

**Chevron Environmental
Management Company**

**First Semi-Annual 2012
Groundwater Monitoring Report**

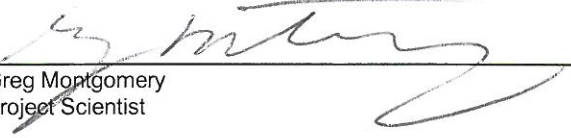
Former Chevron Facility 306443
Gate 28, West Ramp, Fairbanks International
Airport
Fairbanks, Alaska
ADEC File # 100.26.040

September 27, 2012

ARCADIS



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Project Scientist

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Groundwater Monitoring
Report**

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Gate 28, West Ramp, Fairbanks
International Airport
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ADEC File No. 100.26.040

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Chevron Environmental Management
Company

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Date:
September 27, 2012

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1. Introduction

On behalf of Chevron Environmental Management Company (Chevron), ARCADIS US, Inc. (ARCADIS), has prepared this report to document the first semi-annual 2012 groundwater sampling event for former Chevron facility 306443 (the site) located at Gate 28, West Ramp at Fairbanks International Airport in Fairbanks, Alaska. The site location and surrounding area are shown on **Figure 1**. The site features are shown on **Figure 2**. This report summarizes the groundwater sampling events conducted by ARCADIS on June 12 and 13, 2012. Work was conducted under the direction of a “qualified person” as defined in 18 Alaska Administrative Code (AAC) 75.990 (100), and 18 AAC 78.995 (118).

2. Groundwater Monitoring Methods

2.1. Groundwater Gauging Methods

On June 12, 2012, nineteen site monitoring wells, GEI-1 through GEI-9, MW-1 through MW-8, MW-10, and recovery well RW-1, were gauged with an oil/water interface probe to determine depth-to-water, and to ascertain if light non-aqueous phase liquid [LNAPL] was present. Measurable LNAPL was detected in monitoring wells GEI-7, GEI-9, and MW-1 during gauging activities on June 12, 2012. Thicknesses in these wells ranged from 0.06 feet (GEI-9) to 0.15 (GEI-7) feet. Groundwater gauging data are presented in **Table 1**.

In order to prevent the possibility of cross-contamination, wells were gauged in the order of lowest to highest historical petroleum hydrocarbon concentrations in groundwater. Non-disposable groundwater monitoring equipment was decontaminated prior to and after each use, with a detergent solution and rinsed in potable water. Field data sheets are included in **Appendix A**.

2.2. Groundwater Elevation and Flow Direction

Depth-to-groundwater during the June 2012 event ranged from 8.82 feet below top of casing (btoc) in monitoring well MW-2 to 10.91 feet btoc in monitoring well MW-10. Groundwater elevations ranged from 422.73 feet above mean sea level (msl) in monitoring wells MW-9 to 422.97 feet asl in monitoring well GEI-4. Due to the presence of LNAPL, groundwater elevations recorded in monitoring wells GEI-7, GEI-9, and MW-1 were corrected using the following formula:

Corrected Groundwater Elevation =

((Top of Casing – Depth-to-Water) + (LNAPL Thickness x Specific Gravity of LNAPL (0.82)))

Based on the water levels measured during the June 2012 sampling event, the groundwater elevation gradient is relatively flat, therefore contours were not included. The general flow at the site is to the west, which is consistent to previous events (summarized in **Table 1** and shown on **Figure 3**).

3. Groundwater Monitoring Results**3.1. Groundwater Sampling Methods**

The first semi-annual 2012 groundwater monitoring event was conducted on June 13, 2012. Groundwater samples were collected using no purge sampling procedures in accordance with the ADEC field sampling procedures (ADEC 2010). A Teflon[®] bailer was used to collect the samples in accordance with the Bailer-Grab Groundwater Sampling procedures (ARCADIS 2009a). Groundwater samples were labeled, stored in a cooler packed with ice and submitted to Eurofins Lancaster Laboratories (Eurofins) in Lancaster, Pennsylvania, under proper chain-of-custody procedures. Groundwater samples from monitoring wells GEI-2, MW-2, MW-4 through MW-7, and MW-10 were submitted to the analytical laboratory for the following analyses:

- Gasoline range organics (GRO) by Alaska method AK101
- Diesel range organics (DRO) by Alaska method AK102
- DRO with Silica gel cleanup (SGC) by Alaska method AK 102
- Residual range organics (RRO) by Alaska method AK103
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA method 8021B

Concentrations of DRO include not only dissolved petroleum hydrocarbons, but also polar non-hydrocarbon compounds. Polar compounds can result from 1) biodegradation of original petroleum hydrocarbons, 2) sampling or lab artifacts, 3) other chemicals (e.g. chlorinated compounds), or 4) naturally occurring organics. In some cases, polar compounds are a very large portion of the organics being measured as DRO. Groundwater samples from the June 13, 2012 event were analyzed for both DRO and DRO using silica gel cleanup protocols for comparison. The DRO and DRO with silica gel cleanup data are present in **Table 2**.

Groundwater samples from monitoring wells MW-2, MW-4, MW-7, and MW-10 were submitted to the analytical laboratory for the following geochemical parameters:

- Total Alkalinity by EPA method 310.1
- Sulfate and Nitrate as Nitrogen by EPA method 300.0
- Methane by RSKSOP-175 modified

Geochemical parameters were collected to measure natural attenuation on the site. A duplicate groundwater sample BD-1 (GEI-2) was collected and submitted blind to the laboratory for GRO, DRO, and BTEX analysis. Matrix spike (MS) and matrix spike duplicate (MSD) samples were collected from monitoring well MW-10 and submitted to the laboratory for GRO, DRO, and BTEX analysis. Groundwater samples were not collected from monitoring wells GEI-5 through GEI-7, GEI-9, and MW-1 due to the presence of LNAPL. Monitoring wells GEI-1, GEI-3, GEI-4, MW-3, MW-8, and RW-1 were not sampled due to the presence of LNAPL globules seen in the bailer. GEI-8 and MW-9 were not sampled due to obstructions in the wells.

3.2. Groundwater Analytical Results

A concentration of DRO greater than the ADEC GCL (1,500 µg/L) was detected in monitoring well MW-5 at a concentration of 7,000 µg/L.

Analytical results obtained from the first semi-annual 2012 groundwater monitoring event are summarized in **Table 2** and are shown on **Figure 4**. Geochemical parameters are summarized in **Table 3**.

4. LNAPL Removal

Following the first semi-annual 2012 groundwater monitoring event, LNAPL was removed from monitoring wells GEI-7 and MW-1. A peristaltic pump placed in secondary containment was used to remove LNAPL from GEI-7 and MW-1. Purged LNAPL was stored in an over packed drum upon completion. Historical LNAPL thickness is shown in **Figures 5-19**.

5. Laboratory Data Quality Assurance Summary

As required by ADEC (Technical Memorandum 06-002, dated March 2009b), ARCADIS completed a laboratory data review checklist for the Eurofins report during the first semi-annual 2012 reporting period. The laboratory report is included as **Appendix B** and the data review checklist is included as **Appendix C**. The following

quality assurance (QA) summary describes six parameters, related to the quality and usability of the data presented in this report.

5.1. Precision

The data met precision objectives for laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) relative percent differences (RPDs) with the exception of DRO and RRO for samples GEI-1, MW-2, MW-4 through MW-7, and MW-10 being outside specification. Total Alkalinity was outside of specification for samples MW-2, MW-4, MW-7, and MW-10.

5.2. Accuracy

The data met accuracy objectives as indicated by the laboratory quality control samples, which were within method/laboratory limits.

5.3. Representativeness

The data appear to be representative of site conditions and are generally consistent with historical groundwater monitoring results and expected impacts to groundwater.

5.4. Comparability

The laboratory results are presented in the same units as previous reports to allow comparison.

5.5. Completeness

The results appear to be valid and usable, and thus, the laboratory results have 100% completeness.

5.6. Sensitivity

The sensitivity of the analyses was adequate for the samples as the detection limits were less than the ADEC GCLs for compounds analyzed.

6. Conclusions

The groundwater elevation data collected during the June 2012 indicate groundwater flow direction and gradient are generally consistent with historical data. Groundwater samples were collected from monitoring wells GEI-2, MW-2, MW-4 through MW-7, and MW-10. Groundwater samples were not collected from monitoring wells GEI-5 through GEI-7, GEI-9, and MW-1 due to the presence of LNAPL. Groundwater monitoring wells GEI-1, GEI-3, GEI-4, MW-3, MW-8, and RW-1 were not sampled due to the presence of LNAPL globules seen in the bailer. GEI-8 and MW-9 were not sampled due to obstructions in the wells.

The analytical results of the June 2012 groundwater sampling events showed concentrations of DRO in monitoring well MW-5 at concentrations greater than the ADEC GCLs. The analytical results from the remaining monitoring wells did not contain concentrations greater than their respective ADEC GCLs. The analytical results were generally consistent with previous monitoring events.

Based on the DRO plume stability and discussions with ADEC during the project review meeting on August 28, 2012, ARCADIS will decrease sampling the site to an annual basis. The annual 2013 groundwater sampling event will be conducted in the second quarter of 2013. If you have any questions or would like to discuss this further, please contact Greg Montgomery at 206.726.4742.

7. References

ADEC, May, 2010. *Draft Field Sampling Guidance*. Division of Spill Prevention and Response Contaminated Sites Program.

ARCADIS. *Bailer-Grab Groundwater Sampling*. March 10. 2009a.

ADEC Technical Memorandum, March, 2009b. *Environmental Laboratory Data and Quality Assurance Requirements*. ADEC, Division of Spill Prevention and Response Contaminated Sites Program.

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Tables

Table 1
Groundwater Elevation Data
Former Chevron Facility 306443
Gate 28, West Ramp, Fairbanks International Airport
Fairbanks, Alaska

Monitoring Well	Top of Casing Elevation (feet)	Date	Depth-to-Water (top of casing) (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)	LNAPL Removed (Gallons)
GEI-1	99.87	09/04/03	6.32	--	--	93.55	--
		04/24/04					--
		09/16/04	8.56	--	--	91.31	--
		04/21/05					--
		09/30/05	8.17	--	--	91.70	--
		04/19/06					--
		09/21/06	9.04	--	--	90.83	--
		04/03/07	11.35	11.08	0.27	88.74	--
		09/29/07	8.60	8.54	0.06	91.32	--
		10/15/07	10.35	9.94	0.41	89.86	--
		11/19/07	10.91	10.78	0.13	89.07	--
		03/29/08					--
		06/25/08	9.35	--	Trace	90.52	--
		07/14/08	8.22	--	Trace	91.65	--
		08/06/08	5.83	--	Trace	94.04	--
		09/10/08	8.22	8.20	0.02	91.67	--
		11/24/08	9.88	--	Trace	89.99	--
		12/18/08	10.06	--	Trace	89.81	--
		01/27/09	10.73	10.70	0.03	89.16	--
		02/20/09	11.18	10.98	0.20	88.85	--
	04/21/09					--	
	10/06/09	10.35	10.33	0.02	89.54	--	
	03/18/10	11.96	11.22	0.74	88.52	--	
	04/20/10					--	
	05/26/10	11.71	11	0.71	88.74	--	
	06/18/10	9.42	9.41	0.01	90.46	--	
	07/23/10	7.20	--	Trace	92.67	--	
	08/16/10	7.21	--	Trace	92.66	--	
	09/23/10	8.29	8.25	0.04	423.91	--	
	10/25/10	10.67	--	Trace	421.50	--	
	11/16/10	11.46	--	Trace	420.71	--	
	12/14/10					--	
	01/05/11					--	
	02/08/11	10.71	--	Trace	421.46	--	
	03/23/11	11.39	--	Trace	420.78	--	
	04/13/11	11.27	10.84	0.43	421.25	--	
	06/09/11	9.40	--	Trace	422.77	--	
	08/23/11	7.28	--	Trace	424.89	--	
	06/12/12	9.21	--	Trace	422.96	--	
		¹ 432.17					

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Former Chevron Facility 306443
Gate 28, West Ramp, Fairbanks International Airport
Fairbanks, Alaska

Monitoring Well	Top of Casing Elevation (feet)	Date	Depth-to-Water (top of casing) (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)	LNAPL Removed (Gallons)
GEI-4	99.66	09/04/03	6.12	--	--	93.54	--
		04/24/04	9.52	--	--	90.14	--
		09/16/04	8.41	--	--	91.25	--
		04/21/05	9.83	--	--	89.83	--
		09/30/05	7.69	--	--	91.97	--
		04/19/06	10.90	--	--	88.76	--
		09/21/06	8.91	--	--	90.75	--
		04/03/07	10.98	--	--	88.68	--
		09/29/07	8.44	--	--	91.22	--
		03/29/08	10.08	--	--	89.58	--
		09/10/08	8.03	--	--	91.63	--
		04/21/09	10.65	--	--	89.01	--
		10/06/09	10.14	--	--	89.52	--
		06/18/10	9.24	--	--	90.42	--
		07/23/10	6.95	--	--	92.71	--
		08/16/10	7.00	6.97	0.03	92.68	--
		09/23/10	8.10	8.05	0.05	423.91	--
		¹ 431.97	10/25/10	Well not measured		--	--
		11/16/10	Well not measured		--	--	
		12/14/10	Well not measured		--	--	
		01/05/11	Well not measured		--	--	
		02/08/11	Well not measured		--	--	
		03/23/11	Well not measured		--	--	
		04/13/11	Well not measured		--	--	
		06/09/11	9.19	--	--	422.78	--
		08/23/11	7.09	--	Trace	424.88	--
		06/12/12	9.0	--	Trace	422.97	--
	GEI-5	99.88	09/04/03	8.28	5.97	2.31	93.49
04/24/04			10.11	9.71	0.40	90.10	--
09/16/04			10.40	8.21	2.19	91.28	--
04/21/05			10.49	10.06	0.43	89.74	--
09/30/05			7.95	--	--	91.93	--
04/19/06			11.75	11.01	0.74	88.74	--
09/21/06			10.09	9.01	1.08	90.68	--
04/03/07			11.70	11.23	0.47	88.57	--
09/29/07			9.22	8.72	0.50	91.07	--
03/29/08			10.67	10.45	0.22	89.39	--
09/10/08			8.71	8.37	0.34	91.45	--
11/24/08			10.08	--	--	89.80	--
12/18/08			10.29	--	--	89.59	--
01/27/09			11.26	10.94	0.32	88.88	--
02/20/09			11.65	11.21	0.44	88.59	--
04/21/09			11.44	11.02	0.42	88.78	--
10/06/09			10.65	10.53	0.12	89.33	--
03/18/10			11.61	11.6	0.01	88.28	--
04/20/10			12.45	11.5	0.95	88.21	--
05/26/10			11.69	11.31	0.38	88.50	--
06/18/10			9.73	9.72	0.01	90.16	--
07/23/10			7.76	--	--	92.12	--
08/16/10			7.98	7.34	0.64	92.42	--
09/23/10			9.51	8.45	1.06	423.79	--
10/25/10			10.88	--	--	421.55	--
11/16/10			11.71	11.68	0.03	420.74	--
12/14/10			Well not measured		--	--	
01/05/11		10.86	--	--	421.57	--	
02/08/11	10.99	--	--	421.44	--		
03/23/11	11.24	11.23	0.01	421.20	--		
04/13/11	11.51	11.18	0.33	421.19	--		
06/09/11	9.69	--	Trace	422.74	--		
08/23/11	7.84	7.56	0.28	424.82	0.2		
06/12/12	9.55	--	Trace	422.88	--		
¹ 432.43	11/16/10	Well not measured		--	--		

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Fairbanks, Alaska

Monitoring Well	Top of Casing Elevation (feet)	Date	Depth-to-Water (top of casing) (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)	LNAPL Removed (Gallons)	
GEI-6	99.95	09/04/03	6.47	--	--	93.48	--	
		04/24/04	9.95	--	--	90.00	--	
		09/16/04	8.83	--	--	91.12	--	
		04/21/05	10.28	--	--	89.67	--	
		09/30/05	8.24	--	--	91.71	--	
		04/19/06	Well buried under snow/ice					--
		09/21/06	9.30	9.30	<0.1	90.65	--	
		04/03/07	Well Dry					--
		09/29/07	9.10	8.81	0.29	91.09	--	
		10/15/07	10.70	10.26	0.44	89.61	--	
		11/19/07	11.04	10.71	0.33	89.18	--	
		03/29/08	10.61	10.60	0.01	89.35	--	
		06/25/08	9.58	--	--	90.37	--	
		07/14/08	8.51	--	--	91.44	--	
		08/06/08	6.44	6.08	0.36	93.81	--	
		09/10/08	9.25	8.41	0.84	91.39	--	
		11/24/08	10.30	10.22	0.08	89.72	--	
		12/18/08	10.52	10.38	0.14	89.54	--	
		01/27/09	11.10	10.96	0.14	88.96	--	
		02/20/09	11.10	--	--	88.85	--	
		04/21/09	Well blocked at 11.5' below TOC					--
		10/06/09	10.85	10.68	0.17	89.24	--	
		03/18/10	Unable to locate					--
		04/20/10	Well Dry					--
		05/26/10	Well blocked at 11.05' below TOC					--
		06/18/10	9.80	--	Trace	90.15	--	
		07/23/10	7.70	7.61	0.09	92.32	--	
		08/16/10	8.20	7.41	0.79	92.40	--	
		09/23/10	9.31	8.52	0.79	423.83	--	
		10/25/10	Well blocked at 11.1' below TOC					--
		11/16/10	Well blocked at 11.06' below TOC					--
		12/14/10	Well not measured					--
		01/05/11	Well blocked at 11.12' below TOC					--
		02/08/11	Well blocked at 11.10' below TOC					--
		03/23/11	Well blocked at 11.06' below TOC					--
		04/13/11	Well blocked at 11.10' below TOC					--
		06/09/11	9.80	--	--	422.69	--	
		08/23/11	8.59	7.50	1.09	424.79	1.2	
		06/12/12	9.75	--	Trace	422.74	--	
		GEI-7	99.44	09/04/03	5.92	--	--	93.52
04/24/04	9.49			--	--	89.95	--	
09/16/04	8.36			--	--	91.08	--	
04/21/05	9.95			--	--	89.49	--	
09/30/05	7.74			--	--	91.70	--	
04/19/06	11.04			--	--	88.40	--	
09/21/06	9.06			--	--	90.38	--	
04/03/07	11.21			--	--	88.23	--	
09/29/07	8.59			--	--	90.85	--	
03/29/08	10.28			10.26	0.02	89.18	--	
09/10/08	8.21			--	--	91.23	--	
04/21/09	10.90			10.86	0.04	88.57	--	
10/06/09	10.36			10.34	0.02	89.10	--	
03/18/10	Unable to locate					--		
04/20/10	12.31			11.22	1.09	88.02	--	
05/26/10	11.41			11.08	0.33	88.30	--	
06/18/10	9.48			9.47	0.01	89.97	--	
07/23/10	7.25			--	--	92.19	--	
08/16/10	7.21			--	--	92.23	--	
09/23/10	8.30			--	--	423.84	--	
10/25/10	10.76			--	--	421.38	--	
11/16/10	11.26			--	--	420.88	--	
12/14/10	10.38			--	--	421.76	--	
01/05/11	10.36			--	--	421.78	--	
02/08/11	11.23			10.69	0.54	421.35	--	
03/23/11	11.45			10.97	0.48	421.08	--	
04/13/11	11.43			10.95	0.48	421.10	--	
06/09/11	9.71			9.42	0.29	422.67	0.2	
08/23/11	7.33			--	--	424.81	--	
06/12/12	9.42			9.27	0.15	422.84	0.15	

Table 1
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Former Chevron Facility 306443
Gate 28, West Ramp, Fairbanks International Airport
Fairbanks, Alaska

Monitoring Well	Top of Casing Elevation (feet)	Date	Depth-to-Water (top of casing) (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)	LNAPL Removed (Gallons)		
GEI-8	100.01	09/04/03	6.48	--	--	93.53	--		
		04/24/04	9.94	--	--	90.07	--		
		09/16/04	8.84	--	--	91.17	--		
		04/21/05	10.31	--	--	89.70	--		
		09/30/05	8.18	--	--	91.83	--		
		04/19/06	11.47	--	--	88.54	--		
		09/21/06	9.48	--	--	90.53	--		
		04/03/07	11.63	--	--	88.38	--		
		09/29/07	9.08	--	--	90.93	--		
		03/29/08	10.77	--	--	89.24	--		
		09/10/08	8.72	8.70	0.02	91.31	--		
		11/24/08	10.36	--	--	89.65	--		
		12/18/08	10.55	--	--	89.46	--		
		01/27/09	11.24	--	--	88.77	--		
		02/20/09	11.55	--	--	88.46	--		
		04/21/09	11.50	--	--	88.51	--		
		10/06/09	10.82	--	--	89.19	--		
		03/18/10	11.79	--	--	88.22	--		
		04/20/10	11.87	--	--	88.14	--		
		05/26/10	11.63	--	--	88.38	--		
		06/18/10	9.96	--	--	90.05	--		
		07/23/10	6.79	--	--	93.22	--		
		08/16/10	7.71	--	--	92.30	--		
		09/23/10	8.80	--	--	423.88	--		
		10/25/10				Well not measured	--		
		11/16/10				Well not measured	--		
		12/14/10				Well not measured	--		
		01/05/11				Well not measured	--		
		02/08/11				Well not measured	--		
		03/23/11				Well not measured	--		
		04/13/11				Well not measured	--		
		06/09/11		9.97	--	--	422.71	--	
	08/23/11		7.86	--	--	424.82	--		
	¹ 432.68	06/12/12				Well not measured-obstructed by ice			
GEI-9	100.02	09/04/03	6.42	--	--	93.60	--		
		04/24/04	9.82	--	--	90.20	--		
		09/16/04	8.21	--	--	91.81	--		
		04/21/05				Well buried under snow/ice	--		
		09/30/05	8.14	--	--	91.88	--		
		04/19/06				Well buried under snow/ice	--		
		09/21/06	9.31	--	--	90.71	--		
		04/03/07	11.39	--	--	88.63	--		
		09/29/07	8.91	--	--	91.11	--		
		03/29/08	10.73	10.65	0.08	89.36	--		
		09/10/08	8.63	--	--	91.39	--		
		04/21/09				Well buried under snow/ice	--		
		10/06/09	10.90	10.87	0.03	89.14	--		
		03/18/10				Well obstructed by snow/ice	--		
		04/20/10	12.11	11.9	0.21	88.08	--		
		05/26/10	11.81	11.71	0.1	88.29	--		
		07/23/10	7.82	--	--	92.20	--		
		08/16/10	7.84	7.81	0.03	92.20	--		
		09/23/10	9.00	8.87	0.13	423.92	--		
		10/25/10				Well not measured	--		
		11/16/10				Well not measured	--		
		12/14/10				Well not measured	--		
		01/05/11				Well not measured	--		
		02/08/11				Well not measured	--		
		03/23/11				Well not measured	--		
		04/13/11				Well not measured	--		
		06/09/11		10.27	10.08	0.19	422.70	--	
		08/23/11		7.99	--	Trace	424.82	--	
			¹ 432.81	06/12/12	10.07	10.01	0.06	422.79	--

