SECOR International Incorporated, July 2, 2003, *Well Installation Report*.

Figures

Figure 1: Vicinity Map

Figure 2: Site Plan

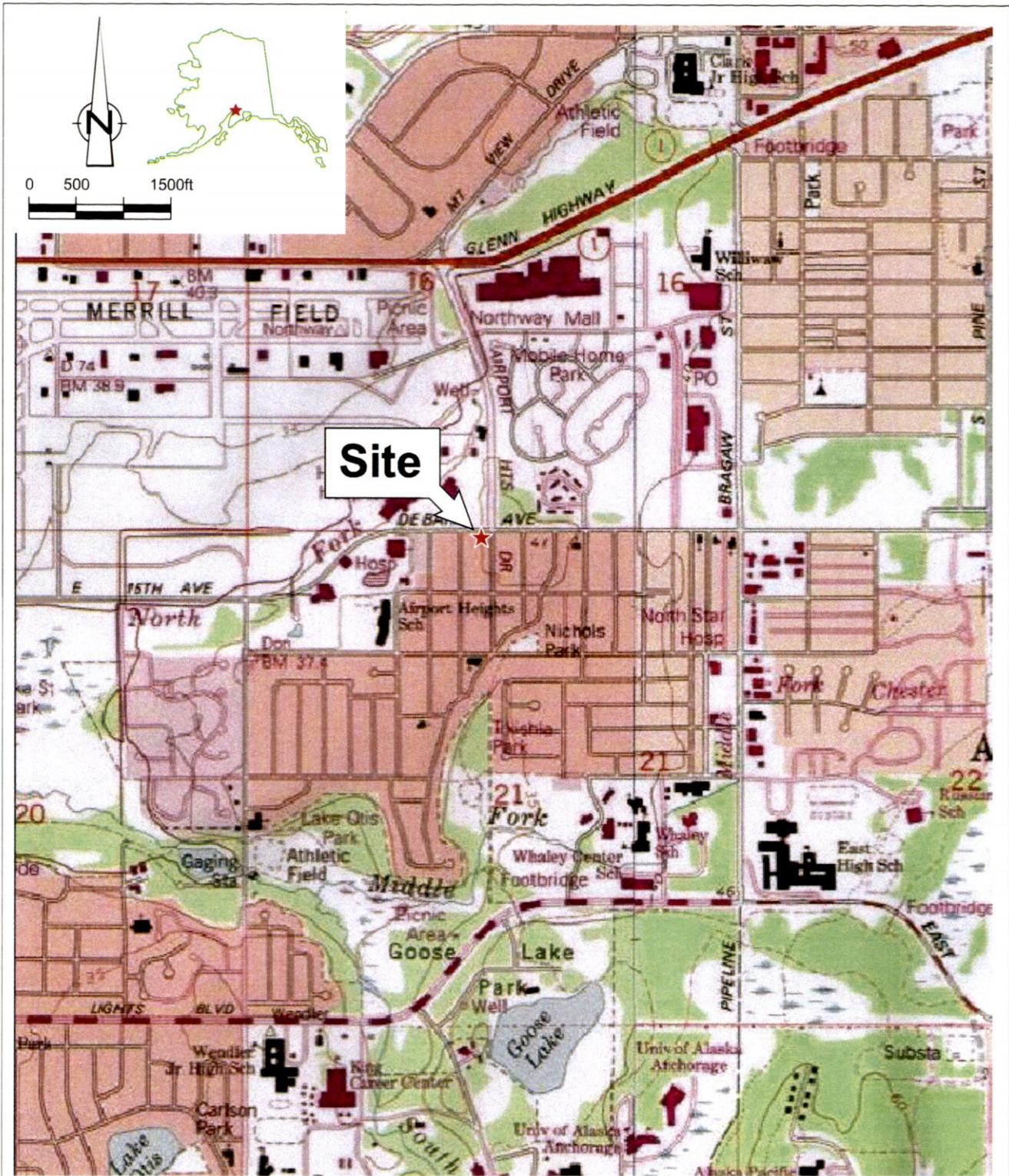


Figure 1
 VICINITY MAP
 CHEVRON-BRANDED SERVICE STATION 96489
 1304 Airport Heights Drive
 Anchorage, Alaska



EXPLANATION

- MW-5 ● Monitoring well location
- UO-C ▲ Soil sample location
- MW-2 ■ Destroyed well location
- SVP-1 ⊗ Decommissioned soil vapor probe

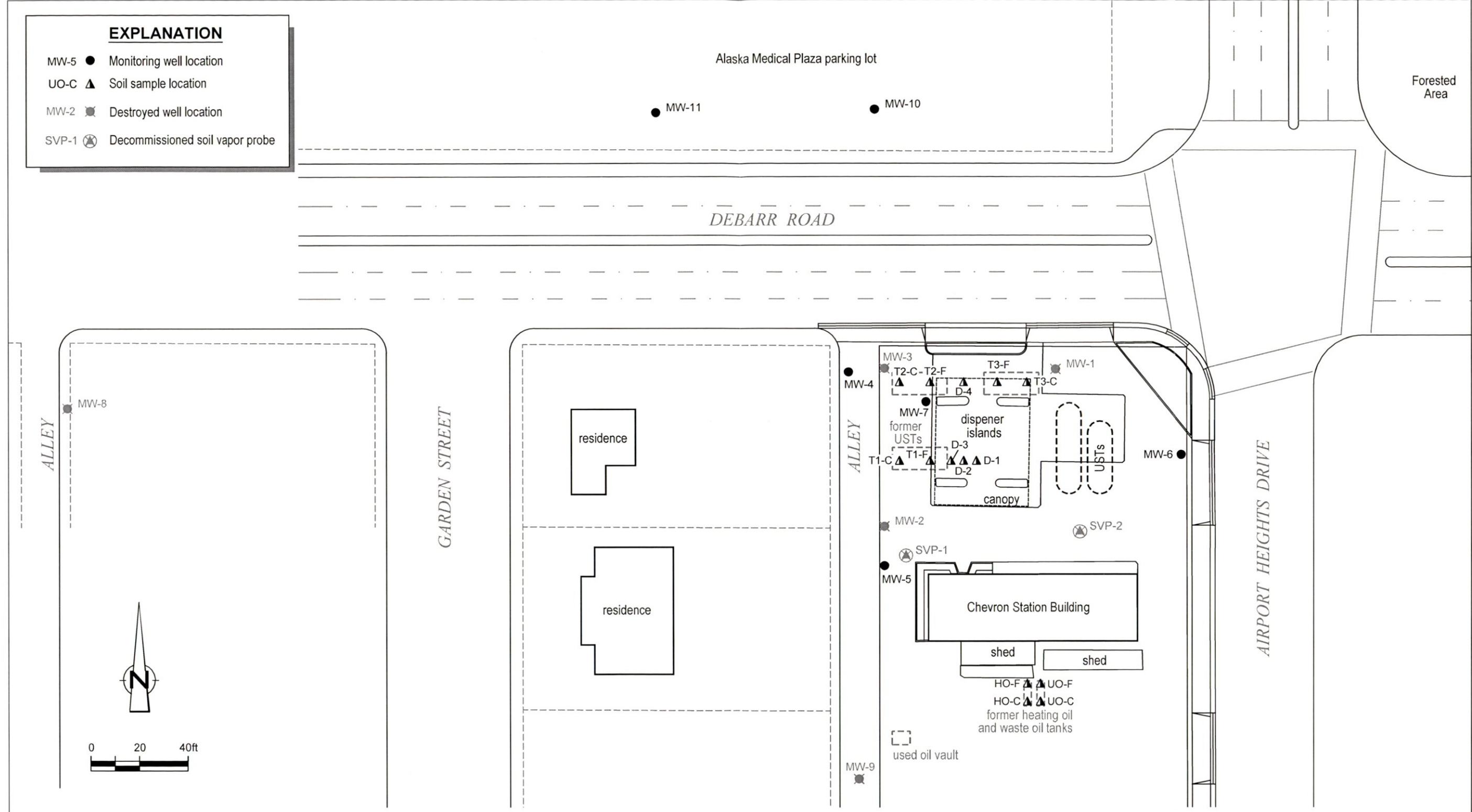


Figure 2
SITE PLAN
CHEVRON-BRANDED SERVICE STATION 96489
1304 AIRPORT HIEGHTS DRIVE
Anchorage, Alaska



