



CH2M HILL
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February 10, 2017

Mr. Chuck Gruenenfelder
Washington State Department of Ecology
Toxics Cleanup Program
4601 N. Monroe, Suite 202
Spokane, WA 99205-1295

Subject: L-Bar Site Compliance Monitoring Program—2016 Year-End Groundwater Monitoring Data Submittal.

Dear Mr. Gruenenfelder:

On behalf of Alcoa, CH2M HILL (CH2M) has prepared this letter and associated attachments to summarize the groundwater monitoring results collected in 2016 as part of the *Compliance Monitoring Program* (CMP) at the L-Bar site.

The following attachments summarize the groundwater monitoring data collected in 2016:

Attachment A	CMP Well Network and October 2016 Groundwater Flow Map
Attachment B	Groundwater Elevation Hydrographs
Attachment C	Field Parameters for April and October 2016 Sampling Events
Attachment D	Groundwater Analytical Results for April & October 2016 Events
Attachment E	Time-Series Concentration Plots
Attachment F	Laboratory Analytical Data for April & October 2016 Events

As shown in **Attachment A**, the current CMP groundwater monitoring network includes thirteen (13) sampling locations, including twelve (12) shallow resource-protection groundwater monitoring wells and one (1) deep production well. Groundwater monitoring is conducted semi-annually at the L-Bar site as initiated in the *L-Bar Material Removal and Compliance Monitoring Work Plan* (CH2M, 2001) and as modified in the *L-Bar Site Compliance Monitoring Program Sampling and Analysis Work Plan Addendum No. 1, May 2012* (CH2M, 2012). Per the 2012 addendum, the primary indicator parameters (ammonia, chloride, and TDS) are consistently sampled twice (semi-annual) per year, while the secondary parameters are sampled twice per year every other year (i.e., secondary constituents are sampled during even numbered years and excluded during odd numbered years). As such, both primary and secondary parameters were sampled in 2016 as presented below.

Attachment A illustrates the October 2016 groundwater elevations, and the inferred groundwater elevation contours for the shallow water-bearing unit (SWBU). The most recent October 2016 groundwater elevation contours support a general flow direction to the north, discharging to the Colville River, which is consistent with previously reported groundwater flow direction.

Attachment B are updated site hydrographs illustrating three different periods and/or groupings of wells; Attachment B.1 hydrograph shows all the wells over the period from spring 2001 through fall 2016, Attachment B.2 hydrograph shows all the wells and monthly frequency of measurements from the most recent two years, and Attachment B.3 hydrograph emphasizes wells within and around the Magnesite Residue Pile (i.e., SA-series and adjacent wells) at monthly frequency for past two years. In support of the data evaluations in the upcoming periodic review, Alcoa collected monthly groundwater level readings in 2015 and 2016 from all the CMP wells and the supplemental hand-dug piezometers (PZEP and PZSP) to gain a better understanding of hydraulic interconnection and related groundwater flow characteristics.

Attachment C and D summarize the groundwater monitoring field parameters and analytical results for the respective spring and fall events in 2016; **Attachment E** are updated time-series concentration plots. As shown from the updated time-series concentration plots (**Attachment E**), the latest 2016 groundwater quality results suggest continued improved conditions (i.e., decreased concentration levels) for primary indicator constituents. For example, well SA-10 atop the Magnesite Residue Pile (MRP) located in the general vicinity of former source removal areas continues to exhibit decreasing concentrations for ammonia, chloride, and total dissolved solids. The recent 2016 values for pH in well SA-11 atop the center of the MPR decreased below the cleanup level when all the prior values exceeded. Groundwater conditions in north field area, as demonstrated by observations from wells P-19 and P-27, show seasonal variation but are also exhibiting decreases in chloride and ammonia in recent years. While these are only selected examples based on visual interpretation, they do support an overall continued improvement in groundwater concentration at key areas following the remedial actions completed in 2004.

Alcoa understands that the next periodic review for the site is scheduled to occur this year in 2017, which will build upon the findings presented in the latest 2012 periodic review (Ecology, 2012) and include another five years of CMP data to evaluate statistically significant trends and quantify progress towards cleanup levels. As noted above for **Attachment B**, Alcoa has collected supplemental groundwater level measurements on a monthly frequency in 2015 and 2016, and these data will be evaluated in support of the upcoming periodic review to enhance the understanding seasonal changes to groundwater flow.

At your convenience, Alcoa and CH2M would like to schedule a meeting with you to discuss these latest CMP results in support of preparing for the upcoming periodic review evaluations in 2017.