Table 1
Groundwater Elevation Data
Former Chevron Facility 306443
Gate 28, West Ramp, Fairbanks International Airport
Fairbanks, Alaska

Monitoring Well	Top of Casing Elevation (feet)	Date	Depth-to-Water (top of casing) (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)	LNAPL Removed (Gallons)
MW-1	432.51 ¹ 432.50	09/10/08	8.65	--	--	423.86	--
		04/21/09	11.26	--	--	421.25	--
		10/06/09	10.75	--	--	421.76	--
		06/18/10	9.85	9.79	0.06	422.71	--
		07/23/10	7.54	--	--	424.97	--
		08/16/10	7.56	--	--	424.95	--
		09/23/10	8.68	--	--	423.82	--
		10/25/10	11.05	--	--	421.45	--
		11/16/10	11.82	--	--	420.68	--
		12/14/10	10.83	--	--	421.67	--
		01/05/11	10.82	--	--	421.68	--
		02/08/11	11.15	--	--	421.35	--
		03/23/11	11.40	10.92	0.48	421.49	--
		04/13/11	11.37	11.36	0.01	421.14	--
		06/09/11	9.84	--	--	422.66	--
		08/23/11	7.69	--	--	424.81	--
		06/12/12	9.68	9.59	0.09	422.89	0.01
MW-2	431.79 ¹ 431.77	09/10/08	7.75	--	--	424.04	--
		04/21/09	--	Well under water		--	--
		10/06/09	9.89	--	--	421.90	--
		06/18/10	9.02	--	--	422.77	--
		07/23/10	6.80	--	--	424.99	--
		08/16/10	6.71	--	--	425.08	--
		09/23/10	7.82	--	--	423.95	--
		10/25/10	--	Well not measured		--	--
		11/16/10	--	Well not measured		--	--
		12/14/10	--	Well not measured		--	--
		01/05/11	--	Well not measured		--	--
		02/08/10	--	Well not measured		--	--
		03/23/11	--	Well not measured		--	--
		04/13/11	--	Well not measured		--	--
		06/09/11	8.98	--	--	422.79	--
		08/23/11	6.87	--	--	424.90	--
		06/12/12	8.82	--	--	422.95	--
MW-3	432.89 ¹ 432.90	09/10/08	9.00	--	--	423.89	--
		04/21/09	11.69	--	--	421.20	--
		10/06/09	10.15	--	--	422.74	--
		06/18/10	10.22	--	--	422.67	--
		07/23/10	7.91	--	--	424.98	--
		08/16/10	7.96	--	--	424.93	--
		09/23/10	9.08	--	--	423.82	--
		10/25/10	--	Well not measured		--	--
		11/16/10	--	Well not measured		--	--
		12/14/10	--	Well not measured		--	--
		01/05/11	--	Well not measured		--	--
		02/08/11	--	Well not measured		--	--
		03/23/11	--	Well not measured		--	--
		04/13/11	--	Well not measured		--	--
		06/09/11	10.21	--	--	422.69	--
		08/23/11	8.08	--	--	424.82	--
		06/12/12	10.0	--	--	422.90	--
MW-4	432.29 ¹ 432.31	09/10/08	8.26	--	--	424.03	--
		04/21/09	--	Well buried under snow/ice		--	--
		10/06/09	10.57	--	--	421.72	--
		06/18/10	9.49	--	--	422.80	--
		07/23/10	7.24	--	--	425.05	--
		08/16/10	7.26	--	--	425.03	--
		09/23/10	8.33	--	--	423.98	--
		10/25/10	--	Well not measured		--	--
		11/16/10	--	Well not measured		--	--
		12/14/10	--	Well not measured		--	--
		01/05/11	--	Well not measured		--	--
		02/08/11	--	Well not measured		--	--
		03/23/11	--	Well not measured		--	--
		04/13/11	--	Well not measured		--	--
		06/09/11	9.53	--	--	422.78	--
		08/23/11	7.42	--	--	424.89	--
		06/12/12	9.44	--	--	422.87	--

Table 1
Groundwater Elevation Data
Former Chevron Facility 306443
Gate 28, West Ramp, Fairbanks International Airport
Fairbanks, Alaska

Monitoring Well	Top of Casing Elevation (feet)	Date	Depth-to-Water (top of casing) (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)	LNAPL Removed (Gallons)		
MW-9	432.39	09/20/10	8.30	--	--	424.09	--		
		09/23/10	8.60	--	--	423.79	--		
		10/25/10	10.95	--	--	421.44	--		
		11/16/10	11.74	--	--	420.65	--		
		12/14/10		Well not measured- unable to locate			--		
		01/05/11		Well blocked at 0.8' below grade surface			--		
		02/08/11		Well blocked at 0.8' below grade surface			--		
		03/23/11		Well blocked at 0.8' below grade surface			--		
		04/13/11		Well blocked at 0.8' below grade surface			--		
		06/09/11		Obstructed @ 4.45'			--		
		08/23/11		7.61	--	--	424.78	--	
		06/12/12		9.66	--	--	422.73	--	
		MW-10	432.75	09/20/10	8.58	--	--	424.17	--
				09/23/10	8.92	--	--	423.83	--
10/25/10	10.20			--	--	422.55	--		
11/16/10	11.99			--	--	420.76	--		
12/14/10				Well not measured			--		
01/05/11				11.00	--	--	421.75	--	
02/08/11				11.37	--	--	421.38	--	
03/23/11				11.62	--	--	421.13	--	
04/13/11				11.90	--	--	420.85	--	
06/09/11				10.06	--	--	422.69	--	
08/23/11				7.91	--	--	424.84	--	
06/12/12				10.91	--	--	421.84	--	
RW-1	432.30			09/10/08	8.30	--	--	424.00	--
				04/21/09		Well obstructed by snow/ice			--
		10/06/09		10.45	--	--	421.85	--	
		06/18/10		9.54	--	--	423.21	--	
		08/16/10		7.31	--	--	424.99	--	
		09/23/10		8.39	--	--	423.91	--	
		10/25/10		Well not measured			--		
		11/16/10		Well not measured			--		
		12/14/10		Well not measured			--		
		1/5/11		Well not measured			--		
		2/8/11		Well not measured			--		
		3/23/11		Well not measured			--		
		4/13/11		Well not measured			--		
		06/09/11		9.54	--	--	422.76	--	
08/23/11		7.45	--	Trace	424.85	--			
06/12/12		9.37	--	Trace	422.93	--			

Notes:

LNAPL = Light non-aqueous phase liquid

Groundwater elevations were corrected due to the presence of LNAPL in well. Specific gravity of 0.82 was used for the LNAPL (Jet-A Fuel).

Bold text indicates most recent sampling event.

"--" = Not applicable.

¹ = Updated survey data

Table 2
Groundwater Analytical Data
 Former Chevron Facility 306443
 Gate 28, West Ramp, Fairbanks International Airport
 Fairbanks, Alaska

Monitoring Well	Date Sampled	GRO	DRO	DRO with SGC	RRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	Lead	1,2 Dibromethane
ADEC Groundwater Cleanup Levels ¹		2,200	1,500	1,500	1,100	5	1,000	700	10,000	15	0.05
GEI-1	04/24/04					Well buried by snow/ice					
	09/16/04	1,760	151,000	--	--	7.05	1.83	47.9	251	--	--
	09/16/04 ^D	--	--	--	--	5.40	2.02	42.2	233	--	--
	04/21/05					Well buried by snow/ice					
	09/30/05	2,270	327,000	--	<3,970	5.52	0.945	36.6	208	--	--
	04/19/06					Well buried by snow/ice					
	09/21/06	1,300	690,000	--	<9,800	10.0	0.8	22	140	--	--
	04/03/07					LNAPL Present - Well not sampled					
	09/29/07					LNAPL Present - Well not sampled					
	03/29/08					Well buried by snow/ice					
	09/10/08					LNAPL Present - Well not sampled					
	04/22/09					Well buried under snow/ice					
	10/06/09					LNAPL Present - Well not sampled					
	06/18/10					LNAPL Present - Well not sampled					
09/23/10					LNAPL Present - Well not sampled						
06/10/11					LNAPL Globules Present - Well not sampled						
08/25/11					LNAPL Globules Present - Well not sampled						
	06/13/12					LNAPL Globules Present - Well not sampled					
GEI-2	04/24/04					Well buried by snow/ice					
	09/16/04	76.6	1,430	--	--	2.53	0.547	<0.500	1.81	--	--
	04/21/05					Well buried by snow/ice					
	09/30/05	65.6	885	--	<391	<0.500	<0.500	<0.500	<1.50	--	--
	04/19/06					Well buried by snow/ice					
	09/21/06	56.0	1,500	--	430	<0.5	<0.500	<0.500	<1.50	--	--
	04/03/07					Well dry - Not sampled					
	09/29/07	30	--	--	--	<1.00	<1.00	<1.00	<2.00	--	--
	03/29/08	<50.0	-- ³	--	-- ³	<0.500	<0.500	<0.500	<1.00	--	--
	09/10/08	52 ⁴	5,300 ⁵	--	<743	0.225	<0.500	1.16	<1.00	<1.00	--
	04/22/09					Well under water					
	10/06/09					Well dry - Not sampled					
	06/18/10					LNAPL Present - Well not sampled					
	09/23/10	<10	2,500	--	210	<0.5	<0.5	<0.5	<1.5	<0.052	--
06/10/11	13	6,100	--	930	<0.5	<0.5	<0.5	<1.00	--	--	
08/25/11	<10	1,100	--	840	<0.5	<0.5	<0.5	<1.50	--	--	
08/25/11	<10	--	--	--	<0.5	<0.5	<0.5	<1.50	--	--	
	06/13/12	<10	320	79	980	<0.5	<0.5	<0.5	<1.5	--	--
	06/13/12	<10	190	--	--	<0.5	<0.5	<0.5	<1.5	--	--
GEI-3	04/24/04	1,330	21,000	--	--	<5.00	<5.00	13.9	59.8	--	--
	09/16/04	310	18,300	--	--	1.26	<0.500	8.27	14.9	--	--
	04/21/05	464	22,900	--	--	<0.500	<0.500	6.24	14.6	--	--
	09/30/05	450	33,300	--	625	<0.500	<0.500	3.45	10.6	--	--
	04/19/06					LNAPL Present - Well not sampled					
	09/21/06	500	29,000	--	<480	<0.600	<0.500	7.7	25.0	--	--
	04/03/07					LNAPL Present - Well not sampled					
	09/29/07	700	65,000	--	<2,100	<5.00	<5.00	<5.00	<20	--	--
	03/29/08	492	47,100 ²	--	863	<0.500	<0.500	5.01	16.0	--	--
	09/10/08	374 ⁴	22,400 ⁶	--	<3,750	<1.00	<2.50	7.06	13.7	<1.00	--
	04/22/09					LNAPL Present - Well not sampled					
	10/06/09					LNAPL Present - Well not sampled					
	06/18/10					LNAPL Present - Well not sampled					
	09/23/10	450	2,400	--	<140	<0.5	<0.5	2.2	8.6	<0.052	--
06/10/11					LNAPL Globules Present - Well not sampled						
08/25/11					LNAPL Globules Present - Well not sampled						
	06/13/12					LNAPL Globules Present - Well not sampled					
GEI-4	04/24/04	1,270	43,600	--	--	<5.00	<5.00	14.6	57.2	--	--
	09/16/04	638	36,200	--	--	15.0	0.675	21.8	35.7	--	--
	04/21/05	570	37,500	--	--	35.4	1.27	17.7	40.1	--	--
	09/30/05	1,030	122,000	--	--	<4,100	7.47	4.88	58.7	--	--
	04/19/06	879	17,800	--	<391	7.58	<0.500	21.8	27.9	<1.00	--
	09/21/06	630	12,000	--	<480	24.0	0.5	25	43	--	--
	04/03/07	300	2,000	--	<40	5.0	<1.00	9	8.0	--	--
	09/29/07	1,400	43,000	--	<2,000	20	1.00	20	40	--	--
	03/29/08	255 ¹	11,300 ²	--	<735	2.17	<0.500	4.16	9.20	--	--
	09/10/08	889 ⁴	32,300 ⁵	--	<3,750	53.2	2.42	37.9	71.0	<1.00	--
	04/22/09	229 ¹	2,840 ⁵	--	<721	2.90	<0.500	4.50	7.64	<1.00 ⁷	<0.01
	10/06/09	305	5,820	--	787	15.7	<1.00	17.3	33.77	<1.00	<0.0100
	06/18/10					Well Not Sampled					
	09/23/10					LNAPL Present - Well not sampled					
06/10/11	3,900	270,000	--	<14,000	<2.5	<10	<2.5	8.2	--	--	
08/25/11					LNAPL Globules Present - Well not sampled						
	06/13/12					LNAPL Globules Present - Well not sampled					
GEI-5	04/24/04					LNAPL Present - Well not sampled					
	09/16/04					LNAPL Present - Well not sampled					
	04/21/05					LNAPL Present - Well not sampled					
	09/30/05	2,530	671,000	--	<8,700	12.4	<0.500	107	326	--	--
	04/19/06					LNAPL Present - Well not sampled					
	09/21/06					LNAPL Present - Well not sampled					
	04/03/07					LNAPL Present - Well not sampled					
	09/29/07					LNAPL Present - Well not sampled					
	03/29/08	68.1	1,860 ²	--	<708	<0.500	<0.500	<0.500	1.78	--	--
	09/10/08					LNAPL Present - Well not sampled					
	04/22/09					LNAPL Present - Well not sampled					
	10/06/09					LNAPL Present - Well not sampled					
	06/18/10					LNAPL Present - Well not sampled					
	09/23/10					LNAPL Present - Well not sampled					
06/10/11					LNAPL Globules Present - Well not sampled						
08/25/11					LNAPL Globules Present - Well not sampled						
	06/13/12					LNAPL Present - Well not sampled					

Table 2
Groundwater Analytical Data
Former Chevron Facility 306443
Gate 28, West Ramp, Fairbanks International Airport
Fairbanks, Alaska

Monitoring Well	Date Sampled	GRO	DRO	DRO with SGC	RRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	Lead	1,2 Dibromoethane	
ADEC Groundwater Cleanup Levels ¹		2,200	1,500	1,500	1,100	5	1,000	700	10,000	15	0.05	
GEI-6	04/24/04	2,930	168,000	--	--	8.17	<5.00	59.6	145	--	--	
	09/16/04	1,880	39,600	--	--	7.80	1.57	23.8	75.0	--	--	
	04/21/05	1,290	25,300	--	--	15.7	<0.500	57.1	134	--	--	
	09/30/05	2,220	120,000	--	<4,770	14.8	<0.500	20.8	107	--	--	
	04/19/06	Well buried by snow/ice										
	09/21/06	LNAPL Present - Well not sampled										
	04/03/07	Well Dry - Not sampled										
	09/29/07	LNAPL Present - Well not sampled										
	03/29/08	1,170 ¹	334,000 ²	--	904	8.41	<2.50	33.8	128	58.8	--	--
	09/10/08	LNAPL Present - Well not sampled										
	04/22/09	Well blocked at 11.5' below TOC										
	10/06/09	LNAPL Present - Well not sampled										
	06/18/10	LNAPL Present - Well not sampled										
	09/23/10	LNAPL Present - Well not sampled										
	06/10/11	1,300	170,000	--	<8,400	2.9	<0.5	19	61	--	--	
08/25/11	LNAPL Globules Present - Well not sampled											
06/13/12	LNAPL Present - Well not sampled											
GEI-7	04/24/04	2,440	43,200	--	--	6.97	<5.00	7.58	20.0	--	--	
	09/16/04	363	5,660	--	--	<0.500	1.34	8.89	14.2	--	--	
	04/21/05	1,080	13,600	--	--	32.6	2.52	64.6	92.0	--	--	
	09/30/05	226	6,700	--	<397	<0.500	<0.500	3.68	4.72	--	--	
	04/19/06	934	25,200	--	<856	37.9	4.11	77.8	103	<1.00	--	
	09/21/06	470	4,100	--	<98	1.2	<0.5	14	15	--	--	
	04/03/07	2,200	12,000	--	<980	50	4	90	200	--	--	
	04/03/07 ^D	2,200	12,000	--	<980	40	4	90	200	--	--	
	09/29/07	1,500	130,000	--	<2,000	<5	<5	<10	<20	27.9	--	
	09/29/07 ^D	900	92,000	--	<2,000	<5	<5	<10	<20	--	--	
	03/29/08	1,630 ¹	44,200	--	1,320	31.1	<5.00	90.5	147	--	--	
	03/29/08 ^D	1,630	51,400	--	1,470	26.8	<5.00	85.2	131	--	--	
	09/10/08	352 ⁴	15,200 ⁵	--	<833	<1.00	<2.50	10.7	8.02	<1.00	--	
	04/22/09	LNAPL Present - Well not sampled										
	10/06/09	LNAPL Present - Well not sampled										
	06/18/10	LNAPL Present - Well not sampled										
	09/24/10	570	1,900	--	200	<2.0	<2.0	9.7	11	<0.052	--	
	06/10/11	LNAPL Present - Well not sampled										
08/25/11	LNAPL Globules Present - Well not sampled											
06/13/12	LNAPL Present - Well not sampled											
GEI-8	04/24/04	<500	7,390	--	--	<5.00	<5.00	11.7	30.4	--	--	
	09/16/04	82	8,690	--	--	<0.500	<0.500	0.520	1.12	--	--	
	04/21/05	54.3	1,460	--	--	<0.500	<0.500	<0.500	<1.50	--	--	
	04/21/05 ^D	<50	--	--	--	<0.500	<0.500	<0.500	<1.50	--	--	
	09/30/05	<50	4,970	--	<397	<0.500	<0.500	<0.500	<1.50	--	--	
	04/19/06	<50	1,480	--	<400	<0.500	<0.500	<0.500	<1.50	--	--	
	04/19/06 ^D	78.0	--	--	--	<0.500	<0.500	<0.500	<1.50	<1.00	--	
	09/21/06	40.0	1,800	--	<160	<0.5	<0.5	<0.5	<1.5	--	--	
	04/03/07	60	910	--	360	<1.0	<1.0	<1.0	<2.0	--	--	
	09/29/07	80	4,400	--	<200	<1.0	<1.0	<1.0	<2.0	--	--	
	03/29/08	62.0 ¹	2,830 ²	--	<758	<0.500	<0.500	<0.500	1.94	--	--	
	09/10/08	LNAPL Present - Well not sampled										
	04/22/09	66.6 ¹	1,810 ⁹	--	818 ⁹	<0.200	<0.500	<0.500	<1.00	<1.00 ⁷	<0.01	
	10/06/09	50.9	942	--	<391	<0.200	<1.00	<1.00	<3.00	<1.00	<0.0100	
	10/06/09	50.9	942	--	<391	<0.200	<1.00	<1.00	<3.00	<1.00	<0.0100	
	06/18/10	Obstruction - Well not sampled										
	09/23/10	11	530	--	220	<0.5	<0.5	<0.5	<1.5	<0.052	--	
	06/10/11	1,300	26,000	--	<3,400	<2.5	<2.5	<2.5	<7.5	--	--	
08/25/11	20	99,000	--	<3,500	<0.5	<0.5	<0.5	<1.5	--	--		
08/25/11	32	--	--	--	<0.5	<0.5	<0.5	<1.5	--	--		
06/13/12	Obstruction - Well not sampled											
GEI-9	04/24/04	8,370	33,700	--	--	9.53	<5.00	113	321	--	--	
	09/16/04	1,350	77,400	--	--	17.3	<0.500	58.3	57.5	--	--	
	04/21/05	Well buried by snow/ice										
	09/30/05	838	50,900	--	<443	16.2	<0.500	55.4	82.3	--	--	
	04/19/06	Well buried by snow/ice										
	09/21/06	1,200	95,000	--	<1,900	23.0	<0.5	52	80	36.5	--	
	09/21/06 ^D	1,300	43,000	--	<980	22.0	<0.5	50	75	--	--	
	04/03/07	1,600	9,700	--	<400	6.0	<1.0	40	80	0.62	--	
	09/29/07	1,800	680,000	--	<20,000	10.0	<5.00	40	70	29.8	--	
	03/29/08	1,690 ¹	111,000 ²	--	839	7.23	<5.00	25.1	85.5	89.4	--	
	09/10/08	1,510 ⁴	118,000 ⁶	--	<8,330	9.04	<5.00	29.3	63.1	<1.00	--	
	9/10/08 ⁵	1,150 ⁴	191,000 ⁵	--	<7,500	9.18	<5.00	25.0	56.1	<1.00	--	
	04/22/09	Well buried under snow/ice										
	10/06/09	LNAPL Present - Well not sampled										
	06/18/10	Well not sampled										
09/23/10	LNAPL Present - Well not sampled											
06/10/11	LNAPL Present - Well not sampled											
08/25/11	LNAPL Globules Present - Well not sampled											
06/13/12	LNAPL Present - Well not sampled											
MW-1	09/10/08	2,000 ⁴	10,900 ⁵	--	<743	27.4	<0.500	99.8	163	<1.00	--	
	04/22/09	2,260 ¹	20,700 ⁵	--	1,190 ⁸	42.2	0.566	84.3	236	<1.00 ⁷	<0.01	
	10/07/09	1,040	8,070	--	642	25.4	<10.0	81.8	171.9	<1.00	<0.0100	
	06/18/10	LNAPL Present - Well not sampled										
	09/24/10	1,800	12,000	--	<1,500	21	<0.5	55	130	--	--	
	09/24/10	1,800	--	--	--	22	<0.5	56	130	--	--	
	06/10/11	1,200	210,000	--	<8,500	29	<2.5	56	160	--	--	
	06/10/11	1,200	--	--	--	25	<0.5	54	160	--	--	
08/25/11	2,600	82,000	--	<3,400	32.0	9.1	45	130	--	--		
06/13/12	LNAPL Present - Well not sampled											

Table 2
Groundwater Analytical Data
 Former Chevron Facility 306443
 Gate 28, West Ramp, Fairbanks International Airport
 Fairbanks, Alaska