Tables

Table 1: Historical Soil Analytical Data

Table 2: Historical Groundwater Analytical Data

Table 3: Soil Gas Analytical Results for VOCs

TABLE 1
 HISTORICAL SOIL ANALYTICAL RESULTS
 CHEVRON-BRANDED SERVICE STATION 96489
 1304 AIRPORT HEIGHTS DRIVE
 ANCHORAGE, ALASKA

Sample ID	Date Sampled	Sample Depth (ft)	GRO	DRO	RRO	Benzene	Toluene	Ethylbenzene	Xylenes	BTEX (total)	PCB	MTBE	Benzene low	Benzene high	Toluene low	Toluene high	Ethylbenzene low	Ethylbenzene high	Xylenes low	Xylenes high	Lead (total)	
ADEC Method II Cleanup Levels*			300	250	9700	0.025	6.5	6.9	63				1.3	0.025	0.025	6.5	6.5	6.9	6.9	63	63	
ADEC Method II Cleanup Levels**											1										400	
←----- mg/kg -----→																						
MW-1	8/27/1997	25	186			ND	0.154	0.439	20.3													
MW-1	8/27/1997	30	43.1			0.0909	0.157	0.156	2.13													
MW-2	8/27/1997	20	ND			ND	ND	ND	ND													
MW-2	8/27/1997	30	ND			ND	0.0817	ND	0.166													
MW-3	8/27/1997	10	ND			ND	ND	ND	ND													
MW-3	8/27/1997	20	ND			ND	ND	ND	ND													
MW-3	8/27/1997	30	ND			ND	0.0702	ND	0.103													
T1-C	9/11/1998	13	<5.0	--	--	<0.05	0.14	<0.05	0.452	0.592	--										5.09	
T1-F	9/11/98	13	137	--	--	<0.05	3.12	<0.5	23.9	27.02	--										13.1	
T1-F	9/11/98	16	<5.0	--	--	<0.05	<0.05	<0.05	0.144	0.144	--										5.43	
T2-C	9/11/98	13	11.5	--	--	<0.05	0.141	0.0846	2.69	2.9156	--										5.98	
T2-F	9/11/98	13	1,560	--	--	<2.5	40.1	22.3	510	572.4	--										4.54	
T2-F	9/11/98	18	1,740	--	--	<10.0	223	30.7	419	672.7	--										4.73	
T3-C	9/11/98	13	<5.0	--	--	<0.05	0.149	<0.05	0.273	0.422	--										4.64	
T3-F	9/11/98	13	<5.0	--	--	<0.05	0.191	<0.05	0.829	1.02	--										4.27	
UO-C	9/18/98	9.5	<5.0	<4.0	<25.0	<0.05	<0.05	<0.05	<0.1	--	<0.05										--	
UO-F	9/18/98	9.5	<5.0	14.4	73.9	<0.05	<0.05	<0.05	<0.1	--	0.0656										--	
HO-C	9/18/98	9.5	--	--	--	--	--	--	--	--	--										--	
HO-F	9/18/98	9.5	--	--	--	--	--	--	--	--	--										--	
D-1	9/29/98	2	<5.0	--	--	<0.05	0.0995	<0.05	0.227	0.3265	--										19.6	
D-2	9/29/98	2	23.9	--	--	<0.2	<0.2	<0.2	<0.4	--	--										31.2	
D-3	9/29/98	2	30.1	--	--	0.294	2.23	0.423	3.44	6.387	--										26.2	
D-4	9/29/98	2	<5.0	--	--	<0.05	0.0728	<0.05	<0.1	0.0728	--										7.12	
MW-4@15'	7/2/99	15	<1.84	--	--	<0.02	0.06	<0.02	<0.02	--	<0.18											
MW-4@27'	7/2/99	27	23.5	--	--	2.19	5.52	0.64	3.94	--	<0.45											
MW-5@15'	7/2/99	15	<1.64	--	--	<0.02	0.04	<0.02	<0.02	--	<0.16											
MW-5@28'	7/2/99	28	91.7	--	--	0.32	0.88	0.37	0.84	--	<0.19											
MW-6@15'	7/2/99	15	<1.59	--	--	<0.02	0.06	0.02	0.03	--	<0.16											
MW-6@28.5'	7/2/99	28.5	<2.08	--	--	<0.02	<0.02	<0.02	0.02	--	<0.21											
MW-7@15'	7/2/99	15	2.43	--	--	0.03	0.28	0.04	0.90	--	<0.12											
MW-7@27'	7/2/99	27	17.1	--	--	0.36	3.81	0.68	4.00	--	<0.29											
MW-8@25'	8/16/2000	25	<1.36	--	--	<0.00546	<0.0136	<0.0136	<0.0273	--	<0.0164											
MW-8@30'	8/16/2000	30	<1.47	--	--	0.00745	<0.0147	<0.0147	<0.0293	--	<0.0176											
DUP#1	8/16/2000	30	<1.24	--	--	0.0108	<0.0124	0.0136	0.0250	--	<0.0149											

TABLE 1
HISTORICAL SOIL ANALYTICAL RESULTS
CHEVRON-BRANDED SERVICE STATION 96489
1304 AIRPORT HEIGHTS DRIVE
ANCHORAGE, ALASKA

Sample ID	Date Sampled	Sample Depth (ft)	GRO	DRO	RRO	Benzene	Toluene	Ethylbenzene	Xylenes	BTEX (total)	PCB	MTBE	Benzene low	Benzene high	Toluene low	Toluene high	Ethylbenzene low	Ethylbenzene high	Xylenes low	Xylenes high	Lead (total)	
ADEC Method II Cleanup Levels*			300	250	9700	0.025	6.5	6.9	63				1.3	0.025	0.025	6.5	6.5	6.9	6.9	63	63	400
ADEC Method II Cleanup Levels**											1											
mg/kg																						
MW-9-26	6/17/02	26	<1.80	--	--	<0.00718	<0.0180	<0.0180	<0.0359		--											
MW-9-36	6/17/02	36	<2.23	--	--	<0.00892	<0.0223	<0.0223	<0.0446		--											
S-30.5	5/20/03	30.5	<0.3	--	--	<0.003	<0.003	<0.003	<0.01		--											
S-39	5/20/03	39	<0.3	--	--	<0.003	<0.003	<0.003	<0.009		--											
MW-11-11.0	7/11/06	11	<0.7	--	--	<0.007	<0.007	<0.007	<0.02		--											
MW-11-15.0	7/11/06	15	<0.6	--	--	<0.006	<0.006	<0.006	<0.02		--											
MW-11-21.0	7/11/06	21	<0.6	--	--	<0.006	<0.006	<0.006	<0.02		--											
MW-11-26.0	7/11/06	26	<0.7	--	--	<0.007	<0.007	<0.007	<0.02		--											
MW-11-28.0	7/11/06	28	<0.5	--	--	<0.005	<0.005	<0.005	<0.02		--											
MW-11-28.0 Dup (d)	7/11/06	28	<0.5	--	--	<0.005	<0.005	<0.005	<0.01		--											
SVP-1-NT-091211-20.0	9/12/2011	20	<0.6	<4.2	--						--		0.002 J	<0.032	<0.001	<0.064	<0.001	<0.064	<0.001	<0.064	<0.064	
SVP-1-NT-091211-25.0	9/12/2011	25	1.8 J	<4.2 UJ	--						--		0.011	<0.030	0.010	<0.059	0.006	<0.059	0.007	<0.059	<0.059	
DUP-1-NT-091211	9/12/2011	25	5.3 J	54 J	--						--		0.01	<0.044	0.009	0.17 J	0.004 J	0.17 J	0.003 J	0.003 J	<0.088	
SVP-2-NT-091211-20.0	9/12/2011	20	0.8 J	<4.1	--						--		0.066	0.22 J	<0.001	<0.060	<0.001	<0.060	<0.001	<0.060	<0.060	
SVP-2-NT-091211-25.0	9/12/2011	25	1.3 J	<4.1	--						--		0.16	0.29	0.001 J	<0.058	<0.001	<0.058	0.002 J	0.002 J	<0.058	
TRIP BLANK-1-NT-091211	9/12/2011	-	<0.5	-									<0.025	-	<0.050	-	<0.050	-	<0.050	-	-	
TRIP BLANK-2-NT-091211	9/12/2011	-	<0.010	-									<0.0005	-	<0.0005	-	<0.0005	-	<0.0005	-	-	
RB-1-NT-091211***	9/12/2011	-	<0.010	<0.048									<0.0005	-	<0.0005	-	<0.0005	-	<0.0005	-	-	

Abbreviations and Methods:

DRO = Diesel range organics by Alaska Series Method AK102/AK103
GRO = Gasoline range organics by Alaska Series Method AK101
BTEX = Benzene, toluene, ethylbenzene, xylenes, and tetrachloroethene by EPA Method 8260
PCB = Tetrachloroethane by Alaska method 8082
MTBE = Methyl tertiary butyl ether by EPA Method 8260
ADEC = Alaska Department of Environmental Conservation
EPA = Environmental Protection Agency
-- = Not analyzed / applicable
ND = Not detected above laboratory method detection limit
J = Estimated value.
UJ = Estimated value below detection limit.
<x = Constituent not detected above x milligrams per kilogram
* = Levels established in ADEC Method II - Soil Cleanup Levels, Tables B1 and B2, Under 40-Inch Zone, Migration to Groundwater, (ADEC, 18 AAC 75.341)
** = Levels established in ADEC Method II - Soil Cleanup Levels, Tables B1 and B2, Under 40-Inch Zone, Direct Contact, (ADEC, 18 AAC 75.341)
*** = Units in mg/L (milligrams per Liter)

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
 CHEVRON-BRANDED SERVICE STATION 96489
 1304 AIRPORT HEIGHTS DRIVE
 ANCHORAGE, ALASKA

Location	Date Units	TOC ft msl	DTW fbg	GWE ft msl	HYDROCARBONS		PRIMARY VOCS			
					GRO mg/l	Benzene mg/l	Toluene mg/l	Ethylbenzene mg/l	Total Xylenes mg/l	MTBE mg/l
ADEC Groundwater Cleanup Levels^a					2.2	0.005	1	0.7	10	0.47
MW-4	07/03/1999	131.97	27.74	104.23	9.33	0.625	0.54	0.041	0.292	<0.04
MW-4	10/12/1999	131.97	26.44	105.53	17.9	1.48	4.35	0.296	1.67	<0.125
MW-4	05/22/2000	131.97	26.21	105.76	19.2 / 9.57	1.63 / 0.809	4.02 / 1.83	0.403 / 0.0246	1.89 / 0.82	<0.1 / <0.04
MW-4	09/20/2000	131.97	26.25	105.72	47.7	3.4	13.6	<0.25	6.86	<0.5
MW-4	05/04/2001	131.97	26.90	105.07	9.32	0.63	2.28	0.202	0.904	<0.5
MW-4	09/26/2001	131.97	26.90	105.07	9.16	0.539	2.39	0.181	0.684	<0.5
MW-4	05/08/2002	131.98	-	-	-	-	-	-	-	-
MW-4	10/02/2002	131.98	26.24	105.74	-	-	-	-	-	-
MW-4	12/12/2002	131.98	25.68	106.30	5.2	0.25	1.8	0.29	0.89	0.002
MW-4	06/05/2003	131.98	26.31	105.67	4.1	0.1	1.1	0.054	0.32	<0.002
MW-4	10/02/2003	131.98	26.72	105.26	8.0	0.085	1.6	0.21	0.9	<0.002
MW-4	06/08/2004	131.98	25.97	106.01	38.0 / 25.0	0.4 / 0.24	9.4 / 5.4	0.75 / 0.44	3.6 / 2.1	-
MW-4	09/27/2004	131.98	26.55	105.43	4.6 / 13.0	0.079 / 0.12	1.8 / 2.6	0.26 / 0.38	0.91 / 1.3	-
MW-4	05/10/2005	131.98	25.97	106.01	34.0	0.19	6.5	0.76	3.8	-
MW-4	05/16/2005	131.98	26.38	105.60	17.0	0.072	2.9	0.48	2.4	-
MW-4	09/22/2006	131.98	25.84	106.14	5.7	0.078	1.1	0.19	0.85	-
MW-4	05/23/2007	131.98	26.11	105.87	3.8	0.03	0.7	0.1	0.7	-
MW-4	09/21/2007	131.98	26.14	105.84	3.1	0.03	0.6	0.1	0.5	-
MW-4	05/02/2008	131.98	26.18	105.80	0.914 / 0.878	0.0122 / 0.0115	0.152 / 0.147	0.0433 / 0.0411	0.197 / 0.184	-
MW-4	07/14/2008	98.67	25.12	73.55	16.0 / 14.0	0.1 / 0.03	1.3 / 1.0	0.7 / 0.5	3.0 / 2.6	-
MW-4	05/05/2009	98.67	25.51	73.16	8.0 / 5.9	0.092 / 0.070	0.84 / 0.64	0.40 / 0.30	1.9 / 1.4	-
MW-4	08/28/2009	98.67	25.52	73.15	9.4 / 7.8	0.14 / 0.11	1.0 / 0.86	0.49 / 0.42	2.3 / 1.9	-
MW-4	07/22/2010	98.67	25.75	72.92	0.035 J / 0.038 J	<0.0005 / <0.0005	<0.0005 / <0.0005	0.0006 J / 0.0006 J	0.0030 J / 0.0037 J	-
MW-4	09/05/2010	98.67	25.59	73.08	-	-	-	-	-	-
MW-4	09/06/2010	-	-	-	0.77 J / 0.54 J	0.0069 J / 0.0043 J	0.017 J / 0.0097 J	0.036 J / 0.023 J	0.15 J / 0.10 J	-
MW-4	06/09/2011	98.67	26.96	71.71	-	-	-	-	-	-
MW-4	06/10/2011	-	-	-	0.37 / 0.42	0.013 / 0.016	0.0008 J / 0.0009 J	0.018 / 0.021	0.060 / 0.065	-
MW-4	09/18/2011	98.67	26.50	72.17	0.58 / 0.68	0.016 / 0.020	0.0008 J / 0.0014 J	0.032 / 0.041	0.088 / 0.11	-
MW-4	05/30/2012	98.67	25.99	72.68	0.80	0.025	0.0015 J	0.036	0.15	-
MW-4	09/19/2012	98.67	26.31	72.36	0.14	0.0057	<0.0005	0.0094	0.023	-
MW-4	05/16/2013	98.67	26.31	72.36	-	-	-	-	-	-
MW-4	05/17/2013	-	-	-	2.0	0.042	0.0040	0.18	0.78	-
MW-4 ¹⁵	05/17/2013	-	-	-	0.11	0.0037	<0.00023	0.0022	0.0081	-
MW-4	09/16/2013	98.67	25.66	73.01	1.4	0.011	0.0011	0.054	0.22	-
MW-4	05/05/2014	98.67	25.94	72.73	1.1	0.0091	0.0014	0.050	0.26	-
MW-4	11/06/2014	98.67	25.95	72.72	2.1	0.012	0.0018	0.083	0.39	-
MW-5	07/03/1999	133.43	28.04	105.39	1.18	0.0063	0.0073	0.0122	0.0036	<0.002
MW-5	10/12/1999	133.43	27.75	105.68	0.098 / 0.103	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.005 / <0.005
MW-5	05/22/2000	133.43	27.50	105.93	<0.08	<0.0005	0.00175	<0.0005	<0.001	<0.002
MW-5	09/20/2000	133.43	27.57	105.86	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
MW-5	05/04/2001	133.43	28.24	105.19	<0.05	0.000639	<0.0005	<0.0005	<0.001	<0.001
MW-5	09/26/2001	133.43	-	-	-	-	-	-	-	-

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
 CHEVRON-BRANDED SERVICE STATION 96489
 1304 AIRPORT HEIGHTS DRIVE
 ANCHORAGE, ALASKA