Sincerely,

CH2M HILL



Craig Sauer, L.G.
Project Manager

cc: Michele Maidman/Alcoa
Johnnie McCanna/Alcoa
Charlie Kessler/Stevens County Conservation District

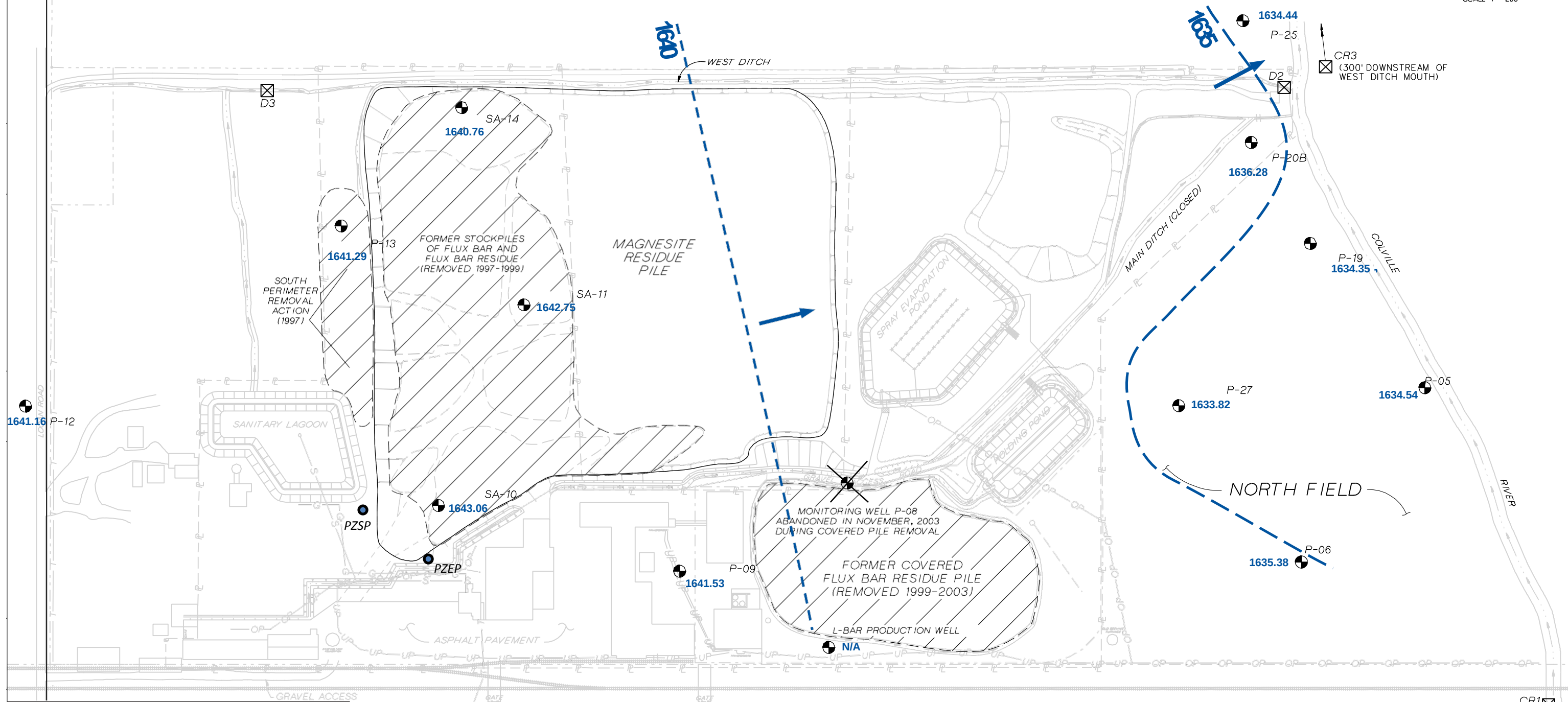
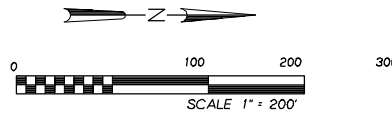
References:

CH2M. 2001. *L-Bar Material Removal and Compliance Monitoring Work Plan.*

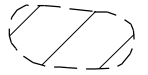
CH2M. 2012. *L-Bar Site Compliance Monitoring Program Sampling and Analysis Work Plan Addendum No. 1, May 2012.*