Monitoring Well	Date Sampled	GRO	DRO	DRO with SGC	RRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	Lead	1,2 Dibromoethane	
ADEC Groundwater Cleanup Levels ¹												
		2,200	1,500	1,500	1,100	5	1,000	700	10,000	15	0.05	
MW-2	09/10/08	<50.0	208 ⁶	--	<743	<0.20	<0.500	<0.50	<1.00	<1.00	--	
	04/22/09	Well buried under snow/ice										
	10/06/09	<50.0	<410	--	<410	<0.200	<1.00	<1.00	<3.00	<1.00	<0.0100	
	06/18/10	11	530	--	290	<0.5	<0.5	<0.5	<1.5	<.05	--	
	09/23/10	<10	100	--	150	<0.5	<0.5	<0.5	<1.5	--	--	
	06/10/11	<10	85	--	200	<0.5	<0.5	<0.5	<1.5	--	--	
	08/25/11	<10	1,000	--	790	<0.5	<0.5	<0.5	<1.5	--	--	
06/13/12	<10	170	<50	170	<0.5	<0.5	<0.5	<1.5	<1.5	--	--	
MW-3	09/10/08	144 ⁴	2,800 ⁵	--	<743	0.263	<0.500	0.687	1.56	<1.00	--	
	04/22/09	96.4 ¹	1,600 ⁵	--	<728	0.210	<0.500	1.09	1.81	<1.00 ⁷	<0.01	
	10/07/09	205	1,350	--	<391	<0.400	<2.00	10.5	10.02	<1.00	<0.0100	
	06/18/10	220	17,000	--	<3.4	<0.5	<2	<0.5	<5	<0.05	--	
	06/18/10	64	17,000	--	<3.5	<0.5	<0.5	<0.5	<1.5	--	--	
	09/24/10	27	510	--	91	<0.5	<0.5	<0.5	<1.5	--	--	
	06/10/11	<50	21,000	--	<1,700	<2.5	<2.5	<2.5	<7.5	--	--	
	06/10/11	460	--	--	--	<0.5	<0.5	0.6	3.3	--	--	
	08/25/11	71	10,000	--	<690	<0.5	<0.5	<0.5	<1.5	--	--	
	06/13/12	LNAPL Globules Present - Well not sampled										
MW-4	09/10/08	<50.0	150 ⁶	--	<743	<0.20	<0.500	<0.50	<1.00	<1.00	--	
	04/22/09	Well buried under snow/ice										
	10/06/09	<50.0	<391	--	<391	<0.200	<1.00	<1.00	<3.00	<1.00	<0.0100	
	10/06/09 ^D	<50.0	<403	--	<403	<0.200	<1.00	<1.00	<3.00	<1.00	<0.0100	
	06/18/10	Well not sampled										
	09/24/10	<10	56	--	75	<0.5	<0.5	<0.5	<1.5	--	--	
	06/10/11	<10	<50	--	<71	<0.5	<0.5	<0.5	<1.5	--	--	
	08/25/11	20	62	--	77	<0.5	<0.5	<0.5	<1.5	--	--	
	06/13/12	<10	120	<50	<71	<0.5	<0.5	<0.5	<1.5	<1.5	--	--
	MW-5	09/10/08	89.1 ⁴	2,240 ⁵	--	<743	0.378	<0.500	2.42	3.28	<1.00	--
04/22/09		254 ¹	4,230 ⁵	--	<728	0.590	<0.500	6.95	5.14	<1.00 ⁷	<0.01	
04/22/09 ^D		248 ¹	4,150 ⁵	--	<721	0.593	<0.500	6.82	4.90	<1.00 ⁷	<0.01	
10/07/09		<50.0	1,040	--	<391	<0.200	<1.00	1.35	<3.00	<1.00	<0.0100	
06/18/10		540	1,500	--	<1.7	<0.5	<.5	2	<5	--	--	
09/24/10		230	6,500	--	<690	<0.5	<0.5	4.3	7.8	--	--	
09/24/10		240	--	--	--	<0.5	<0.5	4.6	8.0	--	--	
06/10/11		3,800	63,000	--	<6,900	<0.5	<0.5	5.2	23	--	--	
08/25/11		210	2,700	--	<140	<0.5	<0.5	<0.5	<1.5	--	--	
06/13/12		130	7,000	10,000	<720	<0.5	<0.5	0.6	2.8	--	--	
MW-6	09/24/10	81	560	--	86	<0.5	<0.5	2.3	3.9	--	--	
	06/10/11	86	730	--	1,600	<0.5	<0.5	0.6	<5	--	--	
	08/25/11	58	770	--	430	<0.5	<0.5	1.1	2	--	--	
	06/13/12	41	460	160	150	<0.5	<0.5	<0.5	<1.5	--	--	
MW-7	09/24/10	<10	200	--	92	<0.5	<0.5	<0.5	<1.5	--	--	
	06/10/11	<10	650	--	2,000	<0.5	<0.5	<0.5	<1.5	--	--	
	08/25/11	<10	150	--	190	<0.5	<0.5	<0.5	<1.5	--	--	
	06/13/12	<10	360	<52	770	<0.5	<0.5	<0.5	<1.5	--	--	
MW-8	09/24/10	1,000	4,500	--	<360	1.3	<0.5	38	69	--	--	
	06/10/11	LNAPL Globules Present - Well not sampled										
	08/25/11	LNAPL Globules Present - Well not sampled										
06/13/12	LNAPL Globules Present - Well not sampled											
MW-9	09/24/10	890	6,000	--	<730	7.3	<0.5	50	55	--	--	
	06/10/11	Obstruction - Well not sampled										
	08/25/11	460	260	--	350	5.9	<2.5	35	42	--	--	
06/13/12	Obstruction - Well not sampled											
MW-10	09/24/10	<10	850	--	520	<0.5	<0.5	<0.5	<1.5	--	--	
	06/10/11	<10	700	--	480	<0.5	<0.5	<0.5	<1.5	--	--	
	08/25/11	<10	960	--	530	<0.5	<0.5	<0.5	<1.5	--	--	
	06/13/12	<10	630	<50	240	<0.5	<0.5	<0.5	<1.5	--	--	
RW-1	10/06/09	172	4,260	--	512	<0.200	<1.00	1.04	2.25	<1.00	<0.0100	
	06/18/10	260	1,500	--	80	<0.5	<2.00	0.7	8.6	--	--	
	09/24/10	330	4,100	--	<350	<0.5	<2.0	1.3	8.6	--	--	
	06/10/11	3,500	140,000	--	<6,800	<2.5	<10	4	39	--	--	
	08/25/11	LNAPL Globules Present - Well not sampled										
06/13/12	LNAPL Globules Present - Well not sampled											

Notes:

All results are reported in micrograms per liter (ug/l).

¹ ADEC Groundwater Cleanup Levels (GCL) per 18 AAC 75.345, Table C, Register 188, October 9, 2008.

^D - duplicate of preceding sample.

-- = sample was not analyzed for this compound.

< = result did not exceed indicated method reporting limit; an elevated reporting limit indicates sample was diluted.

Highlighted cell= exceeds GCL.

Bold Type indicates most recent sampling event.

GRO = Gasoline range organics by AK method 101

DRO = Diesel range organics by AK method 102

SGC = Silica gel cleanup

RRO = Residual range organics by AK method 103

BTEX and 1,2-Dibromoethane by EPA method 8021B

Lead by EPA method 6020

¹ Detected hydrocarbons in the gasoline range appear to be due to overlap of diesel range hydrocarbons.

² Hydrocarbon pattern most closely resembles kerosene.

³ Insufficient water to collect sample.

⁴ Does not match typical pattern.

⁵ Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel.

⁶ The chromatographic pattern is not consistent with diesel fuel.

⁷ Sample filtered in lab.

⁸ The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range.

⁹ Hydrocarbon pattern most closely resembles a blend of Weathered Diesel and Transformer Oil.

Table 3
Geochemical Parameter Monitoring Data
Former Chevron Facility 306443
Gate 28, West Ramp, Fairbanks International Airport
Fairbanks, Alaska

Relative Location	Monitoring Well ID	Date Sampled	DO (mg/L) ¹	ORP (mV) ¹	Total Alkalinity (mg/L as CaCO ₃) ²	Sulfate (mg/L) ³	Nitrate as Nitrogen (mg/L) ³	Methane (mg/L) ⁴	Ferrous Iron (mg/L) ⁵	Nitrate by Field Measurement (mg/L) ⁵
Cross gradient	GEI-4	04/22/09	0.56	-80.61	349	6.22	<0.20	1.95 ⁶	4.0	0.0
Within Plume Close to Source	GEI-8	04/22/09	0.60	-93.16	588	7.40	<0.20	0.468	6.2	0.0
Cross gradient	MW-1	04/22/09	0.32	-108.16	540	<0.40	<0.20	16.5 ⁶	5.6	0.0
Cross gradient	MW-2	06/13/12	--	--	412	31	1.2	0.014	--	--
Down gradient	MW-3	04/22/09	1.07	-108.06	338	8.24	<0.20 ⁷	1.05 ⁶	3.0	0.0
Down gradient	MW-4	06/13/12	--	--	268	22.0	<0.25	0.011	--	--
Down gradient	MW-5	04/22/09	0.31	-84.71	438	6.88	<0.20 ⁷	1.2 ⁶	5.0	0.0
Down gradient	MW-5 ^D	04/22/09	--	--	429	6.84	<0.20 ⁷	0.832	--	--
Down gradient	MW-7	06/13/12	--	--	305	19.2	<0.25	0.110	--	--
Up gradient	MW-10	06/13/12	--	--	440	28.4	<0.25	0.069	--	--

Notes:

- ¹: DO and ORP measured using an In-Situ® 9500 and flow through cell instrument.
- ²: Total alkalinity analyzed using EPA method 310.1.
- ³: Sulfate and nitrate as nitrogen analyzed by EPA method 300.0.
- ⁴: Methane analyzed using GC/FID, with exception of 6/13/12 analyzed by RSKSOP-175 modified.
- ⁵: Ferrous iron and nitrate field measurement analyzed using a Hach field kit.
- ⁶: Sample required dilution due to high concentrations of target analyte.
- ⁷: The holding time was not met.

DO = Dissolved oxygen

ORP = Oxidation-reduction potential

"<" = Indicates analyte not detected above MRL

"--" = Indicates analyte was not sampled or analyzed for

^D Duplicate

mV = millivolts

Bold Type indicates most recent sampling event.

MRL = Method reporting limit

CaCO₃ = Calcium carbonate

EPA = Environmental Protection Agency

mg/L = milligrams per liter

µg/L = micrograms per liter

ADEC = Alaska Department of Environmental Conservation

Table 4
Groundwater Volatile Organic Compound Analytical Data

Former Chevron Facility 306443
 Gate 28, West Ramp, Fairbanks International Airport
 Fairbanks, Alaska

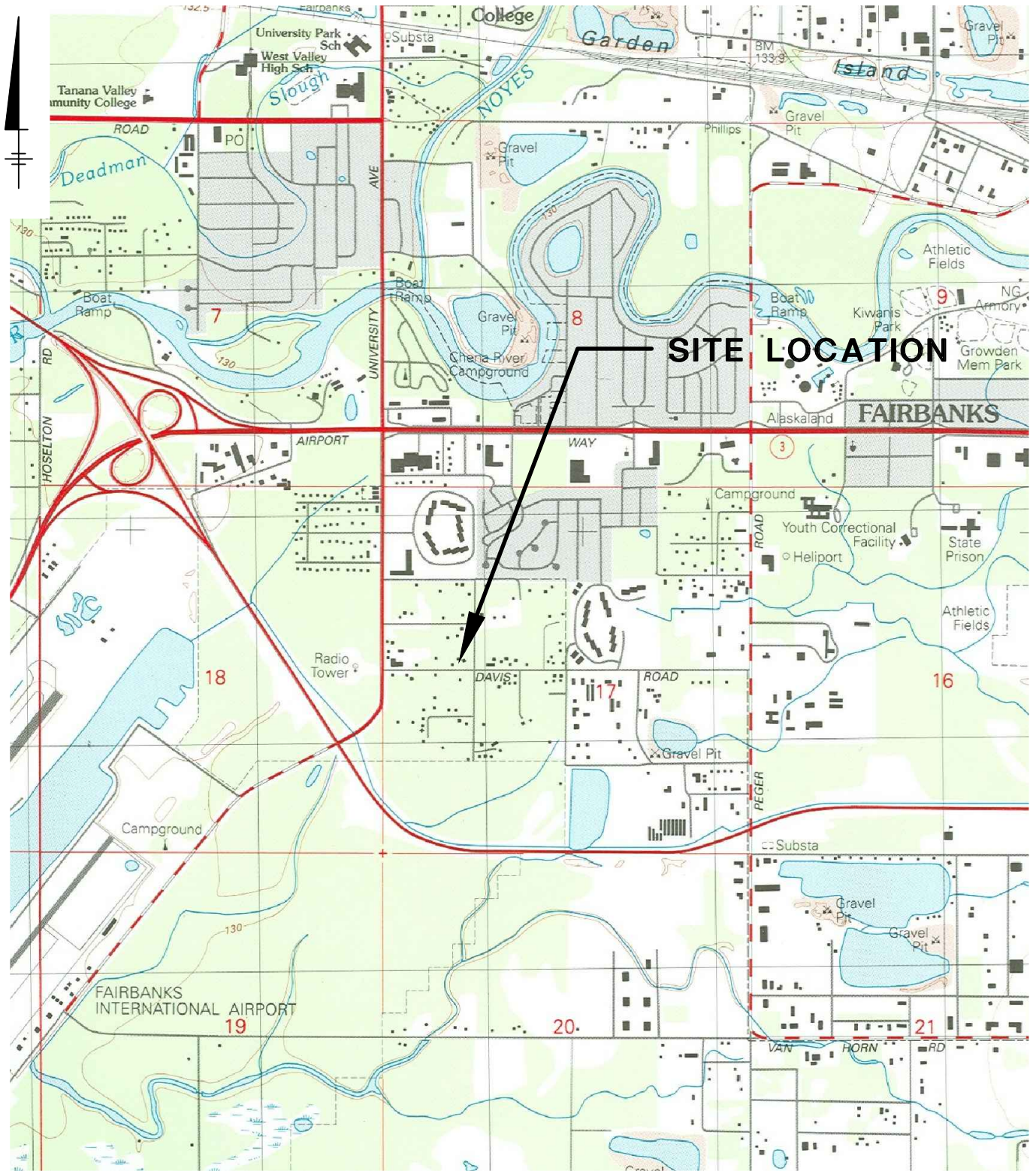
EPA Method:		8011													8260B													8021B	
Well Sampled	Sample Date	1,2-dibromoethane	1,1-dichloroethane	Dichlorodifluoromethane	1,3,5-Trimethylbenzene	1,1,1-trichloroethane	1,2,4-Trimethylbenzene	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	n-Hexane	p-Isopropyltoluene	Isopropylbenzene	n-Propylbenzene	Tetrachloroethene	1,2-dichloroethane	Trichloroethene	Naphthalene	Methyl tertiary butyl ether	Methyl tertiary butyl ether									
GCL:		0.05	7,300	7,300	1,800	200	1,800	370	370	370	NL	3,700	370	5	5	5	730	470	470										
GEI-1	09/10/08 04/22/09 10/06/09	LNAPL Present - Well not sampled Well buried under snow/ice LNAPL Present - Well not sampled																											
GEI-2	09/10/08 04/22/09 10/06/09	<0.01	<1.00	<1.00	2.36	<1.00	4.87	<1.00	4.08	<1.00	<2.00	3.48	3.66	3.51	<1.00	<1.00	<1.00	<5.00	<2.00	--									
		Well under water Well Dry - Not Sampled																											
GEI-3	09/10/08 04/22/09 10/06/09	<0.01	<1.00	<1.00	20.3	<1.00	64.0	7.25	7.35	1.27	<2.00	11.1	6.03	9.25	<1.00	<1.00	<1.00	17.2	<2.00	--									
		LNAPL Present - Well not sampled LNAPL Present - Well not sampled																											
GEI-4	09/10/08 04/22/09 10/06/09	<0.01 <0.0100	<1.00 <1.00	1.58 <1.00	23.0 9.02	<1.00 <1.00	84.0 62.7	1.68 8.35	5.32 10.9	<1.00 <1.00	<2.00 <1.00	4.28 5.89	12.9 17.0	13.1 17.6	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	101 33.2	<2.00 <1.00	--									
		LNAPL Present - Well not sampled LNAPL Present - Well not sampled LNAPL Present - Well not sampled																											
GEI-5	09/10/08 04/22/09 10/06/09	LNAPL Present - Well not sampled LNAPL Present - Well not sampled LNAPL Present - Well not sampled																											
GEI-6	03/29/08 09/10/08 04/22/09 10/06/09	--	<1.00	<1.00	86.8	<1.00	187	6.37	5.08	1.80	<2.00	13.6	6.04	5.83	<1.00	<1.00	<1.00	130	<2.00	--									
		LNAPL Present - Well not sampled Well blocked at 11.5' below TOC LNAPL Present - Well not sampled																											
GEI-7	09/29/07 09/10/08 04/22/09 10/06/09	--	<1.00	--	62	<0.8	170	28.0	27.0	2.0	--	22.0	22.0	41.0	<0.80	<0.50	<1.00	150	<0.50	--									
		<0.01	<1.00	4.63	22.6	<1.00	70.7	16.5	15.2	1.08	<2.00	10.6	11.4	18.1	<1.00	<1.00	<1.00	58.3	<2.00	--									
		LNAPL Present - Well not sampled LNAPL Present - Well not sampled																											
GEI-8	09/10/08 04/22/09 10/06/09	<0.01 <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <1.00	-- <2.00	-- <1.00	--									
		LNAPL Present - Well not sampled																											
GEI-9	09/21/06 04/03/07 09/29/07 03/29/08 09/10/08 09/10/08 ^D 04/22/09 10/06/09	<0.0098 -- -- -- <0.01 <0.01	<1.00 <1.00 <1.00 <1.00 <1.00 <1.00	<2.00 <2.00 <2.00 <1.00 <1.00	120 100 120 69.9 88.8	<0.80 <0.80 <0.80 <1.00 <1.00	540 340 630 169 683	36.0 35.0 31.0 21.1 25.2	17.0 23.0 16.0 11.2 10.5	1.00 2.00 1.00 1.5 1.4	-- -- -- <2.00 <2.00	-- 17.0 20.0 13.0 12.7	25.0 30.0 18.0 20.3 13.6	59.0 65.0 47.0 31.8 28.4	<0.80 <0.80 <0.80 <1.00 <1.00	<0.50 <0.50 <0.50 <1.00 <1.00	<1.00 <1.00 <1.00 <1.00 <1.00	-- -- 100 95.1 43.3	<0.50 <0.50 <2.00 <2.00	<2.50 -- -- -- -- --									
		Well buried under snow/ice LNAPL Present - Well not sampled																											
MW-1	09/10/08 04/22/09 10/07/09	<0.01 <0.01 <1.00	<1.00 <1.00 <1.00	<1.00 <1.00 <1.00	80.8 103	<1.00 <1.00	444 420	26.0 26.8	25.1 21.3	2.14 <1.00	2.42 <1.00	21.5 18.4	40.2 32.1	54.7 51.6	<1.00 <1.00 <1.00	<1.00 <1.00 <1.00	<1.00 <1.00 <1.00	433 815	<2.00 <1.00	--									
MW-2	09/10/08 04/22/09 10/06/09	<0.01 <0.0100	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 1.00	<1.00 <1.00	<1.00 <1.00	<2.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <2.00	<1.00 <1.00	--									
		Well buried under snow/ice																											
MW-3	09/10/08 04/22/09 10/07/09	<0.01 <0.01 <2.00	<1.00 <1.00 <2.00	<1.00 <1.00 <2.00	2.01 8.88	<1.00 <2.00	7.59 89.8	3.63 10.9	3.22 12.9	<1.00 <2.00	<2.00 <2.00	2.48 9.12	1.29 13.5	1.50 19.6	<1.00 <2.00	<1.00 <2.00	<1.00 <2.00	<5.00 22.3	<2.00 <2.00	--									
MW-4	09/10/08 04/22/09 10/06/09 10/06/09 ^D	<0.01 <0.0100 <0.0100	<1.00 <1.00 <1.00	<1.00 <1.00 <1.00	<1.00 <1.00 <1.00	<1.00 <1.00	<1.00 1.00	<1.00 <1.00	<1.00 <1.00	<2.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<1.00 <1.00	<5.00 <2.00	<2.00 <1.00	--									
		Well buried under snow/ice																											
MW-5	09/10/08 04/22/09 04/22/09 ^D 10/07/09	<0.01 <0.01 <0.01 <1.00	<1.00 <1.00 <1.00 <1.00	<1.00 <1.00 <1.00 <1.00	3.75 -- -- 7.87	<1.00 <1.00 <1.00 <1.00	10.1 -- -- 5.69	<1.00 -- -- 2.54	<1.00 -- -- <1.00	<1.00 -- -- <1.00	<2.00 -- -- <1.00	<1.00 -- -- <1.00	<1.00 -- -- <1.00	1.36 -- -- 2.07	<1.00 -- -- <1.00	<1.00 -- -- <1.00	<1.00 -- -- <1.00	<5.00 -- -- 2.12	<2.00 -- -- <1.00	--									
RW-1	10/06/09	<0.0100	<1.00	<1.00	28.8	<1.00	31.1	7.79	3.14	<1.00	<1.00	3.21	2.49	5.14	<1.00	<1.00	<1.00	5.64	<1.00	--									

Notes:
 All results are reported in micrograms per liter (ug/l).
 GCL = ADEC 18 AAC 75 Groundwater Cleanup Level.
 -- = Not analyzed for this compound or data is not available.
 <25 = Result did not exceed indicated method reporting limit.
^D = Duplicate of preceding sample.
 NL = No GCL available
 Highlighted values indicate an exceedance of the respective GCL.