Location	Date Units	TOC ft msl	DTW fbg	GWE ft msl	HYDROCARBONS		PRIMARY VOCS			
					GRO mg/l	Benzene mg/l	Toluene mg/l	Ethylbenzene mg/l	Total Xylenes mg/l	MTBE mg/l
ADEC Groundwater Cleanup Levels ^a					2.2	0.005	1	0.7	10	0.47
MW-5	05/08/2002	133.54	28.60	104.94	<0.05 / <0.05	<0.0002 / 0.000405	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.001 / <0.0001	<0.001 / <0.001
MW-5	10/02/2002	133.43	27.56	105.98	-	-	-	-	-	-
MW-5	06/05/2003	133.44	27.68	105.76	0.012 / 0.012	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.002 / <0.002
MW-5	10/02/2003	133.44	28.04	105.40	0.026 / 0.037	0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.002 / <0.002
MW-5	06/08/2004	133.44	27.26	106.18	0.027	0.005	<0.0005	<0.0005	<0.0005	-
MW-5	09/27/2004	133.44	27.65	105.79	0.017	0.001	<0.0005	<0.0005	<0.0005	-
MW-5	05/10/2005	133.44	27.30	106.14	0.035	0.0059	<0.0005	<0.0002	<0.0006	-
MW-5	09/27/2005	133.44	27.49	105.95	0.039	0.004	<0.0005	<0.0005	<0.0005	-
MW-5	05/16/2006	133.44	27.67	105.77	0.068 / 0.068	0.013 / 0.015	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	-
MW-5	09/22/2006	133.44	27.13	106.31	0.027	0.0094	<0.0005	<0.0005	<0.0015	-
MW-5	05/23/2007	133.44	27.42	106.02	0.01	0.003	<0.001	<0.001	<0.002	-
MW-5	09/21/2007	133.44	27.48	105.96	0.02	0.008	<0.001	<0.001	<0.002	-
MW-5	05/02/2008	133.54	27.53	106.01	<0.05	0.00677	<0.0005	<0.0005	<0.0015	-
MW-5	07/14/2008	100.17	26.51	73.66	0.08	0.03	<0.001	<0.001	<0.002	-
MW-5	05/05/2009	100.17	26.83	73.34	0.039	0.014	<0.0005	<0.0005	<0.0015	-
MW-5	08/28/2009	100.17	26.81	73.36	0.063 J	0.018	<0.0005	<0.0005	<0.0015	-
MW-5	07/22/2010	100.17	27.15	73.02	0.081 J	0.020	<0.0005	<0.0005	<0.0015	-
MW-5	09/05/2010	100.17	26.95	73.22	0.13	0.042	<0.0005	<0.0005	<0.0015	-
MW-5	06/09/2011	100.17	28.30	71.87	-	-	-	-	-	-
MW-5	06/10/2011	-	-	-	0.025 J	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-5	09/18/2011	100.17	27.88	72.29	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-5	05/30/2012	100.17	27.31	72.86	0.047 J	0.0046	<0.0005	<0.0005	<0.0015	-
MW-5	09/19/2012	100.17	27.66	72.51	<0.010	0.0012 J	<0.0005	<0.0005	<0.0015	-
MW-5	05/16/2013	100.17	27.70	72.47	-	-	-	-	-	-
MW-5	05/17/2013	-	-	-	<0.050	0.00050 J	<0.00023	<0.00024	<0.00072	-
MW-5 ^{HS}	05/17/2013	-	-	-	<0.050	0.00033 J	<0.00023	<0.00024	<0.00072	-
MW-5	09/16/2013	100.17	26.98	73.19	<0.050	0.00035 J	<0.00023	<0.00024	<0.00072	-
MW-5	05/05/2014	100.17	27.29	72.88	<0.050	<0.00015	<0.00011	<0.00016	<0.00040	-
MW-5	11/06/2014	100.17	27.24	72.93	<0.050	0.00048 J	<0.00011 J	<0.00016	<0.00040	-
MW-6	07/03/1999	133.12	27.36	105.76	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-6	10/12/1999	133.12	27.04	106.08	0.266	0.053	<0.0005	<0.0005	<0.0005	<0.005
MW-6	05/22/2000	133.12	26.79	106.33	<0.08	<0.0005	<0.0005	<0.0005	0.00147	<0.002
MW-6	09/20/2000	133.12	26.86	106.26	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
MW-6	05/04/2001	133.12	27.54	105.58	<0.05	0.0167	<0.0005	<0.0005	<0.001	<0.001
MW-6	09/26/2001	133.12	27.51	105.61	0.211	0.0694	<0.0005	<0.0005	<0.001	0.00246
MW-6	05/08/2002	133.11	27.91	105.20	0.0961	0.0367	<0.0005	<0.0005	<0.001	<0.001
MW-6	10/02/2002	133.11	26.84	106.27	-	-	-	-	-	-
MW-6	12/12/2002	133.11	26.19	106.92	0.16	0.068	<0.0005	<0.0005	<0.0005	<0.0005
MW-6	06/05/2003	133.11	26.93	106.18	0.026	0.008	<0.0005	<0.0005	<0.0005	<0.002
MW-6	10/02/2003	133.11	27.33	105.78	0.095	0.043	<0.0005	<0.0005	<0.0005	<0.002
MW-6	06/08/2004	133.11	26.52	106.59	0.21	0.14	<0.0005	<0.0005	<0.0005	-
MW-6	09/27/2004	133.11	27.02	106.09	0.048	0.018	<0.0005	<0.0005	<0.0005	-

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
CHEVRON-BRANDED SERVICE STATION 96489
1304 AIRPORT HEIGHTS DRIVE
ANCHORAGE, ALASKA

Location	Date Units	TOC ft msl	DTW fbg	GWE ft msl	HYDROCARBONS		PRIMARY VOCS			
					GRO mg/l	Benzene mg/l	Toluene mg/l	Ethylbenzene mg/l	Total Xylenes mg/l	MTBE mg/l
ADEC Groundwater Cleanup Levels^a					2.2	0.005	1	0.7	10	0.47
MW-6	05/10/2005	133.11	26.56	106.55	0.3	0.086	<0.0002	<0.0002	<0.0006	-
MW-6	09/27/2005	133.11	26.76	106.35	0.24	0.14	<0.0005	<0.0005	<0.0005	-
MW-6	05/16/2006	133.11	27.02	106.09	0.24	0.079	<0.0005	<0.0005	<0.0015	-
MW-6	09/22/2006	133.11	26.41	106.70	0.13	0.044	<0.0005	<0.0005	<0.0015	-
MW-6	05/23/2007	133.11	26.73	106.38	0.04	0.02	<0.001	<0.001	<0.002	-
MW-6	09/21/2007	133.11	26.81	106.30	0.07 / 0.07	0.03 / 0.03	<0.001 / <0.001	<0.001 / <0.001	<0.002 / <0.002	-
MW-6	05/02/2008	133.11	26.84	106.27	<0.05	0.018	<0.0005	<0.0005	<0.0015	-
MW-6	07/14/2008	99.81	25.80	74.01	0.2	0.08	<0.001	<0.001	<0.002	-
MW-6	05/05/2009	99.81	26.04	73.77	0.088	0.036	<0.0005	<0.0005	<0.0015	-
MW-6	08/28/2009	99.81	26.12	73.69	0.36	0.11	<0.0005	<0.0005	<0.0015	-
MW-6	07/22/2010	99.81	26.51	73.30	0.12	0.0066	<0.0005	<0.0005	<0.0015	-
MW-6	09/05/2010	99.81	26.31	73.50	0.24	0.021	<0.0005	<0.0005	<0.0015	-
MW-6	06/09/2011	99.81	27.57	72.24	-	-	-	-	-	-
MW-6	06/10/2011	-	-	-	0.13	0.0084	<0.0005	<0.0005	<0.0015	-
MW-6	09/18/2011	99.81	27.16	72.65	0.22	0.0057	<0.0005	<0.0005	<0.0015	-
MW-6	05/30/2012	99.81	26.51	73.30	0.17	0.012	<0.0005	<0.0005	<0.0015	-
MW-6	09/19/2012	99.81	26.91	72.90	0.41	0.031	<0.0005	<0.0005	<0.0015	-
MW-6	05/16/2013	99.81	26.91	72.90	-	-	-	-	-	-
MW-6	05/17/2013	-	-	-	<0.050	0.0027	<0.00023	<0.00024	<0.00072	-
MW-6 ^{HS}	05/17/2013	-	-	-	0.058 J	0.0054	<0.00023	<0.00024	<0.00072	-
MW-6	09/16/2013	99.81	26.25	73.56	0.16 J / 1.2 J	0.0028 J / 0.023 J	<0.00023 J / 0.0020 J	<0.00024 J / 0.095 J	<0.00072 J / 0.38 J	-
MW-6	05/05/2014	99.81	26.49	73.32	<0.050	0.00074 J	<0.00011	<0.00016	<0.00040	-
MW-6	11/06/2014	99.81	26.51	73.30	0.34/0.32	0.0019/0.0020	<0.00044 J/<0.00049 J	0.0069/0.0071	0.074/0.076	-
MW-7	07/03/1999	132.95	27.42	105.53	20.1	0.627	2.82	0.507	2.42	<0.2
MW-7	10/12/1999	132.95	27.18	105.77	22.2	1.24	4.98	0.452	2.74	<0.25
MW-7	05/22/2000	132.95	26.94	106.01	29.1	1.25	5.71	0.504	3.06	<0.2
MW-7	09/20/2000	132.95	26.99	105.96	33.2 / 24.6	1.5 / 1.44	8.52 / 5.33	0.873 / <0.1	5.04 / 4.94	<0.1 / <0.2
MW-7	05/04/2001	132.95	27.65	105.30	6.04	0.222	0.841	0.122	0.488	<0.005
MW-7	09/26/2001	132.95	27.60	105.35	8.4	0.254	1.76	0.214	1.43	<0.01
MW-7	05/08/2002	132.85	27.98	104.87	28.1	0.48	5.24	0.573	4.31	<0.025
MW-7	10/02/2002	132.85	26.96	105.89	-	-	-	-	-	-
MW-7	12/12/2002	132.84	26.37	106.47	4.9 / 12.0	0.024 / 0.32	3.9 / 4.3	0.39 / 0.48	2.2 / 2.6	0.5 / <0.001
MW-7	06/05/2003	132.84	27.04	105.80	0.83	0.012	0.14	0.017	0.13	<0.002
MW-7	10/02/2003	132.84	27.45	105.39	14.0	0.086	1.5	0.28	1.6	<0.002
MW-7	06/08/2004	132.84	26.65	106.19	73.0	0.53	15.0	2.0	12.0	-
MW-7	09/27/2004	132.84	27.11	105.73	8.7	0.066	2.3	0.31	1.7	-
MW-7	05/10/2005	132.84	26.65	106.19	26.0	0.11	4.2	0.63	3.7	-
MW-7	09/27/2005	132.84	27.15	105.69	9.6	0.088	1.3	0.22	1.6	-
MW-7	05/16/2006	132.84	27.09	105.75	12.0	0.11	1.6	0.35	2.0	-
MW-7	09/22/2006	132.84	26.52	106.32	6.0 / 5.9	0.11 / 0.12	0.77 / 0.78	0.17 / 0.17	1.1 / 1.1	-
MW-7	05/23/2007	132.84	26.81	106.03	4.9 / 2.2	0.09 / 0.04	0.6 / 0.3	0.2 / 0.08	1.1 / 0.4	-
MW-7	09/21/2007	132.84	26.83	106.01	0.9	0.03	0.1	0.03	0.2	-