Ecology. 2012. *Periodic Review of L-Bar Site.*

Attachment A
CMP Well Network and October 2016
Groundwater Flow Map

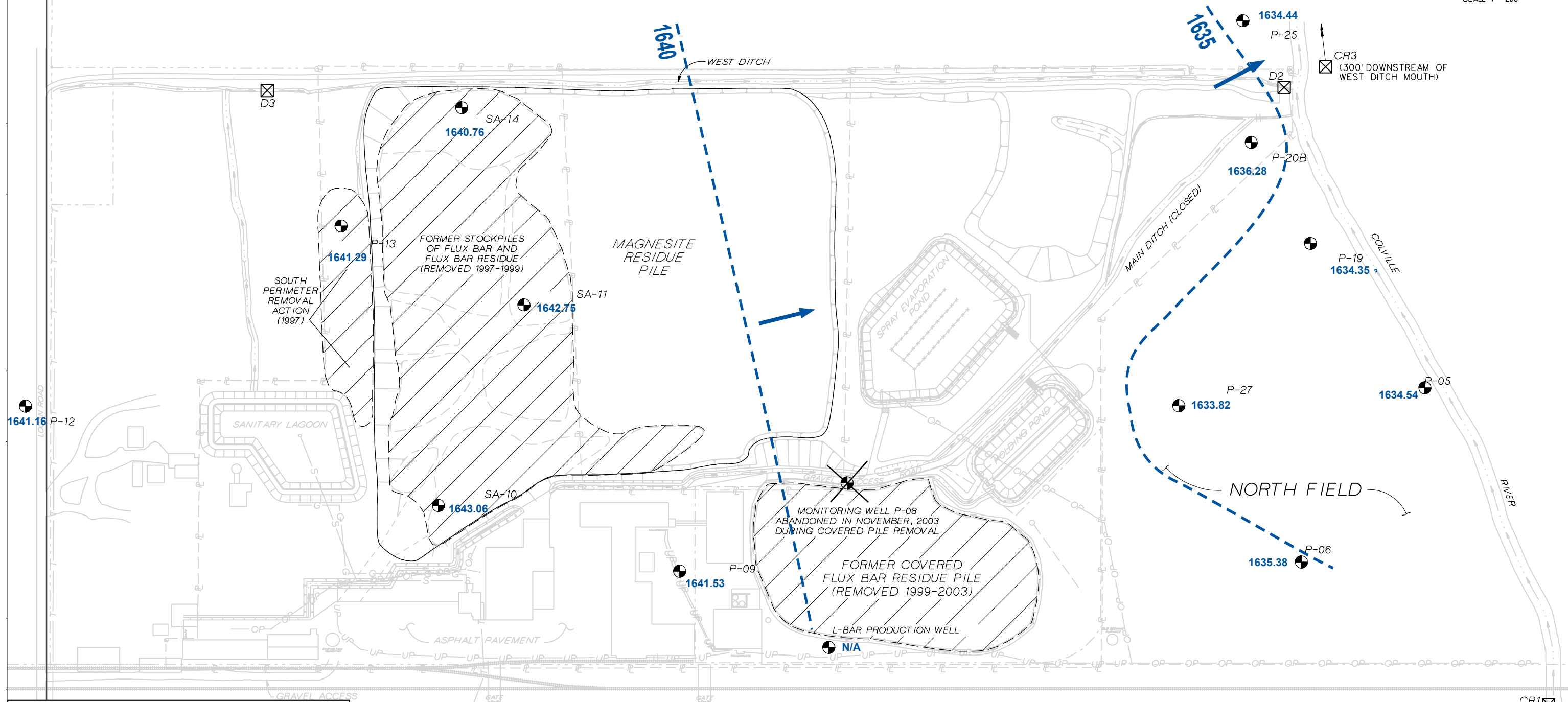
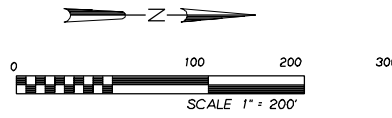


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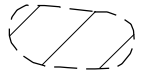
-  P-05
1634.28
COMPLIANCE MONITORING WELL LOCATION AND OCTOBER WATER LEVEL ELEVATION (ft)
-  D2
COMPLIANCE SURFACE WATER SAMPLING STATION
-  MAJOR SOURCE REMOVAL AREA
-  GROUNDWATER CONTOURS AND INFERRED GROUNDWATER FLOW DIRECTION