ARCADIS

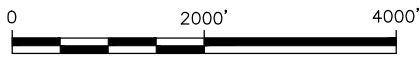
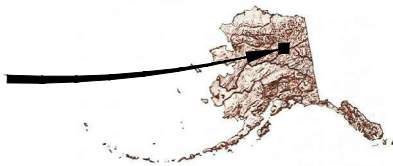
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CITY:TMAPA.FL DIV:GROUP:85 DB:JAR LD:(Opt) PIC:(Opt) PM:(Read) TM:(Opt) LVR:(Opt)ONL="OFF"REF:
 G:\ENV\CAD\TAMPACT\ChevronUSA\Chevron_306443B00458070006.00002\USA GNR 2012\B0045807\NO 1.dwg LAYOUT: 1 SAVED: 8/7/2012 8:40 AM ACADVER: 18.1S (LMS TECH) PAGES: 18.1S (LMS TECH) PLOTSETUP: PLTULL.CTB PLOTTED: 8/7/2012 8:45 AM BY: RICHARDS, JIM



SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE: FAIRBANKS (D-2) SW, AK., 1992, FAIRBANKS NORTH STAR BOROUGH, SECTION: 24, TOWNSHIP: 1S, RANGE: 2W

SITE LOCATION



APPROXIMATE GRAPHIC SCALE

**CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK.
 FIRST SEMI-ANNUAL 2012 GROUNDWATER
 MONITORING REPORT**

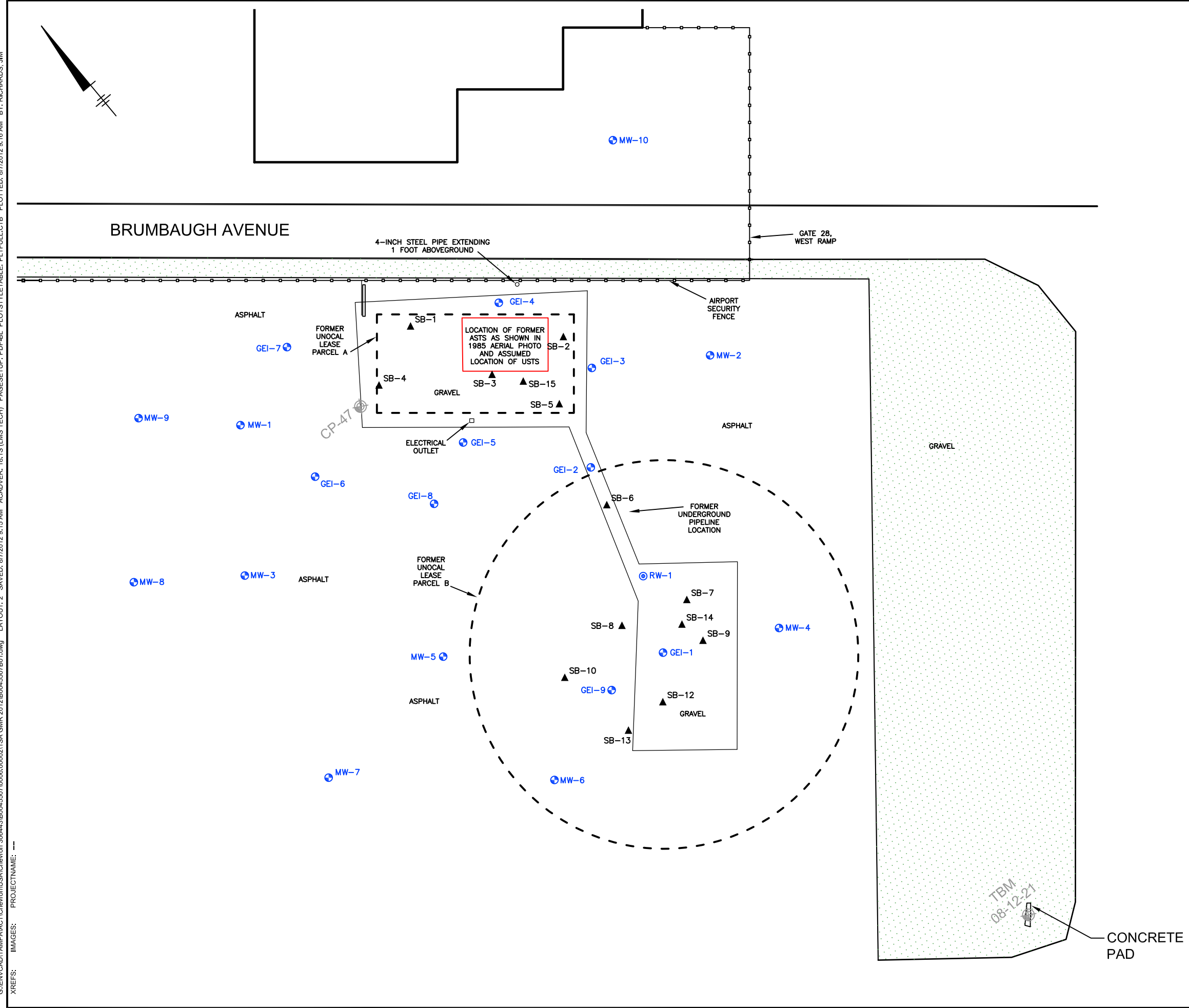
SITE LOCATION MAP



FIGURE

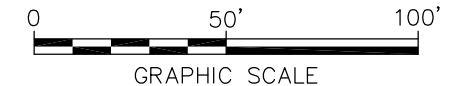
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CITY: TMA-A, FL DIV/GROUP: 85 DR: R: PETRIE, LD: J: RICHARDS, PIC: (Opt) PM: (Read) TM: (Opt) LYR: (Opt) ONE: "OFF" REF: G:\ENVCAD\TAMPA\ACT\Chevron\USA\Chevron_306443\B0045507\0006\0002\USA_GMR_2012\B0045507\B01.dwg LAYOUT: 2 SAVED: 8/7/2012 9:15 AM ACADVER: 18.1S (LMS TECH) PAGES: 18 PLOTSTYLE: PLT: FULL.CTB PLOT: 8/7/2012 9:16 AM BY: RICHARDS, JIM



- ### LEGEND
- SURVEY CONTROL POINT
 - MONITORING WELL
 - RECOVERY WELL
 - SOIL BORING

- Notes:
- Basis of horizontal control NAD83 position (EPOCH 2003) and vertical control (NAVD88) was an Opus solution from NGS stations "SUAF Surveyorsexch UAF CORS APR", "FAIR GILMORE CREEK OBS CORS ARP", GRNX AKDA AS204 CORS ARP", "CENA CENTRAL ALSAKA CORS ARP", "AB39 FORTYKON AK2008 CORS ARP", "AB37 PAXON2 AS2004 CORS ARP" to establish the position and elevation of CP-47.
 - The geodetic position of CP-47 was determined to have a Latitude of 64°48'45.32158"N and a Longitude of 147°52'32.92546"W. The Alaska State Plane coordinates (ASP) Zone 3 NAD 83 in feet for CP-47 are:
 N=3955792.291
 E=1348117.704
 Elev.=432.502 (NAVD88)
 - SB-14 and SB-15 were not surveyed.

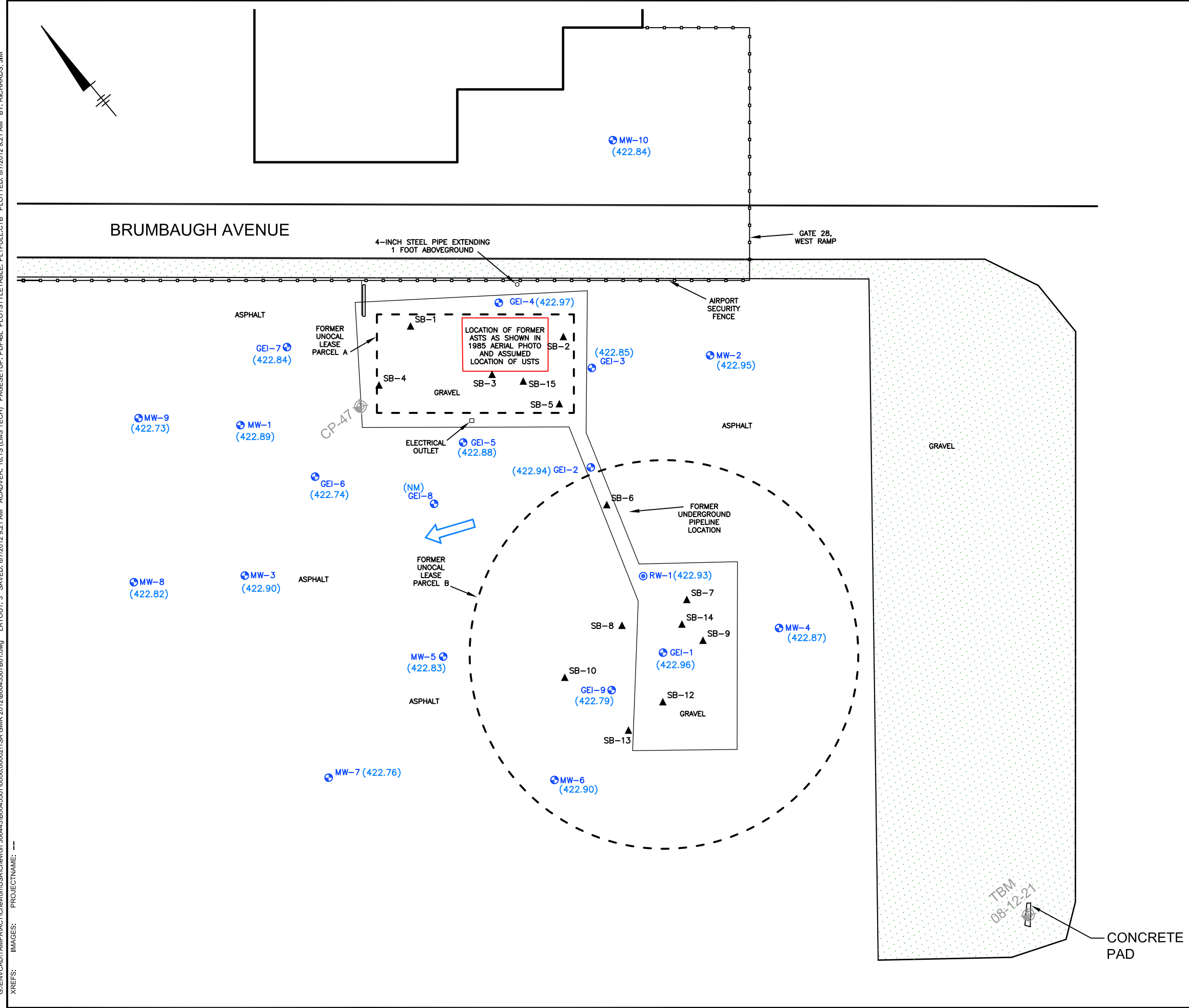


SOURCE: Base map provided by GEOENGINEERS. Map date 5/15/05, full scale. Base map updated with survey information by "McLane Consulting, Inc.", Date 8/31/08 and 10/28/10.

CHEVRON #306443 (FORMER UNOCAL BULK PLANT) GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK. FIRST SEMI-ANNUAL 2012 GROUNDWATER MONITORING REPORT	
<h2>SITE MAP</h2>	
	FIGURE <h1>2</h1>

TBM
08-12-21
CONCRETE PAD

CITY: TMA-A, FL DIV/GROUP: 85 DR: R. PETRIE LD: J. RICHARDS PIC: (C) (P) PM: (R) (E) TMA: (C) (P) LYS: (C) (P) (N) (E) (O) (F) (F) (R) (E) (F)
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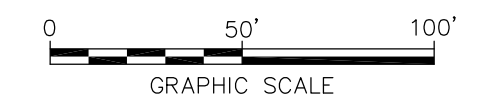


LEGEND

- SURVEY CONTROL POINT
- MONITORING WELL
- RECOVERY WELL
- SOIL BORING
- (422.95) POTENTIOMETRIC SURFACE ELEVATION (FT)
- APPARENT DIRECTION OF GROUNDWATER FLOW
- (NM) NOT MEASURED

NOTE:
 UNABLE TO SHOW CONTOURS,
 SITE IS RELATIVELY FLAT.

- Notes:**
1. Basis of horizontal control NAD83 position (EPOCH 2003) and vertical control (NAVD88) was an Opus solution from NGS stations "SUAF Surveyorsexch UAF CORS APR", "FAIR GILMORE CREEK OBS CORS ARP", GRNX AKDA AS204 CORS ARP", "CENA CENTRAL ALSAKA CORS ARP", "AB39 FORTYKON AK2008 CORS ARP", "AB37 PAXON2 AS2004 CORS ARP" to establish the position and elevation of CP-47.
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 E=1348117.704
 Elev.=432.502 (NAVD88)
 3. SB-14 and SB-15 were not surveyed.



SOURCE: Base map provided by GEOENGINEERS. Map date 5/15/05, full scale. Base map updated with survey information by "McLane Consulting, Inc.", Date 8/31/08 and 10/28/10.

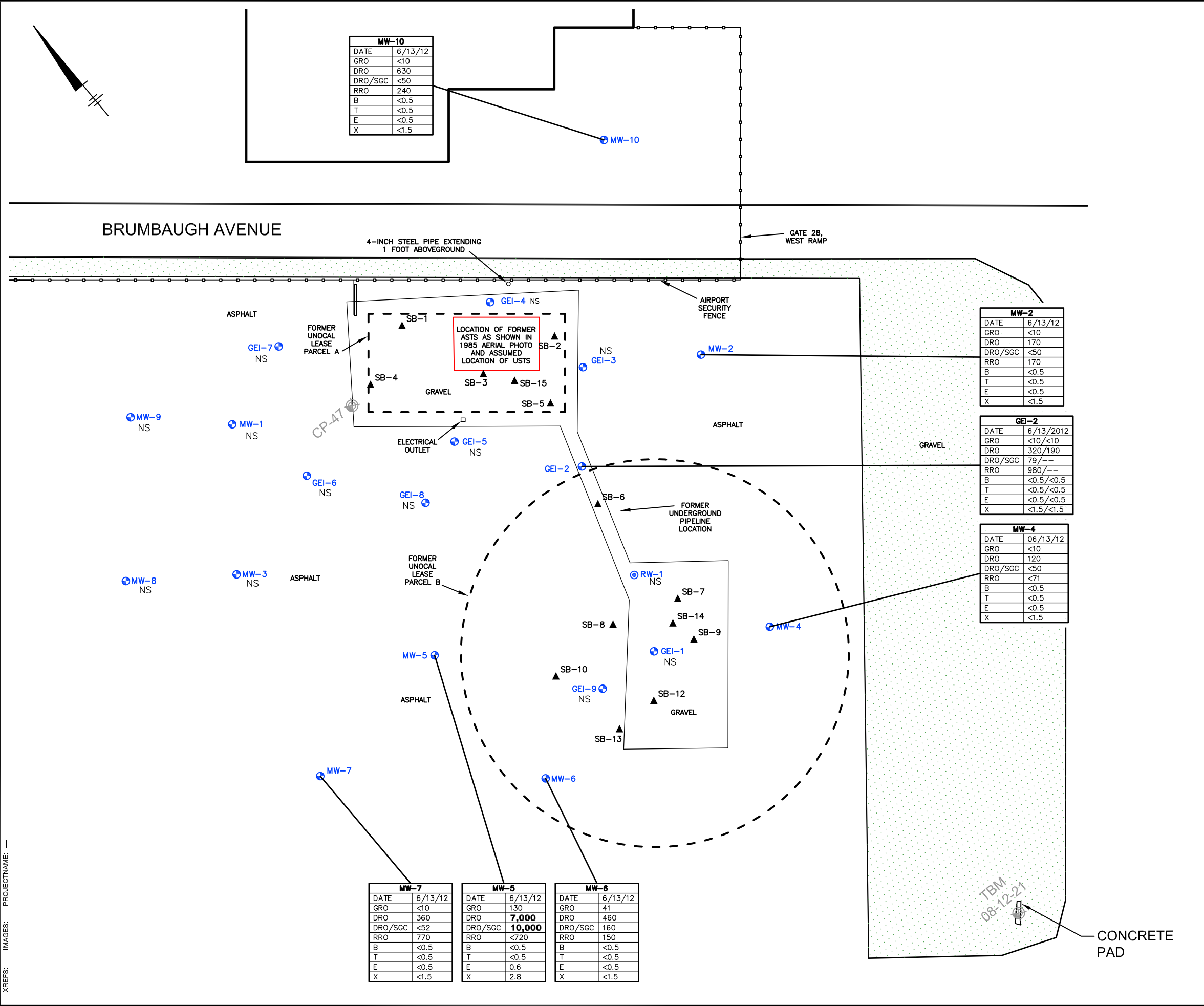
CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK.
FIRST SEMI-ANNUAL 2012 GROUNDWATER MONITORING REPORT

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE **3**

TBM
 08-12-21
 CONCRETE PAD

CITY: TMA-A, FL DIV/GROUP: 85 DR: RICHARDS, LD: J. RICHARDS PIC: (Opt) PM: (Read) TM: (Opt) LYR: (Opt) ONE="OFF" REF="G:\ENVCAD\TAMPACT\Chevron\USA\Chevron_306443\B0045507\0006\0002\USA_GMR_2012\B0045507\B01.dwg LAYOUT: 4 SAVED: 8/7/2012 9:30 AM ACADVER: 18.1S (LMS TECH) PAGES: 18 PLOTSTYLE: TABLE: PLT: FULL.CTB PLOTTED: 8/7/2012 9:31 AM BY: RICHARDS, JIM



MW-10	
DATE	6/13/12
GRO	<10
DRO	6.30
DRO/SGC	<50
RRO	240
B	<0.5
T	<0.5
E	<0.5
X	<1.5

MW-2	
DATE	6/13/12
GRO	<10
DRO	170
DRO/SGC	<50
RRO	170
B	<0.5
T	<0.5
E	<0.5
X	<1.5

GEI-2	
DATE	6/13/2012
GRO	<10/<10
DRO	320/190
DRO/SGC	79/--
RRO	980/--
B	<0.5/<0.5
T	<0.5/<0.5
E	<0.5/<0.5
X	<1.5/<1.5

MW-4	
DATE	06/13/12
GRO	<10
DRO	120
DRO/SGC	<50
RRO	<71
B	<0.5
T	<0.5
E	<0.5
X	<1.5

MW-7	
DATE	6/13/12
GRO	<10
DRO	360
DRO/SGC	<52
RRO	770
B	<0.5
T	<0.5
E	<0.5
X	<1.5

MW-5	
DATE	6/13/12
GRO	130
DRO	7,000
DRO/SGC	10,000
RRO	<720
B	<0.5
T	<0.5
E	0.6
X	2.8

MW-6	
DATE	6/13/12
GRO	41
DRO	460
DRO/SGC	160
RRO	150
B	<0.5
T	<0.5
E	<0.5
X	<1.5

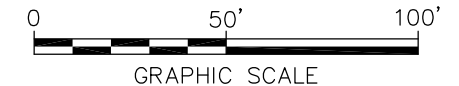
LEGEND

- SURVEY CONTROL POINT
- MONITORING WELL
- RECOVERY WELL
- SOIL BORING

SAMPLE LOCATION	
DATE	SAMPLE DATE
GRO	Gasoline Range Organics
DRO	Diesel Range Organics
DRO/SGC	Diesel Range Organics with Silica gel cleanup
RRO	Residual Range Organics
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total Xylenes

RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)
 BOLD = EXCEEDS GROUNDWATER CLEANUP LEVEL (GCL)
 20/32 = DUPLICATE SAMPLE COLLECTED
 <0.5 = RESULT IS BELOW LABORATORY DETECTION LIMIT
 NS = NOT SAMPLED
 -- = NOT ANALYZED

- Notes:
- Basis of horizontal control NAD83 position (EPOCH 2003) and vertical control (NAVD88) was an Opus solution from NGS stations "SUAF Surveyorsexch UAF CORS APR", "FAIR GILMORE CREEK OBS CORS ARP", GRNX AKDA AS204 CORS ARP", "CENA CENTRAL ALSAKA CORS ARP", "AB39 FORTYKON AK2008 CORS ARP", "AB37 PAXON2 AS2004 CORS ARP" to establish the position and elevation of CP-47.
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 Elev.=432.502 (NAVD88)
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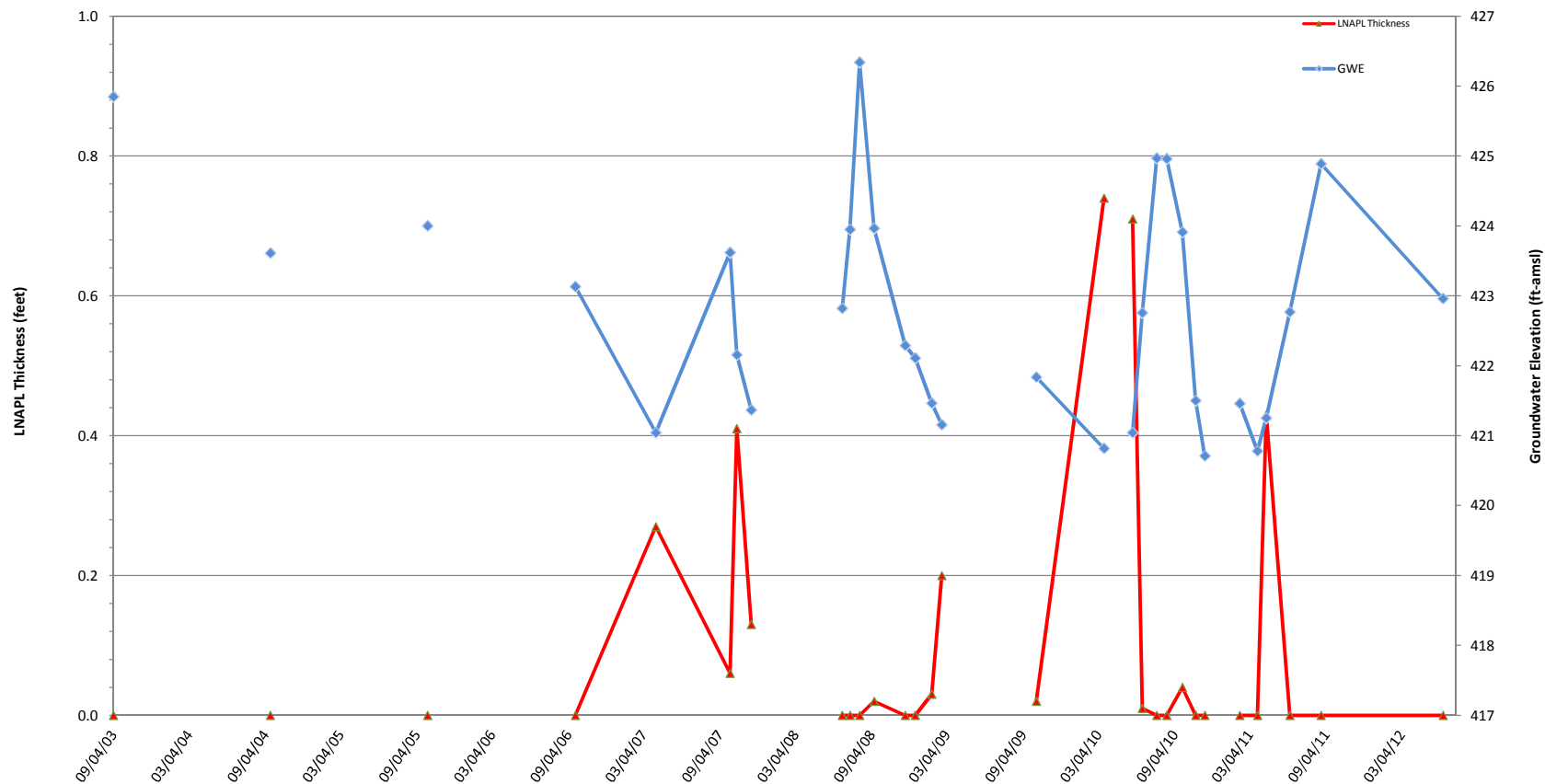


SOURCE: Base map provided by GEOENGINEERS. Map date 5/15/05, full scale. Base map updated with survey information by "McLane Consulting, Inc.", Date 8/31/08 and 10/28/10.

CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK.
FIRST SEMI-ANNUAL 2012 GROUNDWATER MONITORING REPORT

GROUNDWATER ANALYTICAL SUMMARY MAP - JUNE 13, 2012

FIGURE 4



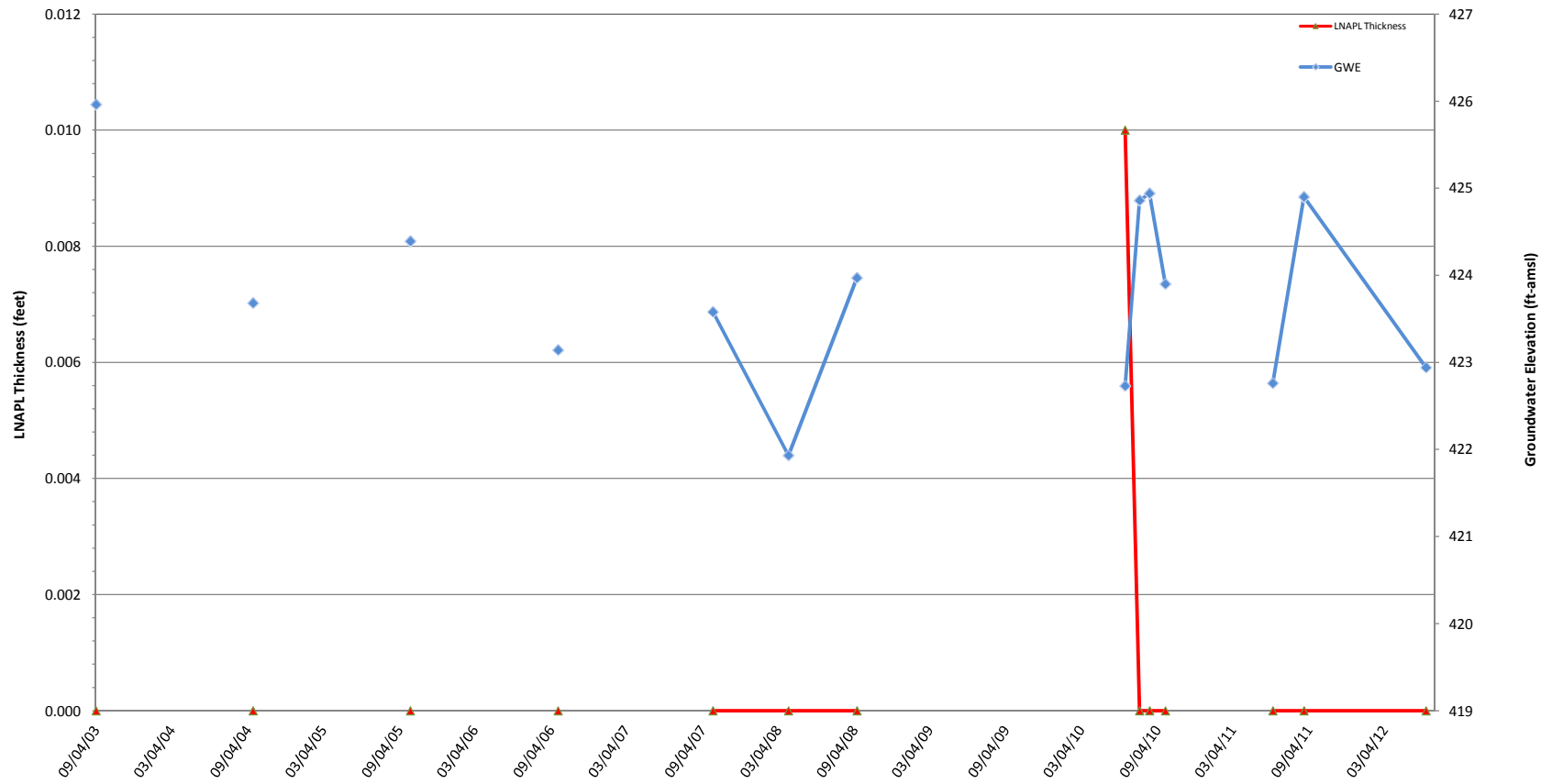
LEGEND:

GWE = Groundwater elevation
 LNAPL = Light non-aqueous phase liquid
 ft-msl = Feet mean sea level
 Data gaps = wells were inaccessible and not gauged

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Monitoring Well GEI-1 Historical Groundwater Elevation and LNAPL Thickness





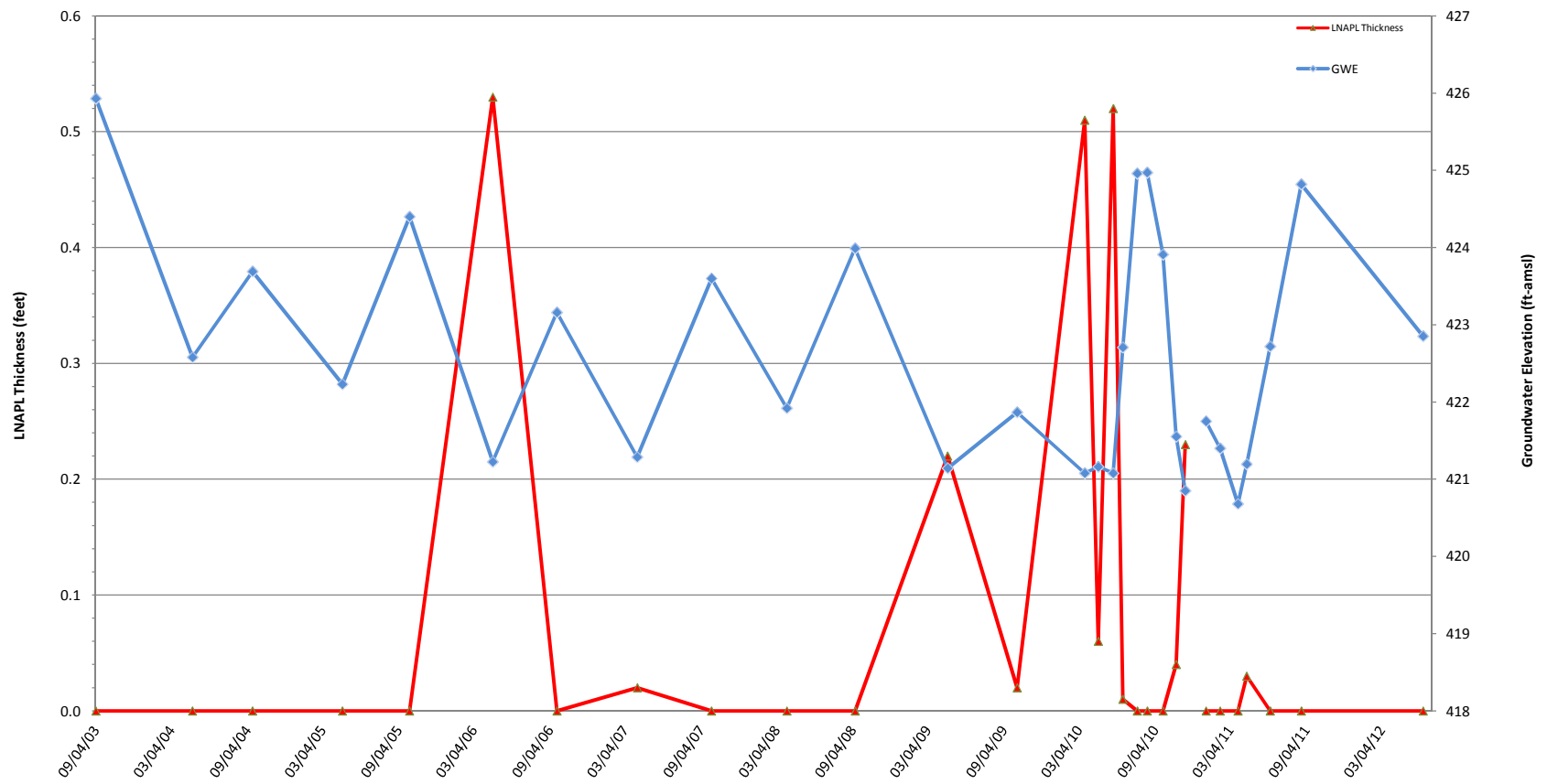
LEGEND:

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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
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Monitoring Well GEI-2 Historical Groundwater Elevation and LNAPL Thickness

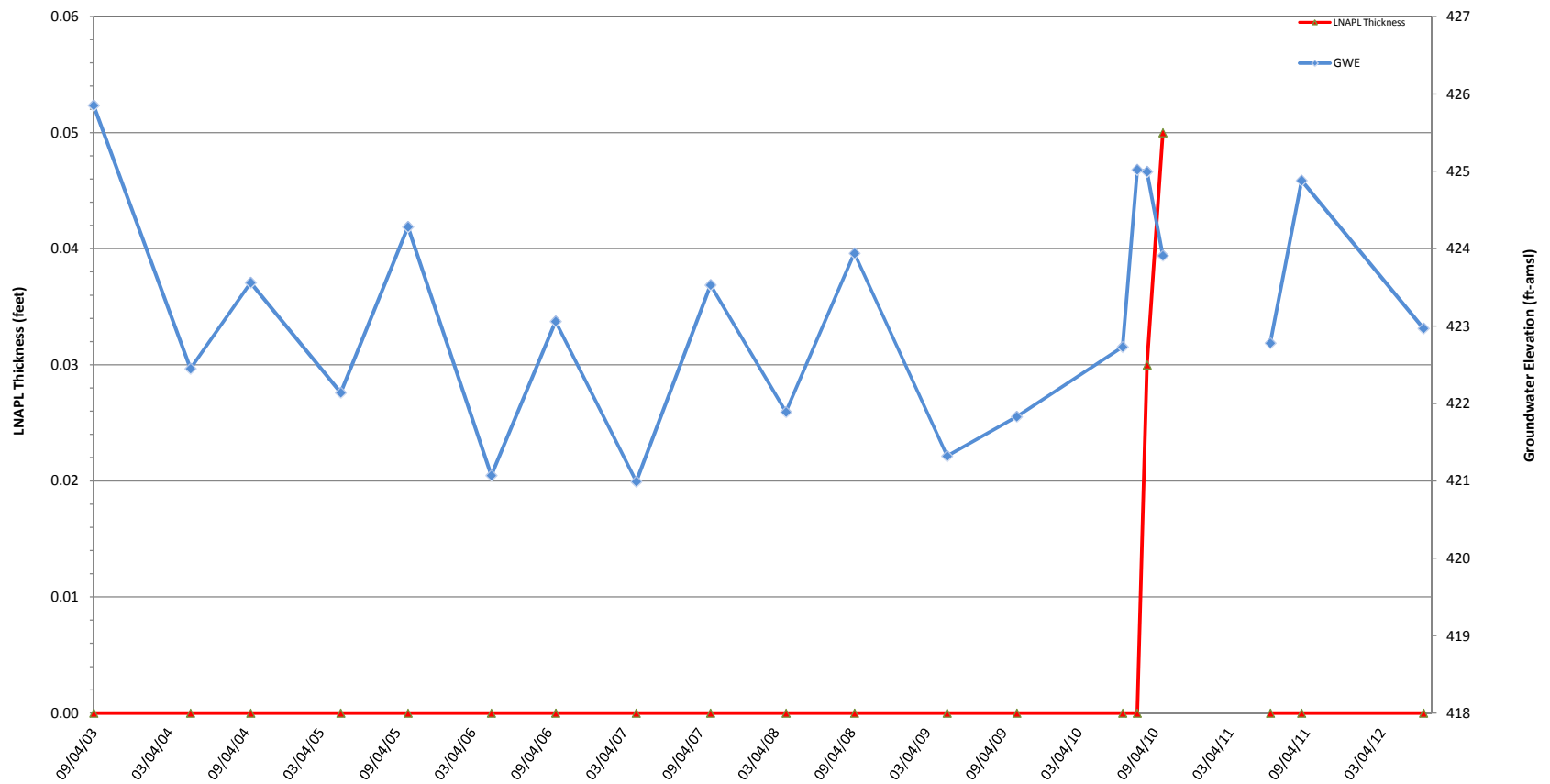




LEGEND:

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 LNAPL = Light non-aqueous phase liquid
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT) GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK FIRST SEMI-ANNUAL 2012 GROUNDWATER MONITORING REPORT	
Monitoring Well GEI-3 Historical Groundwater Elevation and LNAPL Thickness	
	FIGURE 7



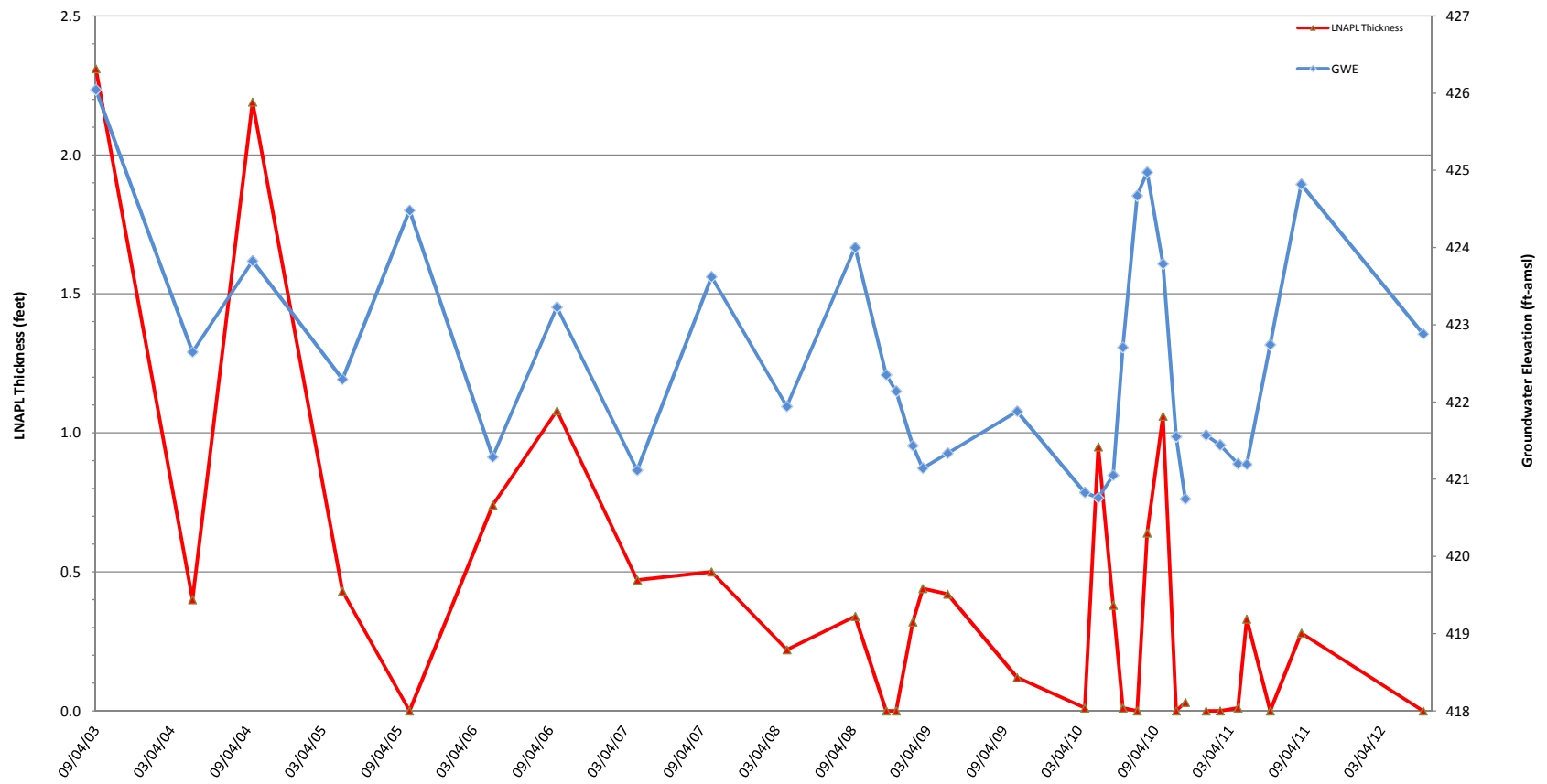
LEGEND:

GWE = Groundwater elevation
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
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FIRST SEMI-ANNUAL 2012 GROUNDWATER MONITORING REPORT

Monitoring Well GEI-4 Historical Groundwater Elevation and LNAPL Thickness





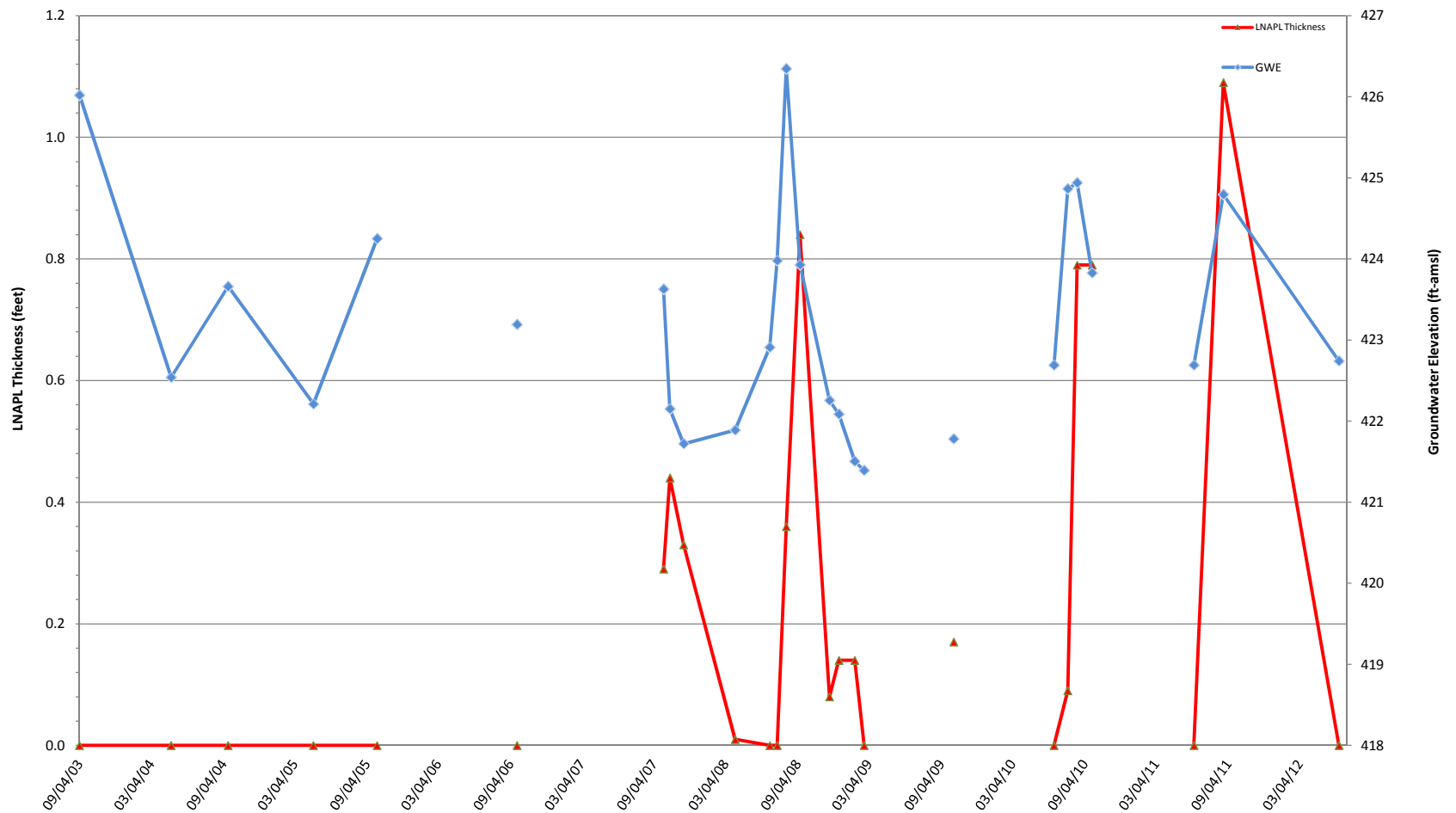
LEGEND:

GWE = Groundwater elevation
 LNAPL = Light non-aqueous phase liquid
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
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Monitoring Well GEI-5 Historical Groundwater Elevation and LNAPL Thickness





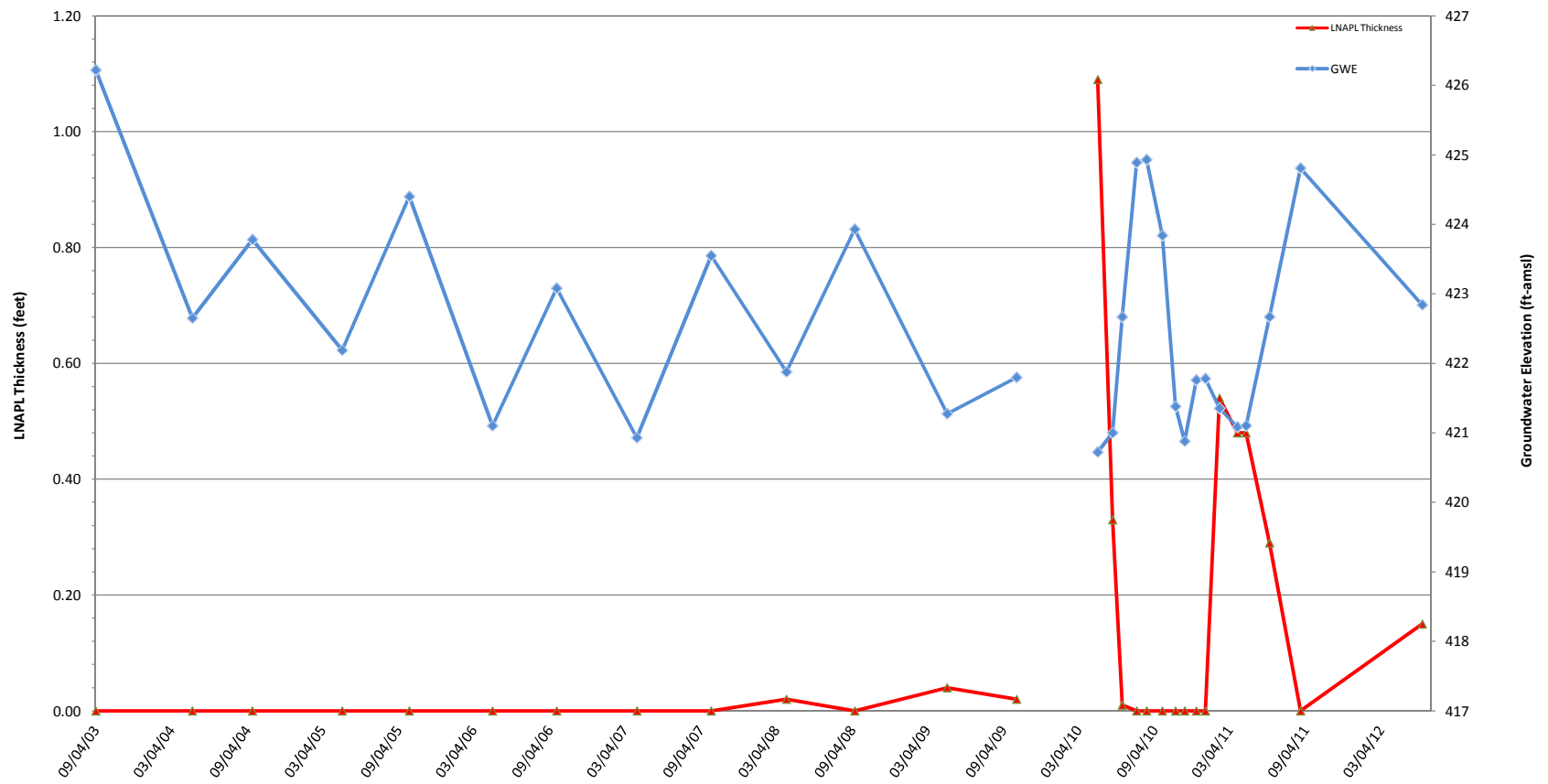
LEGEND:

GWE = Groundwater elevation
 LNAPL = Light non-aqueous phase liquid
 ft-msl = Feet mean sea level
 Data gaps = wells were inaccessible and not gauged

CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
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**FIRST SEMI-ANNUAL 2012 GROUNDWATER
 MONITORING REPORT**

**Monitoring Well GEI-6 Historical Groundwater
 Elevation and LNAPL Thickness**





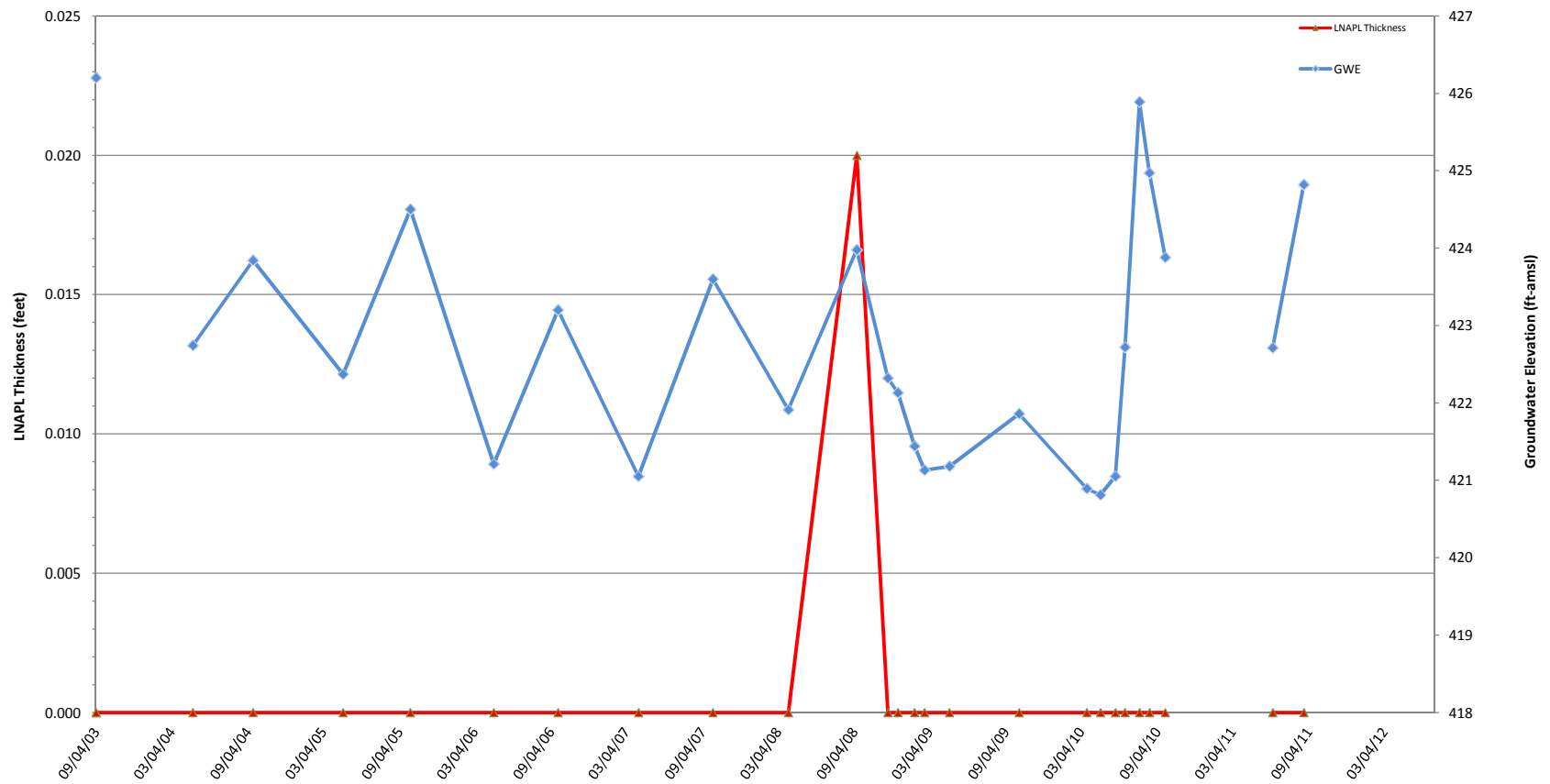
LEGEND:

GWE = Groundwater elevation
 LNAPL = Light non-aqueous phase liquid
 ft-msl = Feet mean sea level
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
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 MONITORING REPORT**

**Monitoring Well GEI-7 Historical Groundwater
 Elevation and LNAPL Thickness**





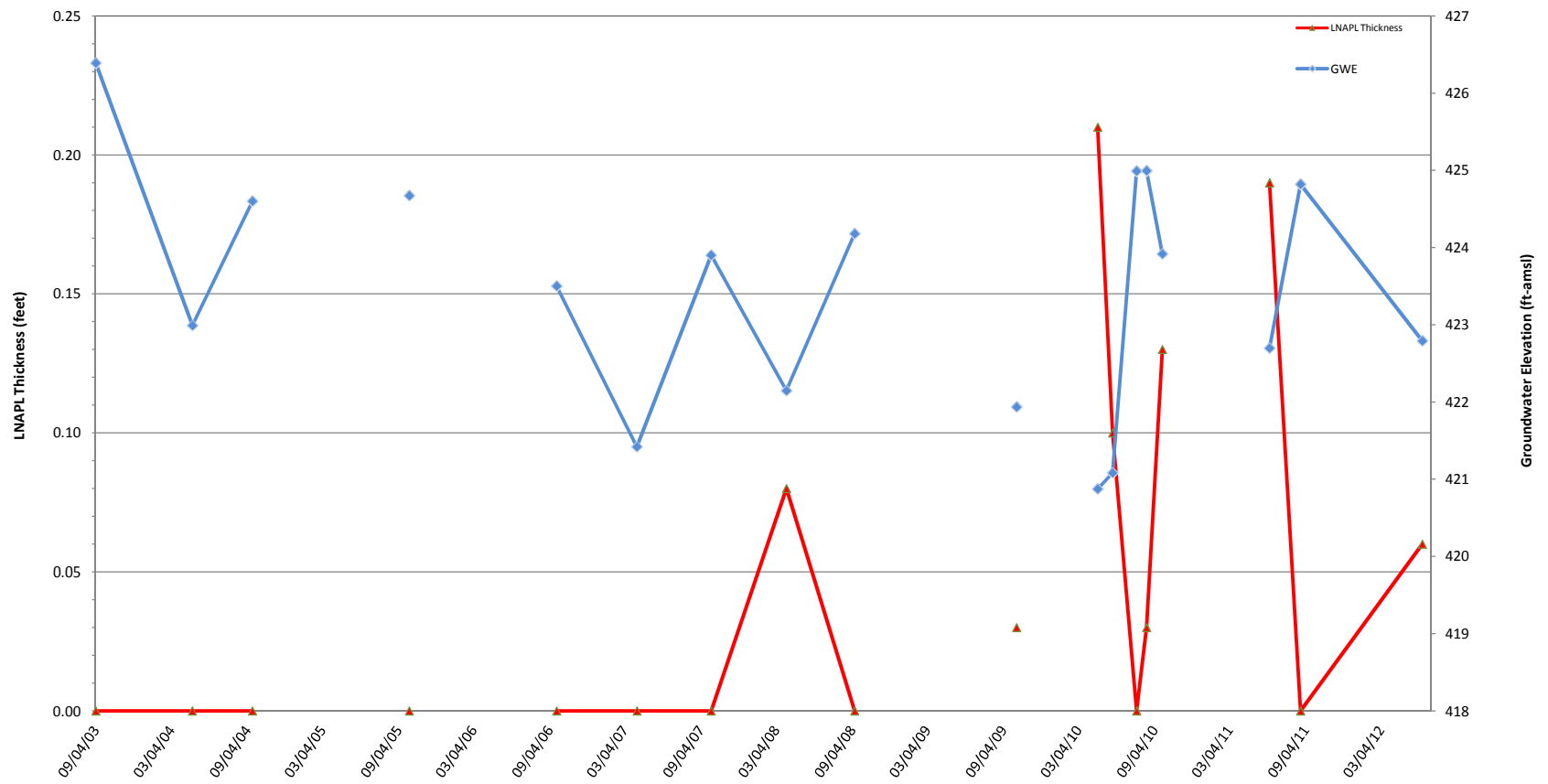
LEGEND:

GWE = Groundwater elevation
 LNAPL = Light non-aqueous phase liquid
 ft-msl = Feet mean sea level
 Data gaps = wells were inaccessible and not gauged, including First Semi-Annual 2012

CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK
**FIRST SEMI-ANNUAL 2012 GROUNDWATER
 MONITORING REPORT**

**Monitoring Well GEI-8 Historical Groundwater
 Elevation and LNAPL Thickness**

**FIGURE
12**



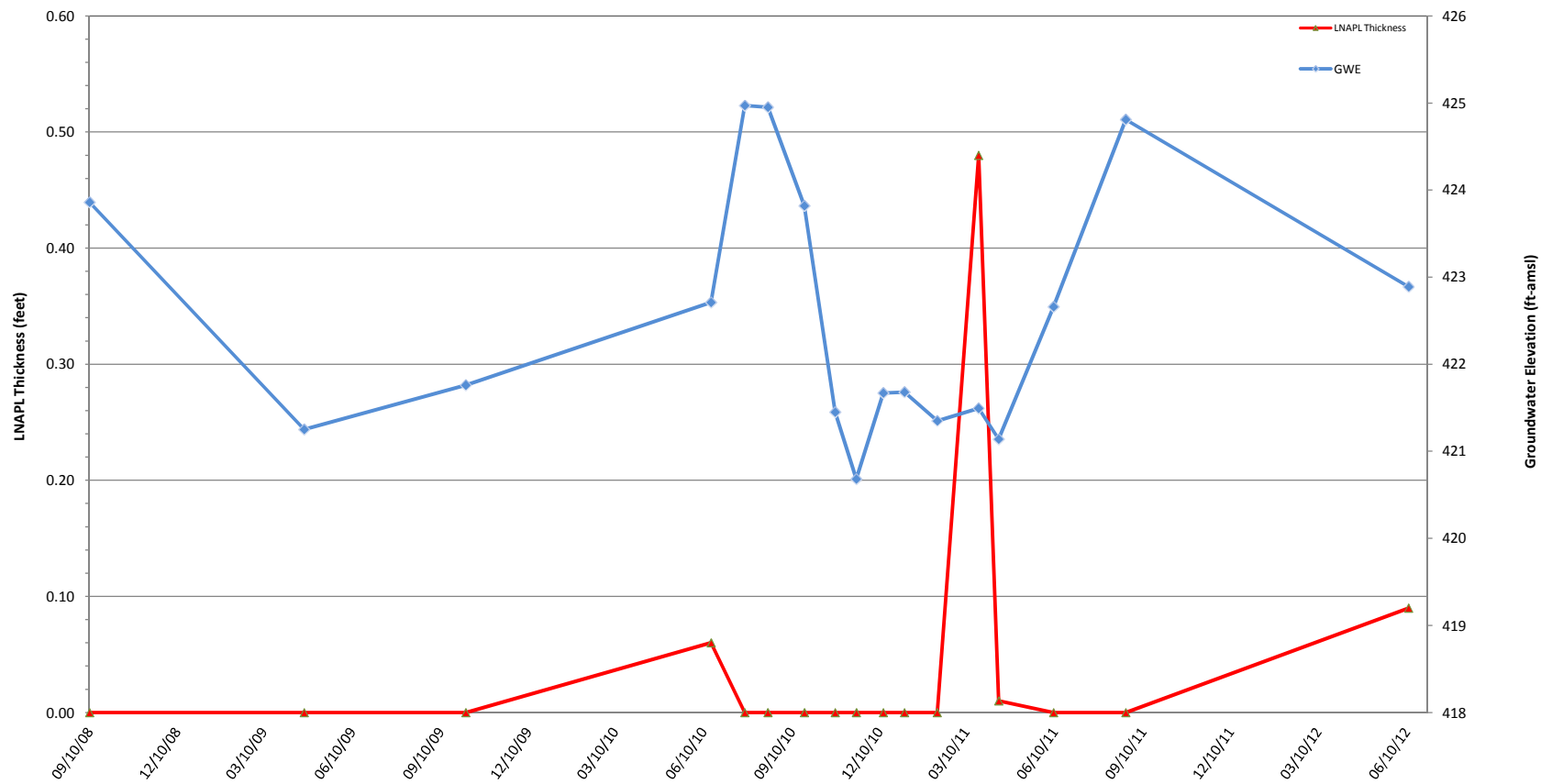
LEGEND:

GWE = Groundwater elevation
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
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**FIRST SEMI-ANNUAL 2012 GROUNDWATER
 MONITORING REPORT**

**Monitoring Well GEI-9 Historical Groundwater
 Elevation and LNAPL Thickness**





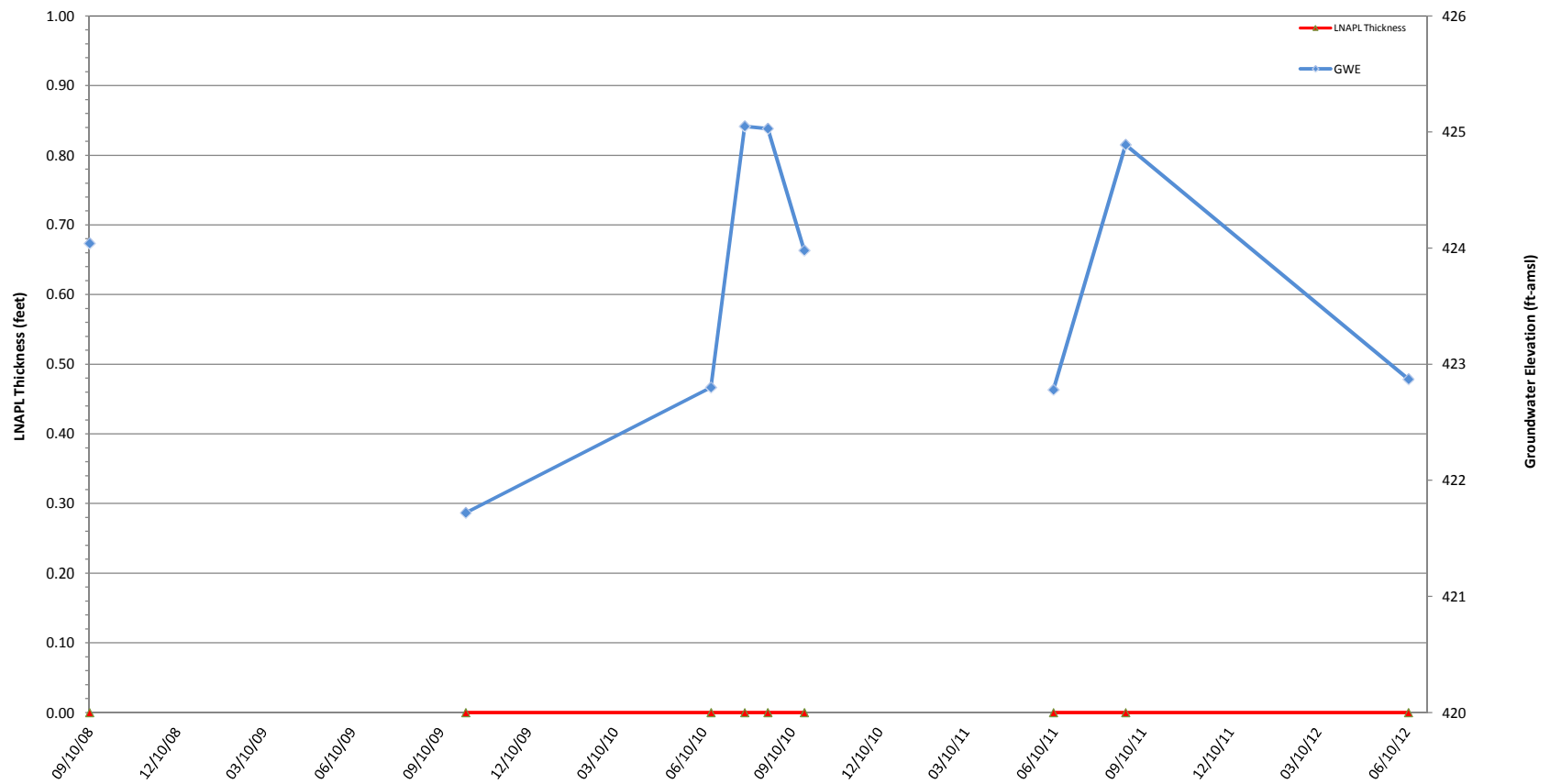
LEGEND:

GWE = Groundwater elevation
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 ft-msl = Feet mean sea level
 Data gaps = wells were inaccessible and not gauged

CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK
**FIRST SEMI-ANNUAL 2012 GROUNDWATER
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**Monitoring Well MW-1 Historical Groundwater
 Elevation and LNAPL Thickness**






LEGEND:

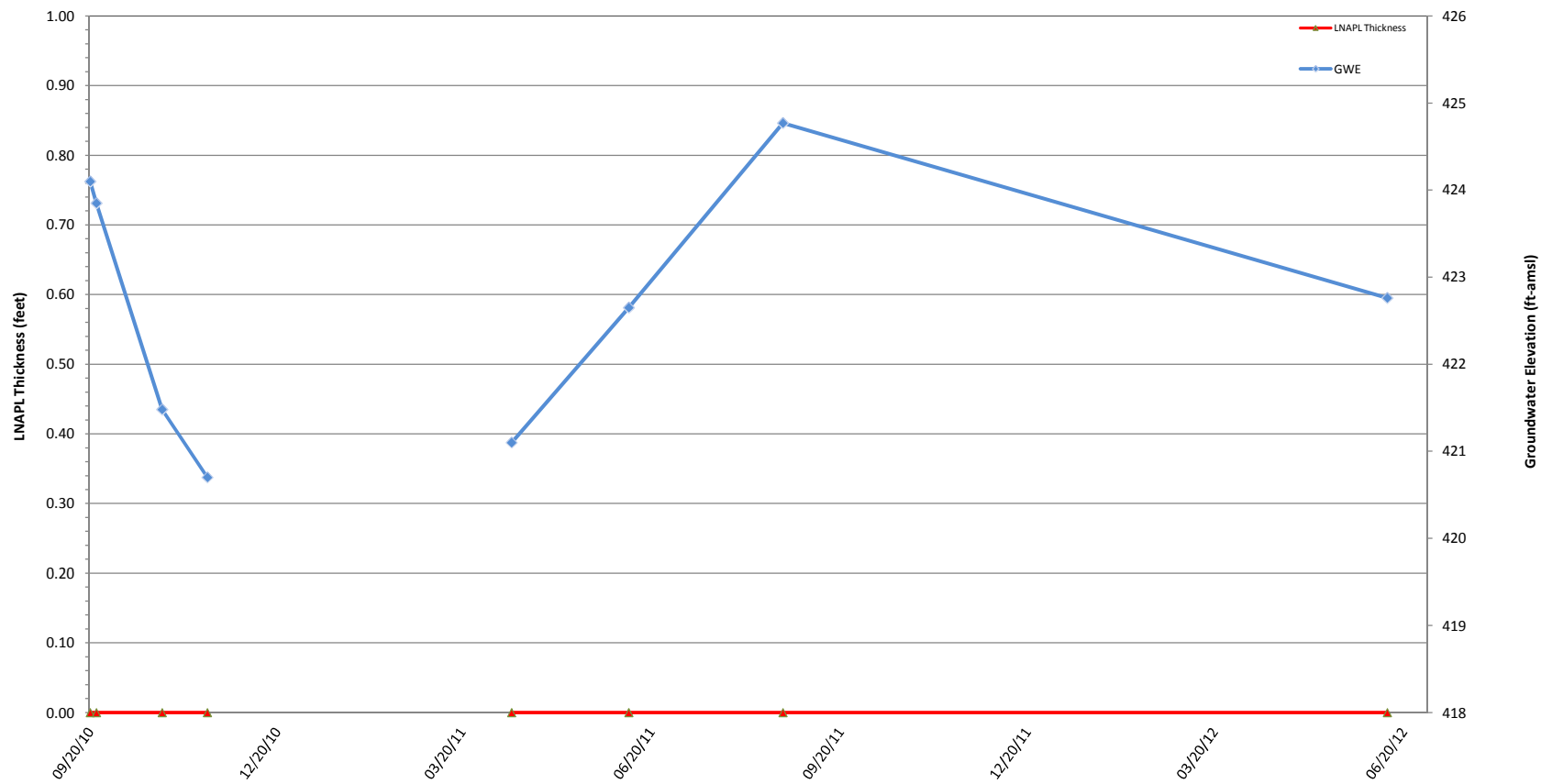
GWE = Groundwater elevation
 LNAPL = Light non-aqueous phase liquid
 ft-msl = Feet mean sea level
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK

**FIRST SEMI-ANNUAL 2012 GROUNDWATER
 MONITORING REPORT**

**Monitoring Well MW-4 Historical Groundwater
 Elevation and LNAPL Thickness**



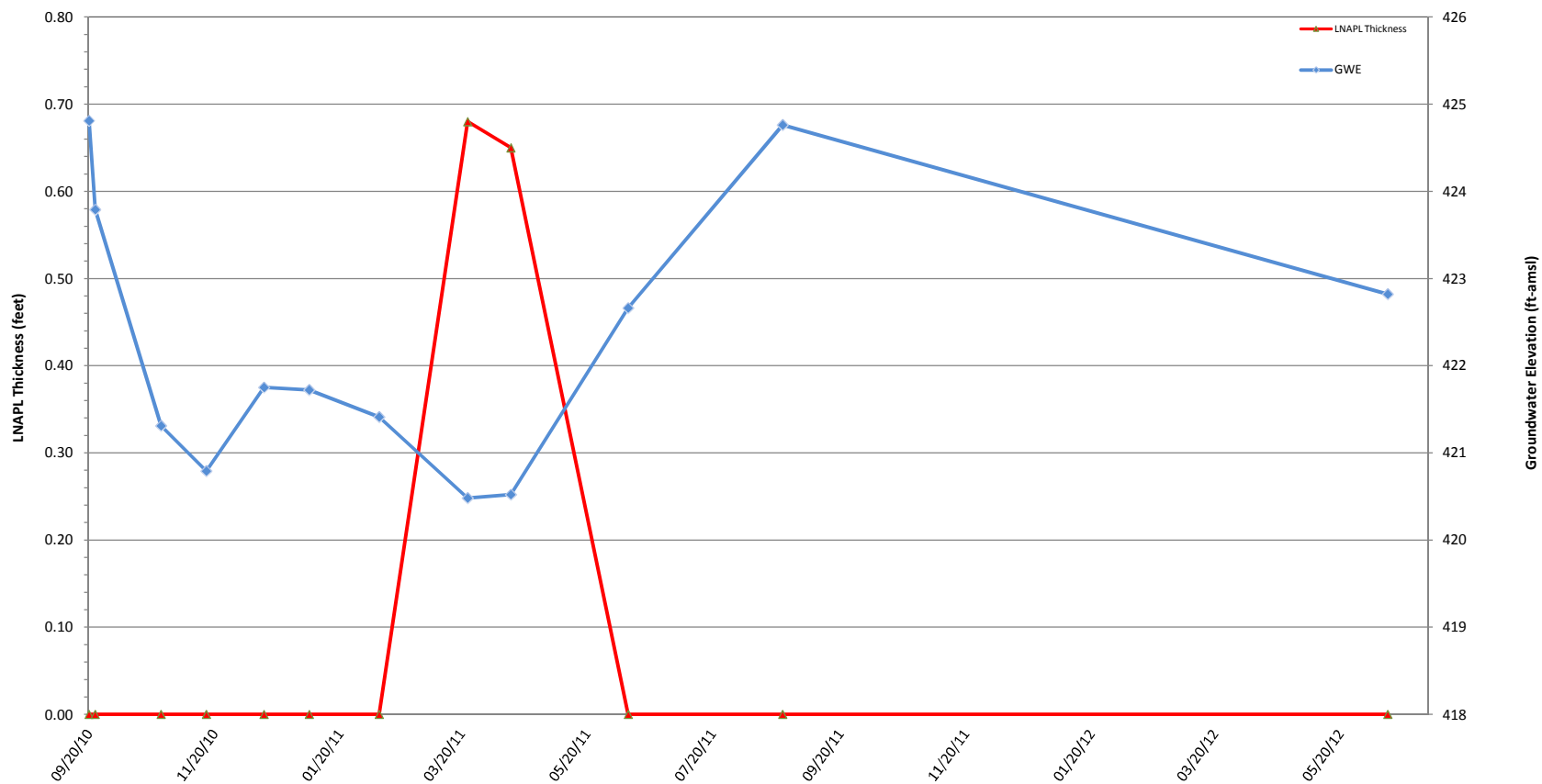


LEGEND:
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK
**FIRST SEMI-ANNUAL 2012 GROUNDWATER
 MONITORING REPORT**

**Monitoring Well MW-7 Historical Groundwater
 Elevation and LNAPL Thickness**

FIGURE
16

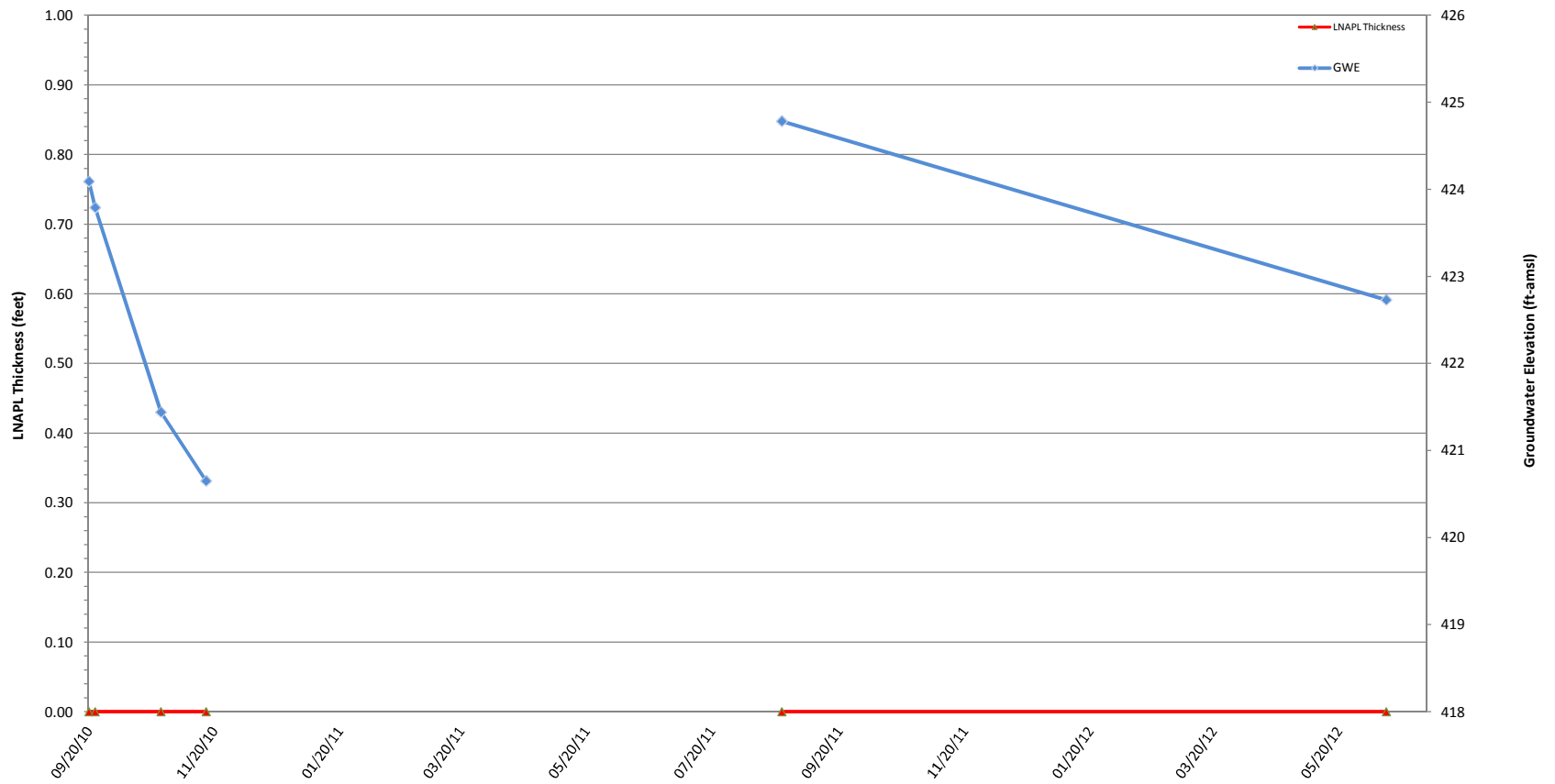


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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK
FIRST SEMI-ANNUAL 2012 GROUNDWATER MONITORING REPORT

Monitoring Well MW-8 Historical Groundwater Elevation and LNAPL Thickness

FIGURE 17



LEGEND:
 GWE = Groundwater elevation
 LNAPL = Light non-aqueous phase liquid
 ft-msl = Feet mean sea level
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
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**FIRST SEMI-ANNUAL 2012 GROUNDWATER
 MONITORING REPORT**

**Monitoring Well MW-9 Historical Groundwater
 Elevation and LNAPL Thickness**


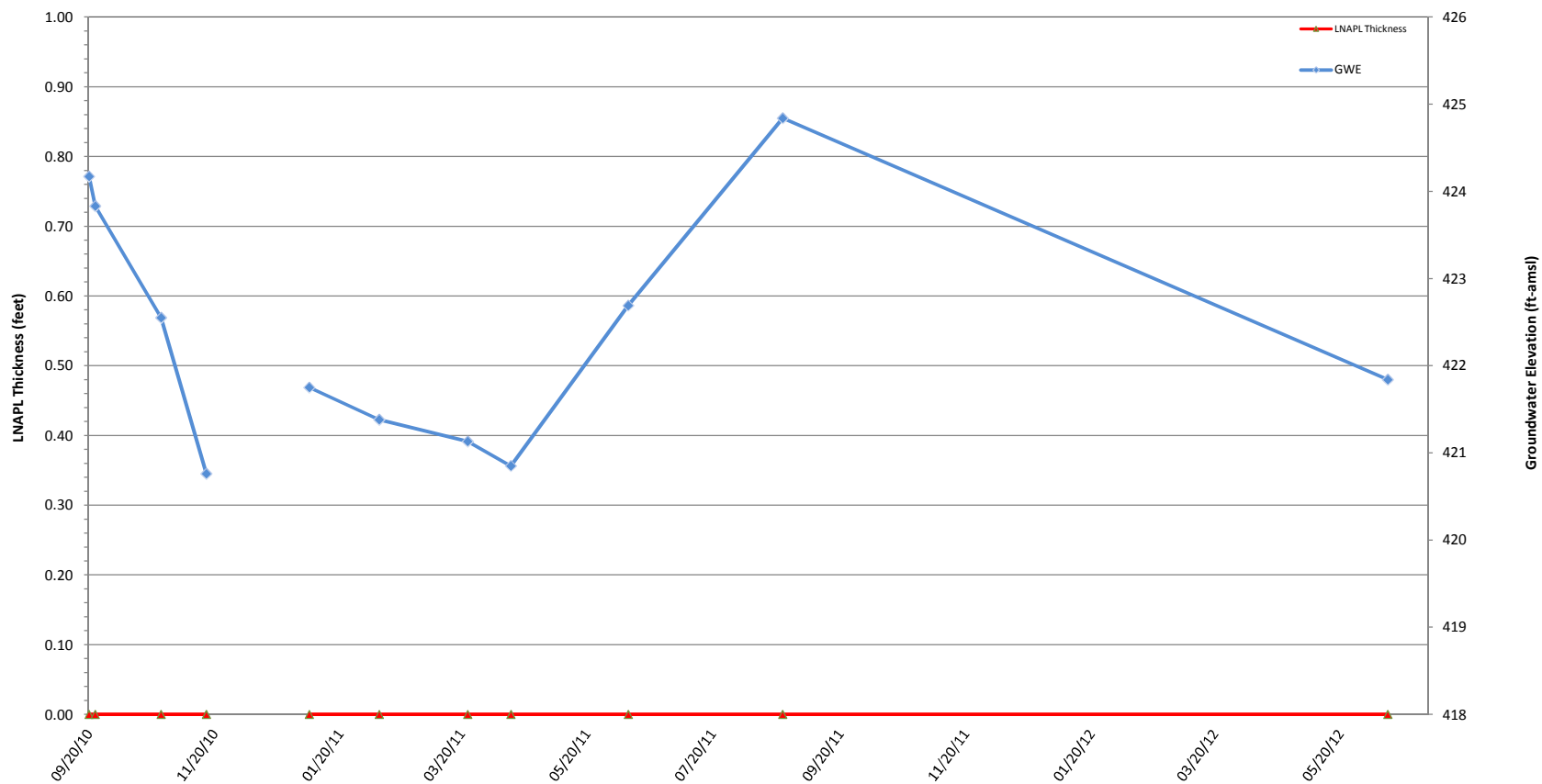


FIGURE
18



LEGEND:
 GWE = Groundwater elevation
 LNAPL = Light non-aqueous phase liquid
 ft-msl = Feet mean sea level
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CHEVRON #306443 (FORMER UNOCAL BULK PLANT)
 GATE 28, WEST RAMP, FAIRBANKS AIRPORT, FAIRBANKS, AK
**FIRST SEMI-ANNUAL 2012 GROUNDWATER
 MONITORING REPORT**

**Monitoring Well MW-10 Historical Groundwater
 Elevation and LNAPL Thickness**



ARCADIS

Appendix A

Field Data Sheets

Location Gate 28 Walling, Fishbake Date 8-26-2011
 Project / Client EIA Unavail #306443 / Chevron

7:45 Mobilize to Feller to Ship Sinks to Leconte
 8:20 Mobilize to EIA Unavail to conduct LNAPL removal via peristaltic pumping
 8:30 Arrive on site complete PPE, Review ICA, L25A, SOP, O & T, and Hazard identification.
 8:45 Basin set up GEI-6 for LNAPL removal. Paged 12 gallons of LNAPL - No exchange
 Initial depth to LNAPL 7.40'
 Initial depth to W.L. 8.14'
 Final depth to water 7.26'
 Paged on O & T sets of LNAPL from GEI-5.
 LNAPL Paged & overpacked down on site.
 Mobilize off site to storage unit Feller / Airport

Location GATE 28 West Ramp, FARRAW Date 6-12-12
 Project / Client EIA Unavail #306443 / Chevron

1500	→ SM/MH	arrive on site and talk to Tvers about getting access to the site. She inspects vehicle and gives gate opener.			
1515	→ SM/MH	arrive in Era hangar area and talk to Era employees of work that is being done on site.			
1540	→ SM/MH	Fill out SOU, review and dig up ICA. SM signs HMR/draw site test.			
1620	Begin to gauge MWs				
WELL ID	DTP	DRW	STB	PID	Comments
GEI-1	—	9.21	—	200	Good 5/3
GEI-2	—	9.21	—	0.8	Good 3/3
GEI-3	—	9.22	—	151	Good 3/3
GEI-4	—	9.0	—	174	Good 3/3
GEI-5	—	9.55	—	173	Good 3/3
GEI-6	—	9.15	—	112	Good 3/3
GEI-7	9.27	9.42	—	118	Good 3/3
GEI-8	ICE @ 35'	—	—	12.7	Good 3/3
GEI-9	16.01	16.07	—	187	Good 3/3

Location Gate 28, West Ramp Date 6/12/12

Project / Client 306443 / Chevron

ISA12 G-WM

Well ID	DTP	DIW	DTB #	DD	Comments
MW-1	9.59	9.68	-	26.9	Good 2/2
MW-2	-	8.82	-	8.0 0.0	Good 2/2
MW-3	-	10.0	-	122	Good 2/2
MW-4	-	9.94	-	55.8	Good 2/2
MW-5	-	10.02	-	0.8	Good 3/3
MW-6	-	9.68	-	0.4	
MW-7	-	10.02	-	0.0	Good 3/2
MW-8	-	10.29	-	25.8	Good 2/2
MW-9	-	9.66	-	0.0	Good 2/2
MW-10	-	10.91	-	0.1	0.1 1/2 GAB, BWT
RW-1	-	9.37	-	310	Good 2/2

* DTB not gauged to prevent cross contamination. Will be gauged annually.

1820 SM/MH Finish gauging round. Decon equipment. Call Tony / Dave.

1830 Run off site.

James McLevin

Location Gate 28, West Ramp Date 6/13/12

Project / Client 306443 / Chevron

ISA12 G-WM

1115 → SM/MH arrive on site. Conduct H&S fatigue meeting and review. Ditch up JTA. Start prep work equipment.

1140 → SM/MH begin work.

Well ID	Sample Time	Comments
GEI-1	NS	LNAPL Globules present
GEI-2	1415	
GEI-3	NS	LNAPL Globules present
GEI-4	1355	
GEI-5	NS	LNAPL in well
GEI-6	NS	LNAPL in well
GEI-7	1240	
GEI-8	NS	
GEI-9	NS	
GEI-10	NS	
MW-5	1600	
MW-6	1425	
MW-7	1540	
MW-8	NS	LNAPL Globules present
MW-9	NS	Obscured w/ ice 6'
MW-10	1535	
RW-1	NS	LNAPL Globules Present
1640	SM/MH complete sample & leave site.	

James McLevin

Location GATE 28, West PUMP Date 6-14-12Project / Client 306743 / CHEURONLNARL RECOVERY

1400 → SM/MAN arrive on site. Do H's

Kilgore meeting, Review SOP / JSA.

1410 → Setup on well & EA-F, 100 ml/min. will pump @

1416 → 8.70 DTP / 8.85 DTW. Start
Pumping out LNARL.1419:30 → About 50% product / 50% water so
pumping stops. Green @ 8.87 w/ LNARL1430 → 8.87 LNARL / 8.88 DTW. Commence
pumping. Immediately more water
than product. Stop pumping. Finish
well. Decou and close well measurement
~~section~~.1435 → Before cleanup green @ 8.88 DTW
with no product.1445 → Move to MW-1. Greened @ 9.10 DTP
and 9.21 DTW. 0.8 thickness1455 → Start pumping. Immediately 50% water
and 50% product. Purge for 1
~~500~~ minute until more water thanLocation GATE 28 West PUMP Date 6-17-12Project / Client 306743 / CHEURONLNARL RECOVERY

Product. Gauge @ 9.20 DTW.

1501 → Gauge @ 9.20 DTW. No water.

1515 → Shut down well and down to bottom
All tubing used is finished out.1530 → Move to down. Pour all purge
LNARL and bed in down.1610 → Go to office to return ex-permit
and some papers. Non site job

* 1 PD down on LNARL removal
@ 1416.

ARCADIS

Appendix B

Laboratory Analytical Reports

ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

Chevron
L4310
6001 Bollinger Canyon Road
San Ramon CA 94583

June 26, 2012

Project: 306443

Submittal Date: 06/15/2012
Group Number: 1316094
SDG: LSU11
PO Number: 0015097006
Release Number: CARRIER

State of Sample Origin: AK

<u>Client Sample Description</u>	<u>Lancaster Labs (LLI) #</u>
GEI-2 Grab Water Sample	6689279
MW-2 Grab Water Sample	6689280
MW-4 Grab Water Sample	6689281
MW-5 Grab Water Sample	6689282
MW-6 Grab Water Sample	6689283
MW-7 Grab Water Sample	6689284
MW-10 Grab Water Sample	6689285
MW-10_MS Grab Water Sample	6689286
MW-10_MSD Grab Water Sample	6689287
BD-1 Grab Water Sample	6689288
Trip_Blank Water Sample	6689289

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

ELECTRONIC COPY TO	Arcadis	Attn: Dana Ramquist
ELECTRONIC COPY TO	Arcadis	Attn: David Beaudoin
ELECTRONIC COPY TO	ARCADIS	Attn: Michael MacDaniel
1 COPY TO	Data Package Group	

Respectfully Submitted,



Jill M. Parker
Senior Specialist

(717) 556-7262

Sample Description: GEI-2 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689279
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 12:40 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

GEI-2 SDG#: LSU11-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	N.D.	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	N.D.	0.0005	1
02102	Ethylbenzene	100-41-4	N.D.	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	N.D.	0.0015	1
GC Petroleum AK 102/103 4/08/02					
Hydrocarbons modified					
02923	C10-<C25 DRO	n.a.	0.32	0.047	1
02923	C25-C36 RRO	n.a.	0.98	0.066	1
GC Petroleum AK 102/AK 103					
Hydrocarbons w/Si 04/08/02					
02244	TPH-DRO AK C10-C25 w/Si Gel	n.a.	0.079	0.051	1
The reverse surrogate, capric acid, is present at <1%.					

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 16:50	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 16:50	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 16:50	Marie D John	1
02923	TPH-DRO/RRO (AK) water	AK 102/103 4/08/02 modified	1	121700027A	06/21/2012 01:37	Tyler O Griffin	1
02244	TPH-DRO AK C10-C25 w/Si Gel	AK 102/AK 103 04/08/02	1	121700028A	06/22/2012 01:51	Tyler O Griffin	1
11242	AK DRO Ext (W) w/SG	AK 102/AK 103 04/08/02	1	121700028A	06/19/2012 08:15	Kerrie A Freeburn	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1

Sample Description: MW-2 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689280
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 16:15 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

FIAM2 SDG#: LSU11-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	N.D.	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	N.D.	0.0005	1
02102	Ethylbenzene	100-41-4	N.D.	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	N.D.	0.0015	1
GC Miscellaneous RSKSOP-175 08/11/94 modified					
07105	Methane	74-82-8	0.014	0.0050	1
GC Petroleum AK 102/103 4/08/02 modified					
Hydrocarbons					
02923	C10-<C25 DRO	n.a.	0.17	0.051	1
02923	C25-C36 RRO	n.a.	0.17	0.071	1
GC Petroleum AK 102/AK 103					
Hydrocarbons w/Si 04/08/02					
02244	TPH-DRO AK C10-C25 w/Si Gel	n.a.	N.D.	0.050	1
The reverse surrogate, capric acid, is present at <1%.					
Wet Chemistry EPA 300.0					
mg/l					
00368	Nitrate Nitrogen	14797-55-8	1.2	0.25	5
00228	Sulfate	14808-79-8	31.1	1.5	5
EPA 310.1					
mg/l as CaCO3					
12150	Total Alkalinity	n.a.	412	0.70	1
12707	Phenolphthalein Alkalinity	n.a.	N.D.	0.70	1

General Sample Comments

State of Alaska Lab Certification No. UST-061

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Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 17:15	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 17:15	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 17:15	Marie D John	1

Sample Description: MW-2 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689280
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 16:15 by MM

Chevron

L4310

Submitted: 06/15/2012 09:50

6001 Bollinger Canyon Road

Reported: 06/26/2012 17:07

San Ramon CA 94583

FIAM2 SDG#: LSU11-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 08/11/94 modified	1	121730028A	06/21/2012 23:47	Elizabeth J Marin	1
02923	TPH-DRO/RRO (AK) water	AK 102/103 4/08/02 modified	1	121700027A	06/20/2012 22:18	Tyler O Griffin	1
02244	TPH-DRO AK C10-C25 w/Si Gel	AK 102/AK 103 04/08/02	1	121700028A	06/22/2012 02:19	Tyler O Griffin	1
11242	AK DRO Ext (W) w/SG	AK 102/AK 103 04/08/02	1	121700028A	06/19/2012 08:15	Kerrie A Freeburn	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1
00368	Nitrate Nitrogen	EPA 300.0	1	12167655601A	06/15/2012 17:30	Christopher D Meeks	5
00228	Sulfate	EPA 300.0	1	12167655601A	06/15/2012 17:30	Christopher D Meeks	5
12150	Total Alkalinity	EPA 310.1	1	12175002201B	06/23/2012 12:07	Susan A Engle	1
12707	Phenolphthalein Alkalinity	EPA 310.1	1	12175002201B	06/23/2012 12:07	Susan A Engle	1

Sample Description: MW-4 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689281
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 13:55 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

FIAM4 SDG#: LSU11-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	N.D.	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	N.D.	0.0005	1
02102	Ethylbenzene	100-41-4	N.D.	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	N.D.	0.0015	1
GC Miscellaneous RSKSOP-175 08/11/94 modified					
07105	Methane	74-82-8	0.011	0.0050	1
GC Petroleum AK 102/103 4/08/02 modified					
Hydrocarbons					
02923	C10-<C25 DRO	n.a.	0.12	0.051	1
02923	C25-C36 RRO	n.a.	N.D.	0.071	1
GC Petroleum AK 102/AK 103					
Hydrocarbons w/Si 04/08/02					
02244	TPH-DRO AK C10-C25 w/Si Gel	n.a.	N.D.	0.050	1
The reverse surrogate, capric acid, is present at <1%.					
Wet Chemistry EPA 300.0					
mg/l					
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	5
00228	Sulfate	14808-79-8	22.0	1.5	5
EPA 310.1					
mg/l as CaCO3					
12150	Total Alkalinity	n.a.	268	0.70	1
12707	Phenolphthalein Alkalinity	n.a.	N.D.	0.70	1

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 17:41	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 17:41	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 17:41	Marie D John	1

Sample Description: MW-4 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689281
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 13:55 by MM

Chevron

L4310

Submitted: 06/15/2012 09:50

6001 Bollinger Canyon Road

Reported: 06/26/2012 17:07

San Ramon CA 94583

FIAM4 SDG#: LSU11-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 08/11/94 modified	1	121730028A	06/22/2012 00:05	Elizabeth J Marin	1
02923	TPH-DRO/RRO (AK) water	AK 102/103 4/08/02 modified	1	121700027A	06/20/2012 22:47	Tyler O Griffin	1
02244	TPH-DRO AK C10-C25 w/Si Gel	AK 102/AK 103 04/08/02	1	121700028A	06/22/2012 02:48	Tyler O Griffin	1
11242	AK DRO Ext (W) w/SG	AK 102/AK 103 04/08/02	1	121700028A	06/19/2012 08:15	Kerrie A Freeburn	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1
00368	Nitrate Nitrogen	EPA 300.0	1	12167655601A	06/15/2012 17:14	Christopher D Meeks	5
00228	Sulfate	EPA 300.0	1	12167655601A	06/15/2012 17:14	Christopher D Meeks	5
12150	Total Alkalinity	EPA 310.1	1	12175002201B	06/23/2012 12:13	Susan A Engle	1
12707	Phenolphthalein Alkalinity	EPA 310.1	1	12175002201B	06/23/2012 12:13	Susan A Engle	1

Sample Description: MW-5 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689282
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 16:00 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

FIAM5 SDG#: LSU11-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	mg/l 0.13	mg/l 0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	mg/l N.D.	mg/l 0.0005	1
02102	Ethylbenzene	100-41-4	0.0006	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	0.0028	0.0015	1
GC Petroleum AK 102/103 4/08/02					
Hydrocarbons modified					
02923	C10-<C25 DRO	n.a.	mg/l 7.0	mg/l 0.51	10
02923	C25-C36 RRO	n.a.	N.D.	0.72	10
GC Petroleum AK 102/AK 103					
Hydrocarbons w/Si 04/08/02					
02244	TPH-DRO AK C10-C25 w/Si Gel	n.a.	mg/l 10	mg/l 0.47	10
Due to the dilution of the sample extract, capric acid recovery can not be determined.					