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
 CHEVRON-BRANDED SERVICE STATION 96489
 1304 AIRPORT HEIGHTS DRIVE
 ANCHORAGE, ALASKA

Location	Date Units	TOC ft msl	DTW fbg	GWE ft msl	HYDROCARBONS		PRIMARY VOCS			
					GRO mg/l	Benzene mg/l	Toluene mg/l	Ethylbenzene mg/l	Total Xylenes mg/l	MTBE mg/l
ADEC Groundwater Cleanup Levels^o					2.2	0.005	1	0.7	10	0.47
MW-7	05/02/2008	132.85	26.93	105.92	20.4	0.415	3.05	0.786	4.36	-
MW-7	07/14/2008	99.54	25.86	73.68	8.2	0.04	0.02	0.5	1.8	-
MW-7	05/05/2009	99.54	26.21	73.33	5.3	0.19	0.52	0.26	1.2	-
MW-7	08/28/2009	99.54	26.21	73.33	11	0.35	0.63	0.56	3.0	-
MW-7	07/22/2010	99.54	26.52	-	3.5	0.063	0.19	0.12	1.2	-
MW-7	09/05/2010	99.54	26.35	73.19	3.0	0.044	0.13	0.091	0.73	-
MW-7	06/09/2011	99.54	27.70	-	-	-	-	-	-	-
MW-7	06/10/2011	-	-	-	0.86	0.014	0.022	0.039	0.26	-
MW-7	09/18/2011	99.54	27.24	72.30	0.84	0.012	0.013	0.031	0.24	-
MW-7	05/30/2012	99.54	26.68	72.86	0.16 J / 0.49 J	0.0019 J / 0.0037	0.0005 J / 0.0029 J	0.0033 J / 0.012 J	0.035 J / 0.11 J	-
MW-7	09/19/2012	99.54	27.04	72.50	0.041 J / 0.039 J	0.0007 J / 0.0008 J	<0.0005 / <0.0005	0.0013 J / 0.0015 J	0.010 / 0.012	-
MW-7	05/16/2013	99.54	27.01	72.53	-	-	-	-	-	-
MW-7	05/17/2013	-	-	-	0.41 / 0.54	0.0054 / 0.0042	0.0017 / 0.0016	0.025 / 0.023	0.15 / 0.14	-
MW-7 ^{HS}	05/17/2013	-	-	-	0.55 / 0.52	0.0034 / 0.0033	0.0014 / 0.0020	0.018 / 0.021	0.18 / 0.21	-
MW-7	09/16/2013	99.54	26.37	73.17	0.57	0.0022	0.00087 J	0.010	0.094	-
MW-7	05/05/2014	99.54	26.65	72.89	2.6 / 2.3	0.015 / 0.014	0.0062 / 0.0058	0.10 / 0.10	0.51 / 0.51	-
MW-7	11/06/2014	99.54	26.65	72.89	1.9 J	0.0067	0.0034	0.052	0.29	-
MW-8	09/20/2000	-	25.46	-	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
MW-8	05/04/2001	-	-	-	-	-	-	-	-	-
MW-8	06/25/2001	-	-	-	<0.05	0.000224	<0.0005	<0.0005	<0.001	<0.001
MW-8	09/26/2001	-	26.00	-	<0.05 / <0.05	<0.0002 / <0.0002	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.001 / <0.001	<0.001 / <0.001
MW-8	05/08/2002	129.94	-	-	-	-	-	-	-	-
MW-8	10/02/2002	129.94	-	-	-	-	-	-	-	-
MW-8	12/12/2002	129.95	24.94	105.01	0.029	<0.0005	<0.0005	<0.0005	<0.0005	0.055
MW-8	06/05/2003	129.95	-	-	-	-	-	-	-	-
MW-8	10/02/2003	129.95	-	-	-	-	-	-	-	-
MW-8	06/08/2004	129.95	-	-	-	-	-	-	-	-
MW-8	09/27/2004	129.95	-	-	-	-	-	-	-	-
MW-8	05/10/2005	129.95	25.18	104.77	<0.01 / <0.01	<0.0002 / <0.0002	0.0003 / <0.0002	<0.0002 / <0.0002	<0.0006 / <0.0006	-
MW-8	09/27/2005	129.95	25.35	104.60	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	-
MW-8	05/16/2006	129.95	-	-	-	-	-	-	-	-
MW-8	09/22/2006	129.95	24.99	104.96	<0.01	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-8	05/23/2007	129.95	-	-	-	-	-	-	-	-
MW-8	09/21/2007	129.95	25.36	104.59	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-8	05/02/2008	129.94	-	-	-	-	-	-	-	-
MW-8	07/14/2008	97.04	-	-	-	-	-	-	-	-
MW-8	05/05/2009	97.04	-	-	-	-	-	-	-	-
MW-9	12/12/2002	132.96	26.32	106.64	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
MW-9	06/05/2003	132.96	-	-	-	-	-	-	-	-
MW-9	10/02/2003	132.96	-	-	-	-	-	-	-	-
MW-9	06/08/2004	132.96	26.71	106.25	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	-

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
 CHEVRON-BRANDED SERVICE STATION 96489
 1304 AIRPORT HEIGHTS DRIVE
 ANCHORAGE, ALASKA