NOTE: GROUNDWATER LEVELS MEASURED ON OCTOBER 12, 2016

ATTACHMENT A
COMPLIANCE MONITORING NETWORK AND
OCTOBER 2016 GROUNDWATER FLOW MAP
L-BAR SITE



LEGEND

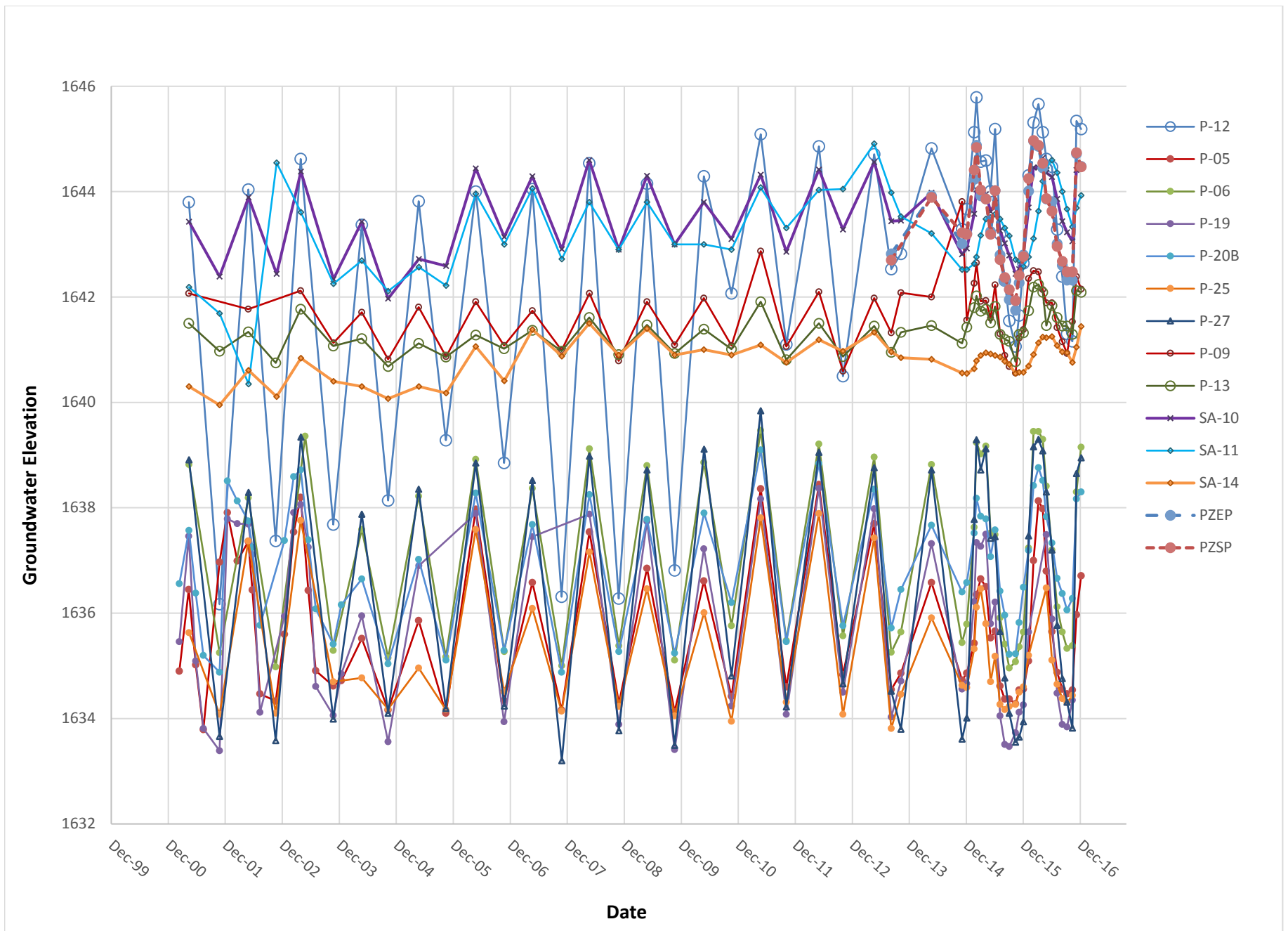
-  P-05
1634.28
COMPLIANCE MONITORING WELL LOCATION AND OCTOBER WATER LEVEL ELEVATION (ft)
-  D2
COMPLIANCE SURFACE WATER SAMPLING STATION
-  MAJOR SOURCE REMOVAL AREA
-  GROUNDWATER CONTOURS AND INFERRED GROUNDWATER FLOW DIRECTION