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 18:06	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 18:06	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 18:06	Marie D John	1
02923	TPH-DRO/RRO (AK) water	AK 102/103 4/08/02 modified	1	121700027A	06/21/2012 21:06	Tyler O Griffin	10
02244	TPH-DRO AK C10-C25 w/Si Gel	AK 102/AK 103 04/08/02	1	121700028A	06/22/2012 23:42	Tyler O Griffin	10
11242	AK DRO Ext (W) w/SG	AK 102/AK 103 04/08/02	1	121700028A	06/19/2012 08:15	Kerrie A Freeburn	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1

Sample Description: MW-6 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689283
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 14:25 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

FIAM6 SDG#: LSU11-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	0.041	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	N.D.	0.0005	1
02102	Ethylbenzene	100-41-4	N.D.	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	N.D.	0.0015	1
GC Petroleum AK 102/103 4/08/02					
Hydrocarbons modified					
02923	C10-<C25 DRO	n.a.	0.46	0.053	1
02923	C25-C36 RRO	n.a.	0.15	0.074	1
GC Petroleum AK 102/AK 103					
Hydrocarbons w/Si 04/08/02					
02244	TPH-DRO AK C10-C25 w/Si Gel	n.a.	0.16	0.050	1
The reverse surrogate, capric acid, is present at <1%.					

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 18:32	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 18:32	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 18:32	Marie D John	1
02923	TPH-DRO/RRO (AK) water	AK 102/103 4/08/02 modified	1	121700027A	06/20/2012 23:44	Tyler O Griffin	1
02244	TPH-DRO AK C10-C25 w/Si Gel	AK 102/AK 103 04/08/02	1	121700028A	06/22/2012 03:45	Tyler O Griffin	1
11242	AK DRO Ext (W) w/SG	AK 102/AK 103 04/08/02	1	121700028A	06/19/2012 08:15	Kerrie A Freeburn	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1

Sample Description: MW-7 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689284
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 15:40 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

FIAM7 SDG#: LSU11-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	N.D.	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	N.D.	0.0005	1
02102	Ethylbenzene	100-41-4	N.D.	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	N.D.	0.0015	1
GC Miscellaneous RSKSOP-175 08/11/94 modified					
07105	Methane	74-82-8	0.11	0.0050	1
GC Petroleum AK 102/103 4/08/02 modified					
02923	C10-<C25 DRO	n.a.	0.36	0.051	1
02923	C25-C36 RRO	n.a.	0.77	0.072	1
GC Petroleum AK 102/AK 103 modified					
02244	TPH-DRO AK C10-C25 w/Si Gel	n.a.	N.D.	0.052	1
The reverse surrogate, capric acid, is present at <1%.					
Wet Chemistry EPA 300.0					
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	5
00228	Sulfate	14808-79-8	19.2	1.5	5
EPA 310.1					
12150	Total Alkalinity	n.a.	305	0.70	1
12707	Phenolphthalein Alkalinity	n.a.	N.D.	0.70	1

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 18:57	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 18:57	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 18:57	Marie D John	1

Sample Description: MW-7 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689284
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 15:40 by MM

Chevron

L4310

Submitted: 06/15/2012 09:50

6001 Bollinger Canyon Road

Reported: 06/26/2012 17:07

San Ramon CA 94583

FIAM7 SDG#: LSU11-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 08/11/94 modified	1	121730028A	06/22/2012 00:41	Elizabeth J Marin	1
02923	TPH-DRO/RRO (AK) water	AK 102/103 4/08/02 modified	1	121700027A	06/21/2012 02:06	Tyler O Griffin	1
02244	TPH-DRO AK C10-C25 w/Si Gel	AK 102/AK 103 04/08/02	1	121700028A	06/22/2012 04:13	Tyler O Griffin	1
11242	AK DRO Ext (W) w/SG	AK 102/AK 103 04/08/02	1	121700028A	06/19/2012 08:15	Kerrie A Freeburn	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1
00368	Nitrate Nitrogen	EPA 300.0	1	12167655601A	06/15/2012 17:46	Christopher D Meeks	5
00228	Sulfate	EPA 300.0	1	12167655601A	06/15/2012 17:46	Christopher D Meeks	5
12150	Total Alkalinity	EPA 310.1	1	12175002201B	06/23/2012 12:19	Susan A Engle	1
12707	Phenolphthalein Alkalinity	EPA 310.1	1	12175002201B	06/23/2012 12:19	Susan A Engle	1

Sample Description: MW-10 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689285
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 13:35 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

FIA10 SDG#: LSU11-07BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	N.D.	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	N.D.	0.0005	1
02102	Ethylbenzene	100-41-4	N.D.	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	N.D.	0.0015	1
GC Miscellaneous RSKSOP-175 08/11/94 modified					
07105	Methane	74-82-8	0.069	0.0050	1
GC Petroleum AK 102/103 4/08/02 modified					
02923	C10-<C25 DRO	n.a.	0.63	0.051	1
02923	C25-C36 RRO	n.a.	0.24	0.072	1
GC Petroleum AK 102/AK 103 modified					
02244	TPH-DRO AK C10-C25 w/Si Gel	n.a.	N.D.	0.050	1
The reverse surrogate, capric acid, is present at <1%.					
Wet Chemistry EPA 300.0					
00368	Nitrate Nitrogen	14797-55-8	N.D.	0.25	5
00228	Sulfate	14808-79-8	28.4	1.5	5
EPA 310.1					
12150	Total Alkalinity	n.a.	440	0.70	1
12707	Phenolphthalein Alkalinity	n.a.	N.D.	0.70	1

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 19:22	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 19:22	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 19:22	Marie D John	1

Sample Description: MW-10 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689285
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 13:35 by MM

Chevron

L4310

Submitted: 06/15/2012 09:50

6001 Bollinger Canyon Road

Reported: 06/26/2012 17:07

San Ramon CA 94583

FIA10 SDG#: LSU11-07BKG

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07105	Volatile Headspace Hydrocarbon	RSKSOP-175 08/11/94 modified	1	121730028A	06/22/2012 00:59	Elizabeth J Marin	1
02923	TPH-DRO/RRO (AK) water	AK 102/103 4/08/02 modified	1	121700027A	06/21/2012 00:12	Tyler O Griffin	1
02244	TPH-DRO AK C10-C25 w/Si Gel	AK 102/AK 103 04/08/02	1	121700028A	06/22/2012 04:41	Tyler O Griffin	1
11242	AK DRO Ext (W) w/SG	AK 102/AK 103 04/08/02	1	121700028A	06/19/2012 08:15	Kerrie A Freeburn	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1
00368	Nitrate Nitrogen	EPA 300.0	1	12167655601A	06/15/2012 16:58	Christopher D Meeks	5
00228	Sulfate	EPA 300.0	1	12167655601A	06/15/2012 16:58	Christopher D Meeks	5
12150	Total Alkalinity	EPA 310.1	1	12175002201B	06/23/2012 12:25	Susan A Engle	1
12707	Phenolphthalein Alkalinity	EPA 310.1	1	12175002201B	06/23/2012 12:25	Susan A Engle	1

Sample Description: MW-10_MS Grab Water Sample
 Facility# 306443
 Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689286
 LLI Group # 1316094
 Account # 11964

Project Name: 306443

Collected: 06/13/2012 13:35 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

FIA10 SDG#: LSU11-07MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	0.89	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	0.021	0.0005	1
02102	Ethylbenzene	100-41-4	0.021	0.0005	1
02102	Toluene	108-88-3	0.020	0.0005	1
02102	Total Xylenes	1330-20-7	0.063	0.0015	1
GC Petroleum AK 102/103 4/08/02 modified					
02923	C10-<C25 DRO	n.a.	0.84	0.051	1

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 21:29	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 19:48	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 19:48	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	2	12170A94A	06/21/2012 21:29	Marie D John	1
02923	AK 102 DRO Only	AK 102/103 4/08/02 modified	1	121700027A	06/21/2012 00:41	Tyler O Griffin	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1

Sample Description: MW-10_MSD Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689287
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 13:35 by MM Chevron
 Submitted: 06/15/2012 09:50 L4310
 Reported: 06/26/2012 17:07 6001 Bollinger Canyon Road
 San Ramon CA 94583

FIA10 SDG#: LSU11-07MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	0.87	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	0.021	0.0005	1
02102	Ethylbenzene	100-41-4	0.021	0.0005	1
02102	Toluene	108-88-3	0.020	0.0005	1
02102	Total Xylenes	1330-20-7	0.063	0.0015	1
GC Petroleum AK 102/103 4/08/02 modified					
02923	C10-<C25 DRO	n.a.	0.81	0.051	1

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 21:55	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 20:13	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 20:13	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	2	12170A94A	06/21/2012 21:55	Marie D John	1
02923	AK 102 DRO Only	AK 102/103 4/08/02 modified	1	121700027A	06/21/2012 01:09	Tyler O Griffin	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1

Sample Description: BD-1 Grab Water Sample
Facility# 306443
Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689288
LLI Group # 1316094
Account # 11964

Project Name: 306443

Collected: 06/13/2012 by MM

Chevron

L4310

Submitted: 06/15/2012 09:50

6001 Bollinger Canyon Road

Reported: 06/26/2012 17:07

San Ramon CA 94583

FIABD SDG#: LSU11-08FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101					
01440	TPH-GRO AK water C6-C10	n.a.	N.D.	0.010	1
GC Volatiles SW-846 8021B					
02102	Benzene	71-43-2	N.D.	0.0005	1
02102	Ethylbenzene	100-41-4	N.D.	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	N.D.	0.0015	1
GC Petroleum AK 102/103 4/08/02					
Hydrocarbons modified					
02923	C10-<C25 DRO	n.a.	0.19	0.051	1

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 22:20	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 22:20	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 22:20	Marie D John	1
02923	AK 102 DRO Only	AK 102/103 4/08/02 modified	1	121700027A	06/21/2012 02:34	Tyler O Griffin	1
11185	AK DRO/ORO Waters Extraction	AK 102/AK 103 04/08/02	1	121700027A	06/19/2012 08:15	Kerrie A Freeburn	1

Sample Description: Trip_Blank Water Sample
 Facility# 306443
 Gate28, West Ramp, FIA - Fairbanks, AK

LLI Sample # WW 6689289
 LLI Group # 1316094
 Account # 11964

Project Name: 306443

Collected: 06/13/2012

Chevron

Submitted: 06/15/2012 09:50

L4310

Reported: 06/26/2012 17:07

6001 Bollinger Canyon Road
 San Ramon CA 94583

FIATB SDG#: LSU11-09TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
GC Volatiles AK 101			mg/l	mg/l	
01440	TPH-GRO AK water C6-C10	n.a.	N.D.	0.010	1
GC Volatiles SW-846 8021B			mg/l	mg/l	
02102	Benzene	71-43-2	N.D.	0.0005	1
02102	Ethylbenzene	100-41-4	N.D.	0.0005	1
02102	Toluene	108-88-3	N.D.	0.0005	1
02102	Total Xylenes	1330-20-7	N.D.	0.0015	1

General Sample Comments

State of Alaska Lab Certification No. UST-061

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

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01440	TPH-GRO AK water C6-C10	AK 101	1	12170A94A	06/21/2012 16:24	Marie D John	1
02102	Method 8021 Water Master	SW-846 8021B	1	12170A94A	06/21/2012 16:24	Marie D John	1
01146	GC VOA Water Prep	SW-846 5030B	1	12170A94A	06/21/2012 16:24	Marie D John	1

Quality Control Summary

Client Name: Chevron Group Number: 1316094
Reported: 06/26/12 at 05:07 PM

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

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

Laboratory Compliance Quality Control

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank MDL</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: 12170A94A	Sample number(s): 6689279-6689289							
Benzene	N.D.	0.0005	mg/l	95		80-120		
Ethylbenzene	N.D.	0.0005	mg/l	100		80-120		
Toluene	N.D.	0.0005	mg/l	95		80-120		
TPH-GRO AK water C6-C10	N.D.	0.010	mg/l	91		60-120		
Total Xylenes	N.D.	0.0015	mg/l	100		80-120		
Batch number: 121730028A	Sample number(s): 6689280-6689281, 6689284-6689285							
Methane	N.D.	0.0050	mg/l	97		80-120		
Batch number: 121700027A	Sample number(s): 6689279-6689288							
C10-<C25 DRO	N.D.	0.050	mg/l	93	86	75-125	8	20
C25-C36 RRO	N.D.	0.070	mg/l	100	92	60-120	9	20
Batch number: 121700028A	Sample number(s): 6689279-6689285							
TPH-DRO AK C10-C25 w/Si Gel	N.D.	0.050	mg/l	81	81	75-125	0	20
Batch number: 12167655601A	Sample number(s): 6689280-6689281, 6689284-6689285							
Nitrate Nitrogen	N.D.	0.050	mg/l	102		90-110		
Sulfate	N.D.	0.30	mg/l	102		90-110		
Batch number: 12175002201B	Sample number(s): 6689280-6689281, 6689284-6689285							
Total Alkalinity	1.6	0.70	mg/l as CaCO3	99		90-110		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

<u>Analysis Name</u>	<u>MS %REC</u>	<u>MSD %REC</u>	<u>MS/MSD Limits</u>	<u>RPD</u>	<u>RPD MAX</u>	<u>BKG Conc</u>	<u>DUP Conc</u>	<u>DUP RPD</u>	<u>Dup RPD Max</u>
Batch number: 12170A94A	Sample number(s): 6689279-6689289 UNSPK: 6689285								
Benzene	105	105	80-130	0	30				
Ethylbenzene	105	105	80-133	0	30				
Toluene	100	100	80-133	0	30				
TPH-GRO AK water C6-C10	81	79	60-120	2	20				
Total Xylenes	105	105	80-132	0	30				
Batch number: 121730028A	Sample number(s): 6689280-6689281, 6689284-6689285 UNSPK: P688433								
Methane	75	65	35-157	13	20				

*- Outside of specification

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

Quality Control Summary

Client Name: Chevron Group Number: 1316094
Reported: 06/26/12 at 05:07 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

<u>Analysis Name</u>	<u>MS</u> <u>%REC</u>	<u>MSD</u> <u>%REC</u>	<u>MS/MSD</u> <u>Limits</u>	<u>RPD</u> <u>RPD</u>	<u>RPD</u> <u>MAX</u>	<u>BKG</u> <u>Conc</u>	<u>DUP</u> <u>Conc</u>	<u>DUP</u> <u>RPD</u>	<u>Dup RPD</u> <u>Max</u>
Batch number: 121700027A	Sample number(s): 6689279-6689288 UNSPK: 6689285								
C10-<C25 DRO	30*	25*	75-125	4	30				
C25-C36 RRO	138*	88	75-125	37*	30				
Batch number: 12167655601A	Sample number(s): 6689280-6689281,6689284-6689285 UNSPK: 6689285 BKG: 6689285								
Nitrate Nitrogen	99		90-110			N.D.	N.D.	0 (1)	20
Sulfate	106		90-110			28.4	28.8	1	20
Batch number: 12175002201B	Sample number(s): 6689280-6689281,6689284-6689285 UNSPK: P688776 BKG: 6689285								
Total Alkalinity	52*		73-121			440	441	0	5
Phenolphthalein Alkalinity						N.D.	N.D.	0 (1)	5

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: TPH-GRO AK water C6-C10
Batch number: 12170A94A

	Trifluorotoluene-F	Trifluorotoluene-P
6689279	75	84
6689280	75	84
6689281	74	85
6689282	76	82
6689283	75	84
6689284	76	84
6689285	76	84
6689286	85	84
6689287	81	84
6689288	75	83
6689289	75	84
Blank	75	84
LCS	89	84
MS	85	84
MSD	81	84
Limits:	60-120	51-120

Analysis Name: TPH-DRO/RRO (AK) water
Batch number: 121700027A

	Orthoterphenyl	n-Triacontane-d62
6689279	92	86
6689280	91	76
6689281	88	59
6689282	100	74
6689283	94	87
6689284	86	53
6689285	96	79

*- Outside of specification

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

Quality Control Summary

Client Name: Chevron
Reported: 06/26/12 at 05:07 PM

Group Number: 1316094

Surrogate Quality Control

6689286	87	65
6689287	87	65
6689288	93	82
Blank	92	77
LCS	92	71
LCSD	88	70
MS	87	65
MSD	87	65

Limits: 50-150 50-150

Analysis Name: TPH-DRO AK C10-C25 w/Si Gel
Batch number: 121700028A
Orthoterphenyl

6689279	95
6689280	93
6689281	79
6689282	69
6689283	84
6689284	72
6689285	83
Blank	85
LCS	86
LCSD	84

Limits: 50-150

Analysis Name: Volatile Headspace Hydrocarbon
Batch number: 121730028A
Propene

6689280	48
6689281	52
6689284	48
6689285	59
Blank	94
LCS	96
MS	77
MSD	70

Limits: 42-131

*- Outside of specification

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

Explanation of Symbols and Abbreviations

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

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

Data Qualifiers:

C – result confirmed by reanalysis.

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

U.S. EPA CLP Data Qualifiers:

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

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

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

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

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

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 LANCASTER LABORATORIES 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 LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES 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 Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions, and Lancaster hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ARCADIS

Appendix C

ADEC Data Review Checklists

Laboratory Data Review Checklist

Completed by:	Tammy Parise		
Title:	Environmental Scientist II	Date:	August 1, 2012
CS Report Name:	First Semi-Annual 2012 GWM Report	Report Date:	June 26, 2012
Consultant Firm:	ARCADIS		
Laboratory Name:	Eurofins Lancaster Laboratories	Laboratory Report Number:	1316094
ADEC File Number:	2100.26.040	ADEC RecKey Number:	1990210018405

1. Laboratory

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

Yes No NA (Please explain.) 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 NA (Please explain) Comments:

Samples not transferred

2. Chain of Custody (COC)

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

Yes No NA (Please explain) Comments:

b. Correct analyses requested?

Yes No NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ}$ C)?

Yes No NA (Please explain) Comments:

Temperature 1.2-3.0 degrees C

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

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

Sample MW-10 1 broken vial by lab and received 1 broken amber for BD-1

e. Data quality or usability affected? (Please explain)

Comments:

Data quality or usability does not appear to be affected.

4. Case Narrative

a. Present and understandable?

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

No discrepancies

c. Were all corrective actions documented?

Yes No NA (Please explain) Comments:

No corrective actions taken

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

Comments:

Data quality or usability does not appear to be affected.

5. Samples Results

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

Yes No NA (Please explain) Comments:

RRO was not reported for BD-1, MS, and MSD samples as shown on COC.

b. All applicable holding times met?

Yes No NA (Please explain) Comments:

c. All soils reported on a dry weight basis?

Yes No NA (Please explain) Comments:

NA- only groundwater samples collected

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

Yes No NA (Please explain) Comments:

e. Data quality or usability affected? (Please explain)

Comments:

NA - Data quality or usability does not appear to be affected.

6. QC Samples

a. Method Blank

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

Yes No NA (Please explain) Comments:

ii. All method blank results less than PQL?

Yes No NA (Please explain) Comments:

iii. If above PQL, what samples are affected?

Comments:

NA

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

Yes No NA (Please explain) Comments:

NA - no affected samples

v. Data quality or usability affected? (Please explain) Comments:

NA

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 NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

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 NA (Please explain) 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/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain) Comments:

DRO with silica gel cleanup (SCG) and RRO outside of specification, but not above reporting limits. See QC page for Alkalinity results outside of specification.

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

For DRO with SGC and RRO samples outside specification are: GEI-2, MW-2, MW-4 through MW-7, and MW-10.

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

Yes No NA (Please explain) Comments:

Only data flags for the DRO with SGC samples.

vii. Data quality or usability affected? (Please explain) Comments:

Data quality or usability does not appear to be affected.

c. Surrogates - Organics Only

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

Yes No NA (Please explain) 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 NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

No failed surrogate flags

iv. Data quality or usability affected? (Use the comment box to explain.).

Comments:

Data quality or usability does not appear to be affected.

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

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No NA (Please explain.) 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 NA (Please explain.) Comments:

No, the specific cooler containing the trip blanks are not identified on the COC.

iii. All results less than PQL?

Yes No NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

NA

e. Field Duplicate

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

Yes No NA (Please explain)

Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain.)

Comments:

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

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain)

Comments:

DRO RPD is 50% (GEI-2 concentration is 320 ug/L and BD-1 (duplicate) concentration is 190 ug/L.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Yes No NA (Please explain)

Comments:

Data quality or usability does not appear to be affected.

f. Decontamination or Equipment Blank (if applicable)

Yes No NA (Please explain)

Comments:

Equipment blank not collected due to sampling method used in groundwater collection.

i. All results less than PQL?

Yes No NA (Please explain)

Comments:

NA - no equipment blank collected

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

NA

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

a. Defined and appropriate?

Yes No NA (Please explain)

Comments:

No other flags/qualifiers

Reset Form