Location	Date Units	TOC ft msl	DTW fbg	GWE ft msl	HYDROCARBONS	PRIMARY VOCS				
					GRO mg/l	Benzene mg/l	Toluene mg/l	Ethylbenzene mg/l	Total Xylenes mg/l	MTBE mg/l
ADEC Groundwater Cleanup Levels ^a					2.2	0.005	1	0.7	10	0.47
MW-9	09/27/2004	132.96	-	-	-	-	-	-	-	-
MW-9	05/10/2005	132.96	-	-	-	-	-	-	-	-
MW-9	09/27/2005	132.96	-	-	-	-	-	-	-	-
MW-9	05/16/2006	132.96	-	-	-	-	-	-	-	-
MW-9	09/22/2006	132.96	-	-	-	-	-	-	-	-
MW-9	05/23/2007	132.96	26.86	106.10	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-9	09/21/2007	132.96	26.93	106.03	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-9	05/02/2008	132.96	27.00	105.96	<0.05	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-9	07/14/2008	99.67	26.00	73.67	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-9	05/14/2009	99.67	26.19	73.48	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-9	08/28/2009	Cannot Locate								
MW-10	10/02/2003	132.15	28.19	103.96	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-10	06/08/2004	132.15	28.45	103.70	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	-
MW-10	09/27/2004	132.15	26.91	105.24	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	-
MW-10	05/10/2005	132.15	28.57	103.58	<0.01	<0.0002	<0.0002	<0.0002	<0.0006	-
MW-10	09/27/2005	132.15	28.65	103.50	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	-
MW-10	05/16/2006	132.15	28.84	103.31	<0.01	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	09/22/2006	132.15	28.33	103.82	<0.01	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	05/23/2007	132.15	28.58	103.57	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-10	09/21/2007	132.15	28.60	103.55	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-10	05/02/2008	132.15	28.62	103.53	<0.05	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	07/14/2008	101.07	27.46	73.61	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-10	05/05/2009	101.07	27.97	73.10	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	08/28/2009	101.07	27.98	73.09	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	07/22/2010	101.07	28.18	72.89	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	09/05/2010	101.07	28.03	73.04	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	06/09/2011	101.07	29.39	71.68	-	-	-	-	-	-
MW-10	06/10/2011	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	09/18/2011	101.07	28.94	72.13	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	05/30/2012	101.07	28.45	72.62	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	09/19/2012	101.07	28.77	72.30	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-10	05/16/2013	101.07	28.43	72.64	-	-	-	-	-	-
MW-10	05/17/2013	-	-	-	<0.050	<0.00024	<0.00023	<0.00024	<0.00072	-
MW-10 ^{HS}	05/17/2013	-	-	-	<0.050	<0.00024	<0.00023	<0.00024	<0.00072	-
MW-10	09/16/2013	101.07	28.11	72.96	<0.050	<0.00024	<0.00023	<0.00024	<0.00072	-
MW-10	05/05/2014	101.07	28.36	72.71	<0.050	<0.00015	<0.00011	<0.00016	<0.00040	-
MW-10	11/06/2014	101.07	28.42	72.65	<0.050	<0.00015	<0.00011	<0.00016	<0.00040	-
MW-11	09/22/2006	133.42	27.74	105.68	<0.01	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	05/23/2007	133.42	27.98	105.44	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-11	09/21/2007	133.42	28.01	105.41	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-11	05/02/2008	133.42	28.02	105.40	<0.05	<0.0005	<0.0005	<0.0005	<0.0015	-

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
 CHEVRON-BRANDED SERVICE STATION 96489
 1304 AIRPORT HEIGHTS DRIVE
 ANCHORAGE, ALASKA

Location	Date Units	TOC ft msl	DTW fbg	GWE ft msl	HYDROCARBONS		PRIMARY VOCs			
					GRO mg/l	Benzene mg/l	Toluene mg/l	Ethylbenzene mg/l	Total Xylenes mg/l	MTBE mg/l
ADEC Groundwater Cleanup Levels ^a					2.2	0.005	1	0.7	10	0.47
MW-11	07/14/2008	100.14	26.87	73.27	<0.01	<0.001	<0.001	<0.001	<0.002	-
MW-11	05/05/2009	100.14	27.42	72.72	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	08/28/2009	100.14	27.41	72.73	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	07/22/2010	100.14	27.45	72.69	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	09/05/2010	100.14	27.34	72.80	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	06/09/2011	100.14	28.81	71.33	-	-	-	-	-	-
MW-11	06/10/2011	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	09/18/2011	100.14	28.33	71.81	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	05/30/2012	100.14	27.96	72.18	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	09/19/2012	100.14	28.23	71.91	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-11	05/16/2013	100.14	28.19	71.95	-	-	-	-	-	-
MW-11	05/17/2013	-	-	-	<0.050	<0.00024	<0.00023	<0.00024	<0.00072	-
MW-11 ^{HS}	05/17/2013	-	-	-	<0.050	<0.00024	<0.00023	<0.00024	<0.00072	-
MW-11	09/16/2013	100.14	27.55	72.59	<0.050	<0.00024	<0.00023	<0.00024	<0.00072	-
MW-11	05/05/2014	100.14	27.84	72.30	<0.050	<0.00015	<0.00011	<0.00016	<0.00040	-
MW-11	11/06/2014	100.14	27.88	72.26	<0.050	<0.00015	<0.00011	<0.00016	<0.00040	-
Trip Blank	10/12/1999	-	-	-	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
Trip Blank	05/22/2000	-	-	-	<0.08	<0.0005	<0.0005	<0.0005	<0.001	<0.002
Trip Blank	09/20/2000	-	-	-	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
Trip Blank	05/04/2001	-	-	-	<0.05	-	-	-	-	<0.005
Trip Blank	06/25/2001	-	-	-	<0.05	<0.0002	<0.0005	<0.0005	1.19	<0.001
Trip Blank	09/26/2001	-	-	-	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
Trip Blank	05/08/2002	-	-	-	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
Trip Blank	12/12/2002	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blank	06/05/2003	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blank	10/02/2003	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blank	06/08/2004	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	-
Trip Blank	09/27/2004	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	-
Trip Blank	05/10/2005	-	-	-	<0.01	<0.0005	<0.0002	<0.0002	<0.0006	-
Trip Blank	09/27/2005	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	-
Trip Blank	05/16/2006	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	09/24/2006	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	05/23/2007	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.002	-
Trip Blank	09/21/2007	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.002	-
Trip Blank	05/02/2008	-	-	-	<0.05	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	07/14/2008	-	-	-	<0.01	<0.001	<0.001	<0.001	<0.002	-
Trip Blank	04/29/2009	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	08/19/2009	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	07/22/2010	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	08/27/2010	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	06/10/2011	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	09/07/2011	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-

TABLE 2

HISTORICAL GROUNDWATER ANALYTICAL RESULTS
 CHEVRON-BRANDED SERVICE STATION 96489
 1304 AIRPORT HEIGHTS DRIVE
 ANCHORAGE, ALASKA

Location	Date	TOC	DTW	GWE	HYDROCARBONS		PRIMARY VOCS			
					GRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
	Units	ft msl	fbg	ft msl	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
ADEC Groundwater Cleanup Levels^a					2.2	0.005	1	0.7	10	0.47
Trip Blank	05/30/2012	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	09/19/2012	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blank	05/17/2013	-	-	-	-	<0.00024	<0.00023	<0.00024	<0.00072	-
Trip Blank	05/05/2014	-	-	-	<0.050	<0.00015	<0.00011	<0.00016	<0.00040	-
Trip Blank	11/06/2014	-	-	-	<0.050	<0.00015	0.00020 J	<0.00016	<0.00040	-

Notes and Abbreviations

VOCS = Volatile Organic Compounds
 TOC = Top of Casing
 DTW = Depth to Water
 GWE = Groundwater Elevation
 GRO = Gasoline Range Organics by Alaska Series Method AK101
 Total Xylenes = Sum of m-, o-, and p-xylenes
 MTBE = Methyl Tertiary-Butyl Ether
 Benzene, Toluene, Ethylbenzene, and Total Xylenes by Environmental Protection Agency (EPA) Method 8021B, 8260B, or SW-846 8021B
 ft msl = Feet Above Mean Sea Level
 fbg = Feet Below Grade
 mg/l = Milligrams per liter
 ADEC = Alaska Department of Environmental Conservation
^a = Levels established in ADEC Table C Groundwater Cleanup Levels (18 AAC 75.345)
 Groundwater data from 1999 through 2007 provided by Gettler-Ryan, Inc.
BOLD = Indicates concentration above the ADEC Table C Groundwater Cleanup Level
 <x = Constituent not detected above x milligrams per liter
 x / y = Sample Results / Blind Duplicate Results
 - = Not Measured/Not Analyzed
 J = Estimated value
 HS = collected via hydrosleeve

Table 3. Soil Gas Analytical Results for VOCS
Chevron-branded Service Station 96489, 1304 Airport Heights Drive, Anchorage, Alaska