NOTE: GROUNDWATER LEVELS MEASURED ON OCTOBER 12, 2016

ATTACHMENT A
COMPLIANCE MONITORING NETWORK AND
OCTOBER 2016 GROUNDWATER FLOW MAP
L-BAR SITE

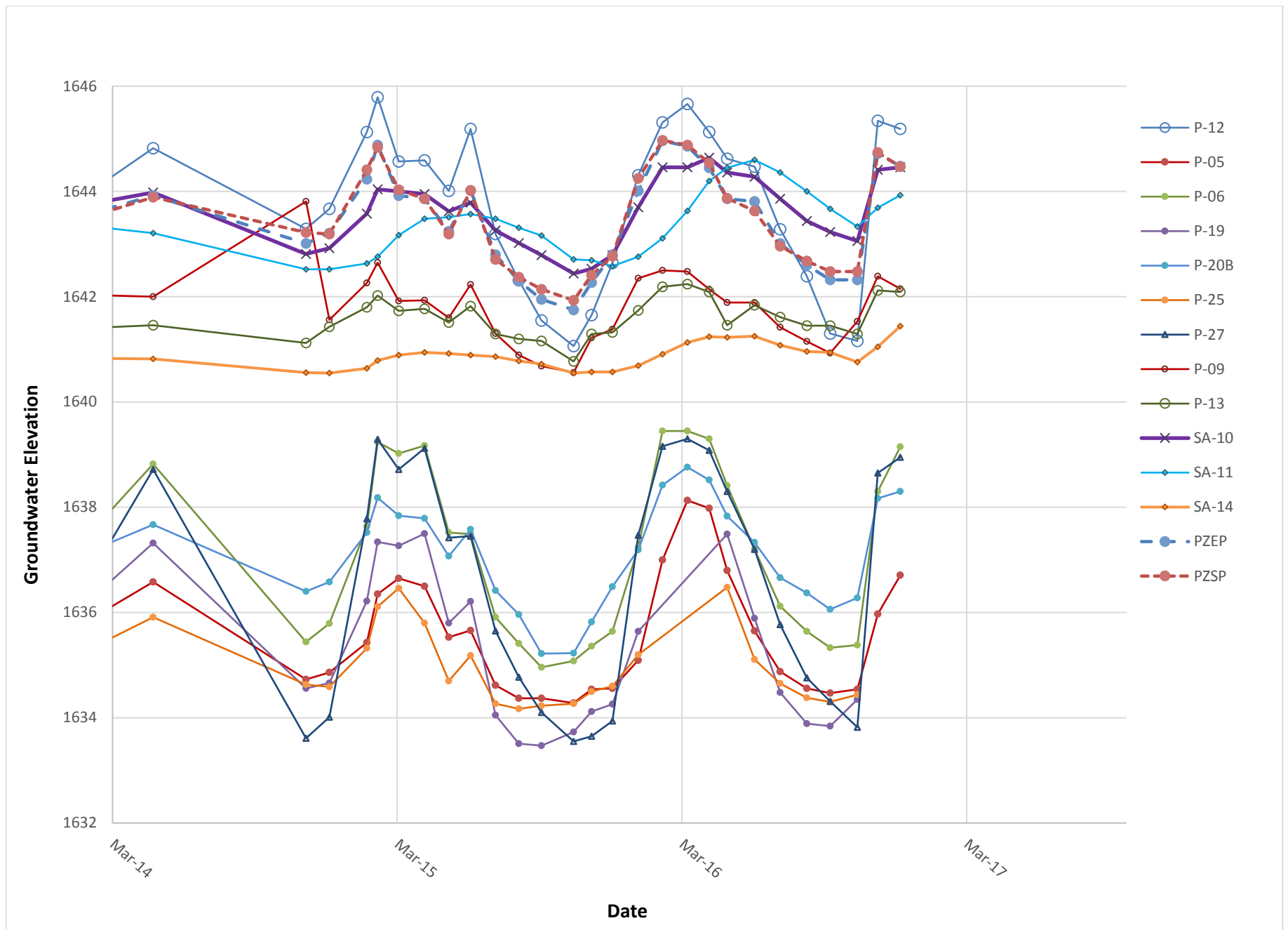
Attachment B

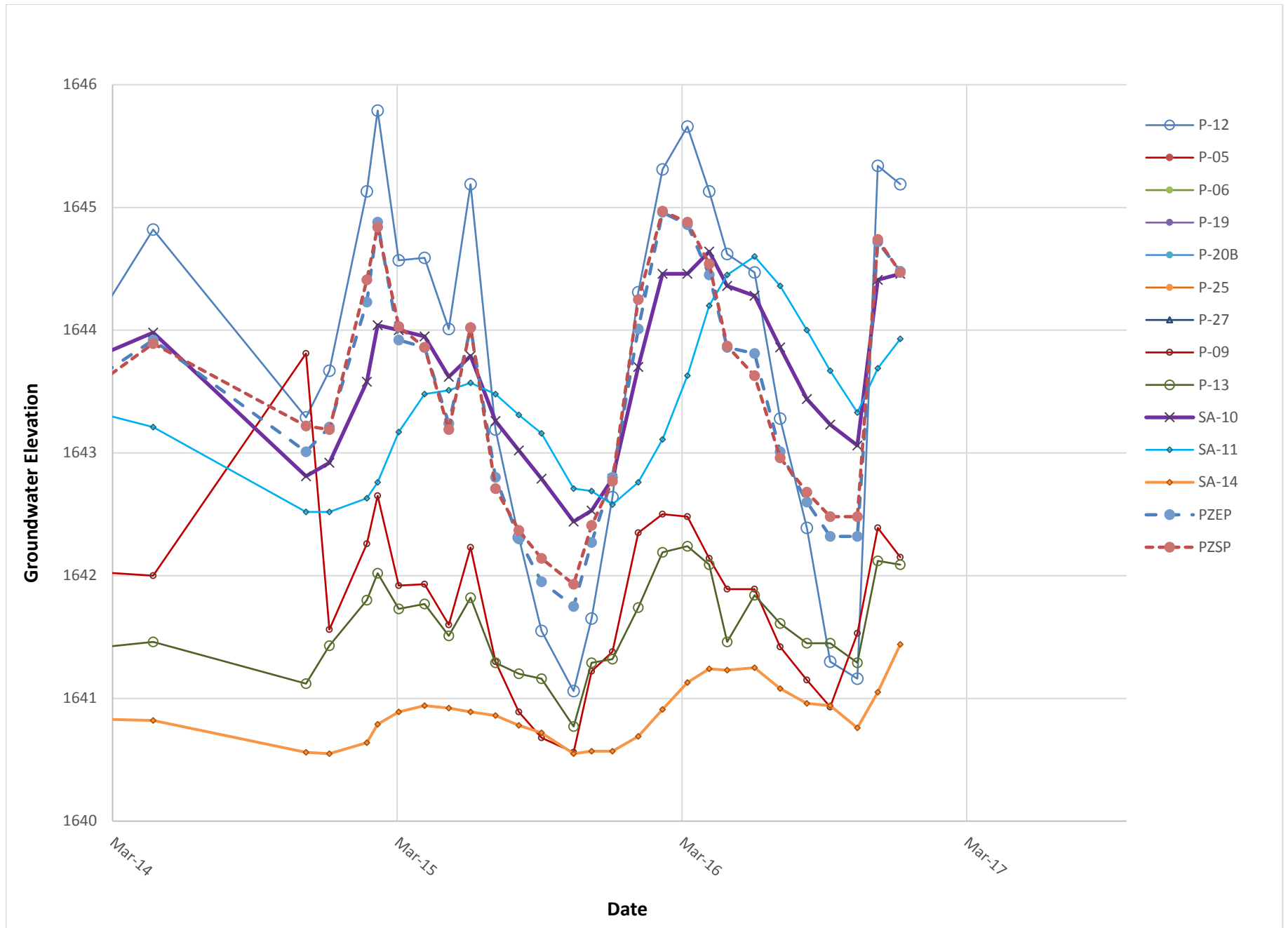
Groundwater Elevation Hydrographs



Attachment B.1: All Wells and Period from 2001 to 2016
L-Bar Site - 2016 Year End Groundwater Data Submittal

Note: Piezometer locations (PZEP & PZSP) shown on Attachment A.