Sample ID	Date Sampled	Sample Depth (ftg)	Benzene	Toluene	Ethylbenzene	m&p-Xylenes*	o-Xylene*	Helium	Methane	Naphthalene	Oxygen	Carbon dioxide	
			mg/m ³							%			
SVP-1-091511-8.0-846	9/15/2011	8	<0.64	<0.75	<0.87	<0.87	<0.87	<25	50	<2.1	16	<0.080	
SVP-1-053012-8.0-805	5/30/2012	8	0.0028 J	<0.0075	<0.0087	<0.0087	0.0012 J	<0.0087	<3300	4 J	<0.021	13	5.5
SVP-1-091812-1076-8.0	9/18/2012	8	<0.0064	<0.0075	<0.0087	<0.0087	<0.0087	<3300	3 J	<0.010	12	7.2	
SVP-1-032813-8.0-525	3/28/2013	8	<0.0064	0.0015 J	0.0034 J	0.0091	0.0055	<3300 J	6 J	<0.021	17	4.3	
SVP-1-091613-8.0-844	9/16/2013	8	0.0082 J	<0.0075	<0.0087	<0.0087	<0.0087	<1600	150	<0.021	1.7	12	
SVP-1-091511-16.0-333	9/15/2011	16	<0.64	<0.75	<0.87	<0.87	<0.87	<25	120	<2.1	4.9	<0.080	
SVP-1-053012-16.0-1112	5/30/2012	16	<0.0064	<0.0075	<0.0087	<0.0087	<0.0087	<3300	30	<0.021	4.5	12	
DUP-1-053012-261	5/30/2012	16	<0.0064	<0.0075	<0.0087	<0.0087	<0.0087	<3300	30	<0.021	4.3	12	
SVP-1-091812-333-16.0	9/18/2012	16	<0.0064	<0.0075	<0.0087	<0.0087	<0.0087	<3300	20	<0.021	3.0	14	
SVP-1-032813-16.0-261	3/28/2013	16	<0.064	0.20 J	<0.087	0.15 J	<0.087	<3300 J	20	<0.21	7.5	12	
SVP-1-091613-16.0-1127	9/16/2013	16	0.0065 J	<0.0075	<0.0087	0.0019 J	0.0014 J	<1600	6 J	<0.021	9.1	6.3	
SVP-1-091511-25.0-828	9/15/2011	25	<1.3	<1.5	<1.7	<1.7	<1.7	<25	620	<4.2	1.7	<0.080	
DUP-1-091511(821)	9/15/2011	25	<1.3	<1.5	<1.7	<1.7	<1.7	<25	430	<4.2	1.6	<0.080	
SVP-1-053012-25.0-1113	5/30/2012	25	<6.4	23 J	9.2 J	20 J	<8.7	<3300	300	<2.1	1.1	12	
SVP-1-091812-002-25.0	9/18/2012	25	<6.4	<7.5	<8.7	<8.7	<8.7	<3300	330	<100	4.5	12	
DUP-1-091812-1076	9/18/2012	25	<6.4	<7.5	<8.7	<8.7	<8.7	<3300	370 J	<100	2.2	14	
SVP-1-032813-25.0-1038	3/28/2013	25	<6.4	8.3 J	10 J	10 J	<8.7	<3300 J	170	<10	1.5	14	
DUP-1-032813-515	3/28/2013	25	<6.4	<7.5	<8.7	9.6 J	<8.7	<3300 J	180	<2.1	1.5	15	
SVP-1-091613-25.0-856	9/16/2013	25	<0.64	<0.75	<0.87	<0.87	<0.87	<1600	780	<2.1	1.1 J	12	
DUP-1-091613-1117	9/16/2013	25	<0.64	<0.75	<0.87	<0.87	<0.87	<1600	550	<2.1	2.9 J	11	
SVP-2-091511-8.0-131	9/15/2011	8	0.10 J	0.38	<0.087	<0.087	<0.087	<25	30	<0.21	6.9	<0.040	
SVP-2-053012-8.0-844	5/30/2012	8	0.0016 J	0.0022 J	0.0046	0.013	0.0065	<3300	3 J	0.0042 J	10	7.6	
SVP-2-091812-874-8.0	9/18/2012	8	0.018 J	<0.0075	<0.0087	0.013 J	<0.0087	<3300	4 J	<0.021	12	7.7	
SVP-2-032813-8.0-814	3/28/2013	8	0.010 J	0.020 J	0.031 J	0.083	0.059	<3300 J	40	0.058 J	13	7.7	
SVP-2-091613-8.0-1028	9/16/2013	8	0.0083	0.0069	0.0021 J	0.0055	0.0030 J	<1600	5 J	<0.0021	9.8	6.4	
SVP-2-091511-16.0-182	9/15/2011	16	<0.13	0.56 J	<0.17	<0.17	<0.17	<25	370 J	<0.42	2.7	<0.080	
SVP-2-053012-16.0-855	5/30/2012	16	<0.0064	<0.0075	<0.0087	<0.0087	<0.0087	<3300	40	<0.021	2.7	13	
SVP-2-091812-516-16.0	9/18/2012	16	0.057	<0.0075	<0.0087	0.0097 J	<0.0087	<3300	40	<0.010	3.4	15	
SVP-2-032813-16.0-021	3/28/2013	16	<0.064	<0.075	<0.087	0.10 J	<0.087	<3300 J	20	<0.21	3.1	14	
SVP-2-091613-16.0-895	9/16/2013	16	0.064	0.018 J	<0.0087	<0.0087	<0.0087	<1600	78	<0.021	3.1	13	
SVP-2-091511-25.0-409	9/15/2011	25	63	<1.5	<1.7	<1.7	<1.7	<25	1800	<4.2	1.4	<0.080	
SVP-2-053012-25.0-810	5/30/2012	25	21 J	19 J	<8.7	<8.7	<8.7	<3300	1100	<2.1	1.2	12	
SVP-2-091812-872-25.0	9/18/2012	25	<6.4	<7.5	<8.7	<8.7	<8.7	<3300	1200 J	<100	1.4	16	
SVP-2-032813-25.0-1113	3/28/2013	25	41	11 J	<8.7	11 J	<8.7	<3300 J	380	<2.1	1.5	13	
SVP-2-091613-25.0-862	9/16/2013	25	20	<0.75	<0.87	<0.87	<0.87	<1600	1700	<2.1	1.3	13	
Target Levels for Deep Soil Gas - Residential (mg/m³)			0.31	521	0.97	10	10	-	-	0.072	-	-	
Target Levels for Deep Soil Gas - Commercial (mg/m³)			1.6	2190	4.9	44	44	-	-	0.36	-	-	

Abbreviations and Methods:

BTEX = Benzene, toluene, ethylbenzene, m&p-xylenes, o-xylenes, and naphthalene by method TO-15

Carbon Dioxide, Oxygen and Helium as Method D1946

Methane by method EPA 18 mod/EPA 25 mod.

ftg = Feet below grade

mg/m³ - milligrams per cubic meter

J = Estimated value.

<x = Constituent not detected above x milligrams per kilogram

Target Levels for Deep Soil Gas - Department of Environmental Conservation/Appendix F - 2009

* Used Total Xylenes target level

Appendix A

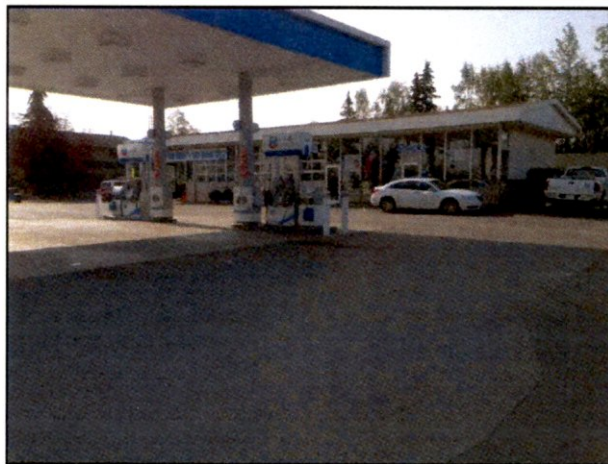
Site Photos



1. View of the rear of the Site facing east



2. View of Site facing south



3. View of Site facing southeast



4. View of Site facing southwest



5. View of Site facing west

Appendix A

SITE PHOTOS
CHEVRON SERVICE STATION 96489
1304 AIRPORT HEIGHTS DRIVE
Anchorage, Alaska



Appendix B

Site Environmental History

Environmental History

Chevron-Branded Service Station 96489

1997 Well Installation

Groundwater monitoring wells MW-1, MW-2, and MW-3 were installed onsite in August 1997. Details are presented in SECOR International, Incorporated's (SECOR's) May 4, 1999 *Well Abandonment and Removal of USTs and Product Lines* report.

1998 Well Destruction, UST Removal and Excavation

Groundwater monitoring wells MW-1, MW-2, and MW-3 were destroyed prior to station upgrades due to their proximity to the planned excavation. Five USTs and product lines were replaced and approximately 150 cubic yards of soil was removed. Details are presented in SECOR's May 4, 1999 *Well Abandonment and Removal of USTs and Product Lines* report.

1999 Site Assessment

Groundwater monitoring wells MW-4 through MW-7 were installed in July 1999. Details are presented in SECOR's September 7, 1999 *Site Assessment* report.

2000 Site Assessment

Groundwater monitoring well MW-8 was installed in August 2000 to further delineate the lateral extent of dissolved phase hydrocarbons offsite. Details are presented in SECOR's April 18, 2001 *Site Assessment* report.

2001 Sensitive Receptor Survey

SECOR conducted a Sensitive Receptor Survey at the request of the ADEC. The survey included a quarter mile radius United States Geological Survey (USGS) well database search and door-to-door well survey. Details are presented in SECOR's November 29, 2001 *Sensitive Receptor Survey Report*.

2002 Site Assessment

Monitoring well MW-9 was installed to further delineate the lateral extent of dissolved phase hydrocarbons. Details are presented in SECOR's July 2, 2003 *Well Installation Report*.

2003 Site Assessment

Groundwater monitoring well MW-10 was installed offsite to evaluate petroleum hydrocarbon migration. Details are presented in SECOR's July 2, 2003 *Well Installation Report*.

2006 Site Assessment

Monitoring well MW-11 was installed offsite to further assess for offsite migration. Details are presented in Cambria Environmental Technology's February 15, 2007 *Subsurface Investigation Report*.

2007 Preliminary Conceptual Site Model

Incidental soil ingestion, inhalation of outdoor air, and inhalation of indoor air were identified as complete exposure pathways. Details are presented in Conestoga-Rovers & Associates, Inc. (CRA's) October 5, 2007 *Preliminary Conceptual Site Model*.

2008 Oxygen Injections

CRA injected oxygen into onsite groundwater monitoring wells MW-4, MW-6, and MW-7 to enhance biodegradation of dissolved petroleum hydrocarbons. Details are presented in CRA's February 24, 2009 *Remedial Actions Report*.

2010 Initial Vapor Intrusion Evaluation Report

CRA recommended soil gas sampling near the station building foundation based on 2010 soil and groundwater data. Details are presented in CRA's February 26, 2010 *Initial Vapor Intrusion Evaluation Report*.

2011 Soil Vapor Probe Installation

CRA installed two multi-increment soil vapor probes near the facility building. Details are presented in CRA's January 3, 2012 *Soil Vapor Assessment Report*.

2014 Soil Vapor Probe Decommissioning

CRA decommissioned two multi-increment soil vapor probes near the facility building. Details are presented in CRA's September 2014 *Soil Vapor Decommissioning Report*.

Appendix C

Human Health Conceptual Site Model Scoping and Graphic Form

Human Health Conceptual Site Model Scoping Form

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 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 checked="" 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 checked="" 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:

Complete

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:

Complete

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:

No surface water in the vicinity of the site.

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:

Complete

Comments:

Soil gas sampling data shows that no migration of VOCs to the surface is occurring, but Appendix D VOCs are present in soil samples collected from less than 15 fbg. Future earthwork has the potential to expose receptors to VOCs.

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:

Soil gas sampling data shows that no migration of VOCs to the surface is occurring.

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 assumed to be protective of this pathway.

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.)

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

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.
- Chromium is present in soil that can be dispersed as dust particles of any size.

Generally, DEC direct contact soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because it is assumed most dust particles are incidentally ingested instead of inhaled to the lower lungs. The inhalation pathway only needs to be evaluated when very small dust particles are present (e.g., along a dirt roadway or where dusts are a nuisance). This is not true in the case of chromium. Site specific cleanup levels will need to be calculated in the event that inhalation of dust containing chromium is a complete pathway at a site.

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:

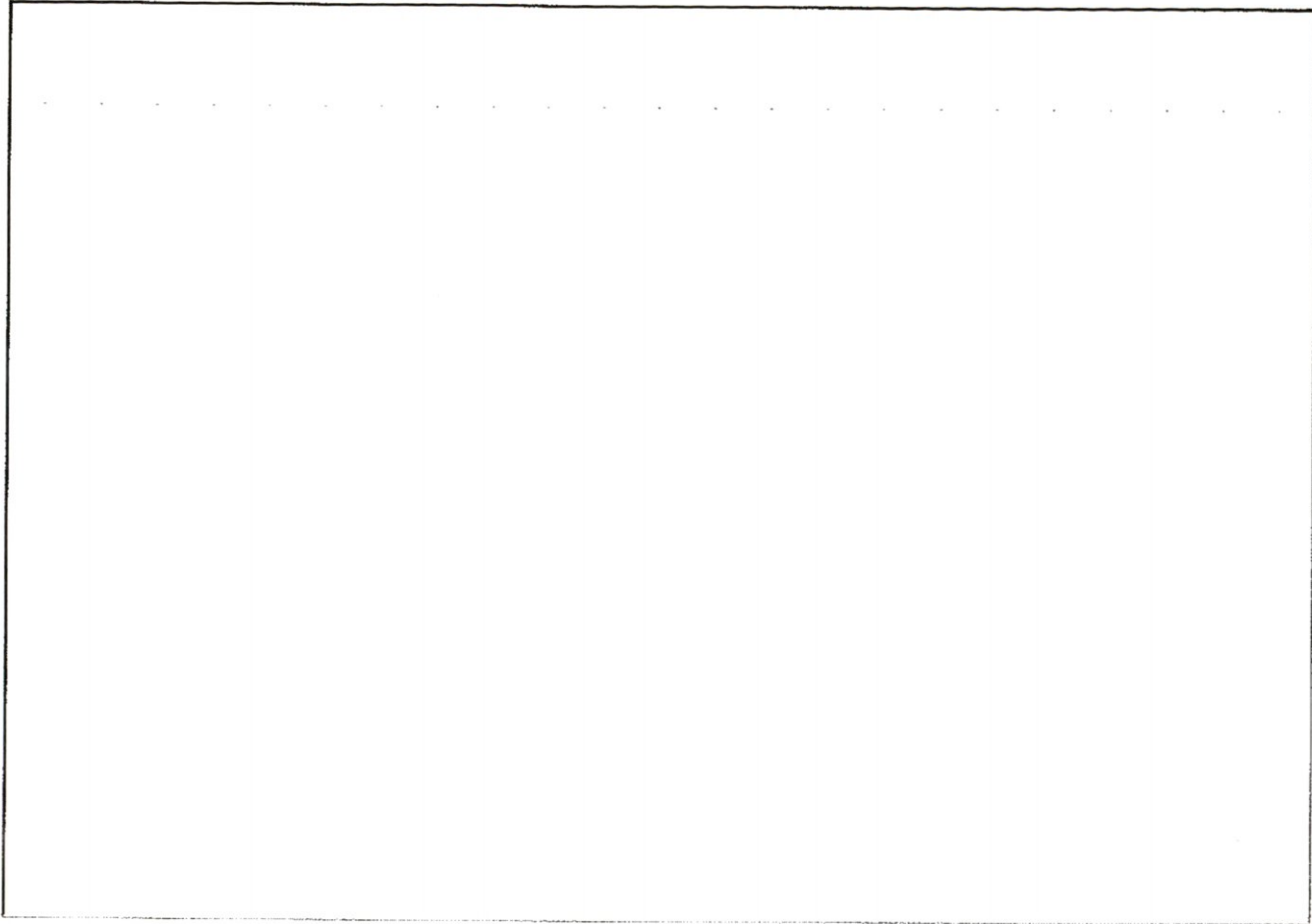
- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

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.)*

A large, empty rectangular box with a thin black border, intended for providing other comments as necessary to support the information provided in the form.

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Chevron 96489
1304 Airport Heights Drive Anchorage, Alaska

Completed By: Tom Bunn
 Date Completed: 1/20/15

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

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

(3)
 Check all exposure media identified in (2).

Exposure Media

(4)
 Check all pathways that could be complete. The pathways identified in this column must agree with Sections 2 and 3 of the Human Health CSM Scoping Form.

Exposure Pathway/Route

(5)
 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.

Current & Future Receptors

Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion	X	X	X				
	<input checked="" type="checkbox"/> Dermal Absorption of Contaminants from Soil	X	X	X				
	<input type="checkbox"/> Inhalation of Fugitive Dust							
<input checked="" type="checkbox"/> groundwater	<input checked="" type="checkbox"/> Ingestion of Groundwater		X	X	X			
	<input type="checkbox"/> Dermal Absorption of Contaminants in Groundwater							
	<input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input checked="" type="checkbox"/> air	<input checked="" type="checkbox"/> Inhalation of Outdoor Air		X	X	X			
	<input checked="" type="checkbox"/> Inhalation of Indoor Air		X	X	X			
	<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							