Attachment C
Field Parameters for April and October
2016 Sampling Events

ATTACHMENT C

Groundwater Monitoring Field Parameter Data - April and October 2016

L-Bar Site Compliance Monitoring Program

Location	Well	Date	TOC Reference Elevation (ft) ¹	Depth to Water (ft)	Groundwater Elevation (ft)	Temp. (°C)	pH	Specific Conductance (uS/cm)
<i>Background</i>	P-12	4/28/2016	1649.43	4.81	1644.62	13.6	7.5	1,399
		10/12/2016		8.27	1641.16	11.1	7.5	1,399
	Prod. Well	4/28/2016	-- not applicable --			12.8	7.9	354
		10/12/2016				11.9	7.96	1,257
<i>North of Site</i>	P-05	4/28/2016	1642.99	6.19	1636.80	10.2	7.3	7,510
		10/12/2016		8.45	1634.54	10.4	7.1	7,980
	P-06	4/28/2016	1642.33	3.92	1638.41	11.4	7.1	1,031
		10/12/2016		6.95	1635.38	11.2	7.1	938
	P-19	4/28/2016	1640.03	2.54	1637.49	14.0	6.6	22,680
		10/12/2016		5.68	1634.35	9.8	6.5	16,490
	P-20B	4/28/2016	1642.25	4.42	1637.83	14.9	7.2	6,740
		10/12/2016		5.97	1636.28	18.1	7.1	8,550
	P-25	4/28/2016	1639.41	2.93	1636.48	10.5	6.8	2,651
		10/12/2016		4.97	1634.44	10.1	6.6	4,214
	P-27	4/28/2016	1642.19	3.89	1638.30	11.9	7.1	27,110
		10/12/2016		8.37	1633.82	10.4	7.1	26,170
<i>Site Interior</i>	P-09	4/28/2016	1643.81	1.92	1641.89	16.7	7.5	3,270
		10/12/2016		2.28	1641.53	17.1	8.4	2,413
	P-13	4/28/2016	1645.98	4.52	1641.46	15.5	7.2	6,930
		10/12/2016		4.69	1641.29	15.2	7.1	7,580
<i>Magnesite Residue Pile</i>	SA-10	4/28/2016	1672.07	27.71	1644.36	11.8	8.0	35,860
		10/12/2016		29.01	1643.06	12.8	7.8	34,990
	SA-11	4/28/2016	1668.27	24.40	1643.87	14.9	8.8	22,270
		10/12/2016		25.52	1642.75	11.3	8.6	16,730
	SA-14	4/28/2016	1666.85	25.62	1641.23	11.4	10.1	6,190
		10/12/2016		26.09	1640.76	10.7	10.0	6,100

Notes:

1. Feet above mean sea level; vertical survey datum in NAVD88. All wells were re-surveyed in October 2013 by Benthin and Associates.

Attachment D
Groundwater Analytical Results for April
& October 2016 Events

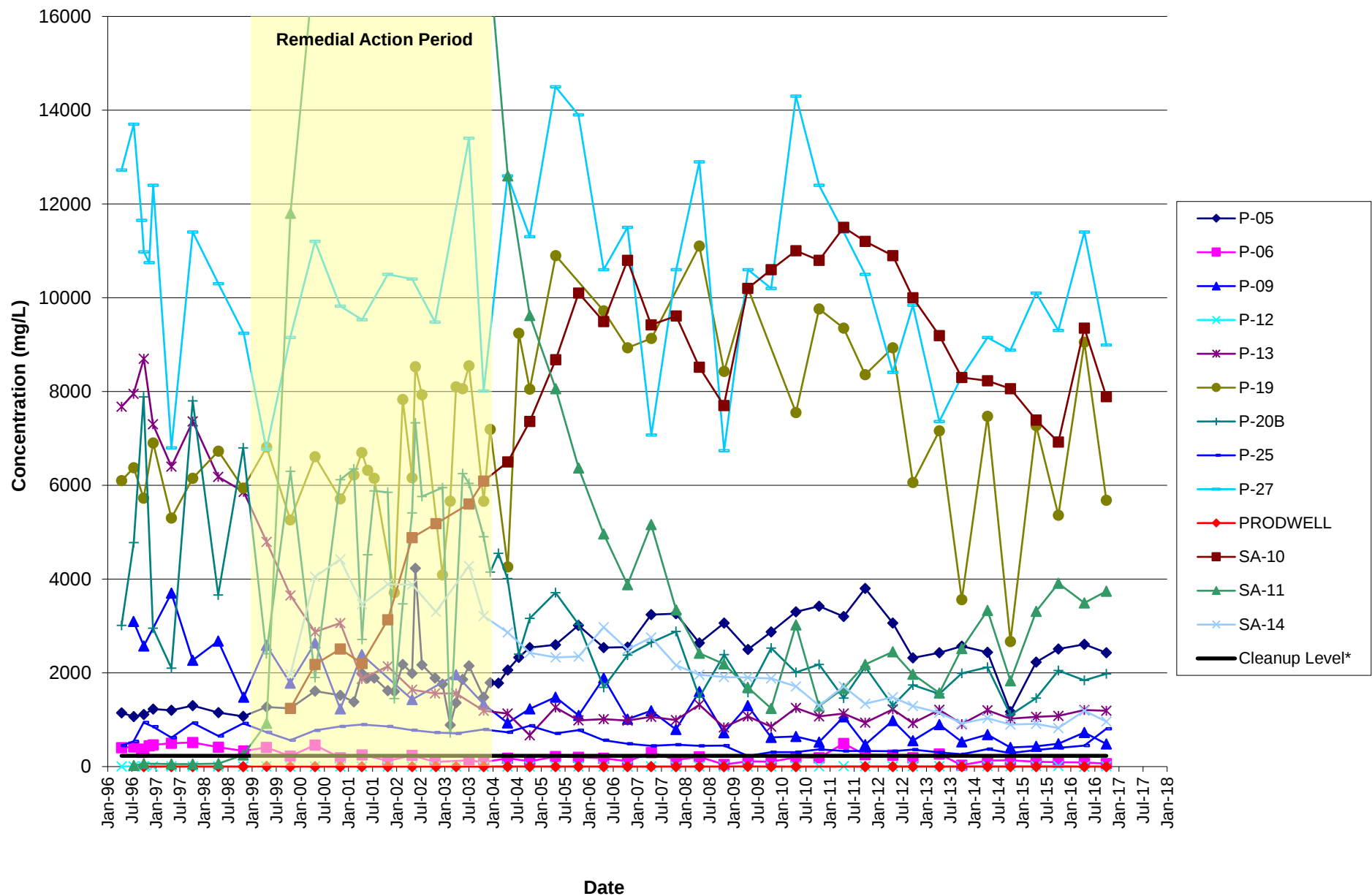
Attachment D
April and October 2016 Groundwater Sampling Analytical Results
L-Bar Site Compliance Monitoring Program

Analyte ¹	Date	Units	Cleanup Levels ²	--- Background ---		---North of Site ---						--- Site Interior ---		--- Magnesite Residue Pile ---		
				P-12	PROD. WELL	P-05	P-06	P-19	P-20B	P-25	P-27	P-09	P-13	SA-10	SA-11	SA-14
Ammonia-N*	April 28, 2016	mg/L	0.13	ND	0.033	ND	0.669	ND	15.9	0.535	0.176	2.87	40.2	937	59	25.9
	October 12, 2016			ND	0.098	0.0371	0.381	0.268	24.6	0.489	ND	0.49	38.7	606	54.9	22.2
Chloride*	April 28, 2016	mg/L	230	0.758	0.921	2610	88.5	9,050	1,840	447	11,400	725	1,204	9,350	3,490	1,190
	October 12, 2016			11.3	0.803	2430	61.6	5,680	1,980	807	8,990	484	1,190	7,890	3,740	963
TDS*	April 28, 2016	mg/L	1,092.4	879	248	3,350	518	12,700	3,810	1,740	12,900	1,620	4,720	20,600	8,970	3,820
	October 12, 2016			758	295	3,400	490	8,490	3,950	1,904	12,100	997	4,820	23,100	8,660	3,730
pH	April 28, 2016	none	6.5-8.5	7.81	8.03	7.25	7.61	6.78	7.78	6.59	7.10	7.57	7.56	7.51	8.39	9.69
	October 12, 2016			7.61	7.90	7.05	7.24	6.68	7.13	6.72	6.91	8.40	7.28	7.59	8.45	9.86
Conductivity	April 28, 2016	µmhos/cm	NA	1,373	412	7,220	1,214	21,640	6,340	2,630	24,400	2,990	6,680	34,100	12,540	5,820
	October 12, 2016			1,239	435	7,700	892	16,000	8,030	4,220	24,000	2,360	7,450	32,900	14,200	5,900
Nitrate-N	April 28, 2016	mg/L	10	0.758	ND	ND	ND	ND	15.2	ND	ND	ND	0.479	ND	ND	ND
	October 12, 2016			0.547	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite-N	April 28, 2016	mg/L	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.136	ND
	October 12, 2016			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	April 28, 2016	mg/L	1	0.043	0.0839	0.542	0.198	0.146	0.0605	0.061	4.02	0.274	0.0551	0.0593	0.0283	0.0137
	October 12, 2016			0.044	0.0784	0.59	0.317	0.0969	0.0807	0.0781	3.49	0.0983	0.0639	0.057	0.0395	0.014
Manganese	April 28, 2016	mg/L	0.44	0.00136	0.0286	0.0185	1.85	2.39	0.816	7.5	0.00338	1.23	4.2	5.83	0.13	0.00911
	October 12, 2016			ND	ND	0.73	1.39	2.35	0.945	8.44	0.00942	0.179	4.31	5.14	0.251	0.00628
Selenium	April 28, 2016	mg/L	0.0082	ND	ND	0.00187	ND	0.00503	0.00346	ND	0.00247	ND	0.00186	0.017	0.0195	0.0259
	October 12, 2016			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0111	0.0268
Thallium	April 28, 2016	mg/L	0.0002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	October 12, 2016			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
¹ Primary indicator parameters indicated with '*'.
² Cleanup Levels as listed in the *L-Bar Cleanup Levels Development and Feasibility Report* (CH2M HILL 1999).
ND = The result is a non-detect
NA = not applicable
TDS = Total Dissolved Solids
BOLD font are values which exceed respective cleanup levels.

Attachment E

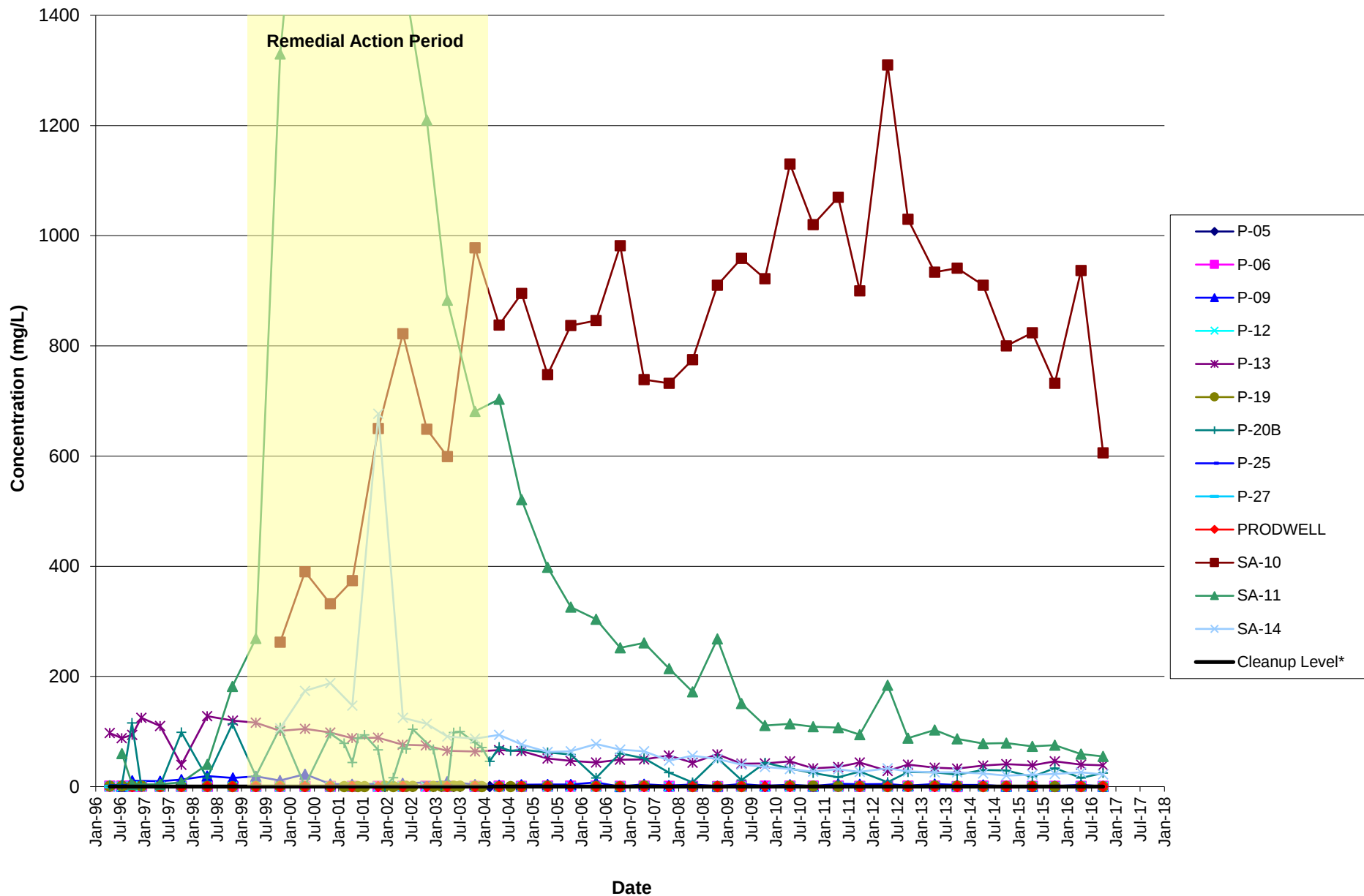
Time-Series Concentration Plots



Notes:

1. Remedial Action Period 1999 -2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, and Main Ditch Closure in 2003.
2. Concentration scale truncated - some high values not shown for well SA-11
3. *Site-Specific Cleanup Level for Chloride is 230 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

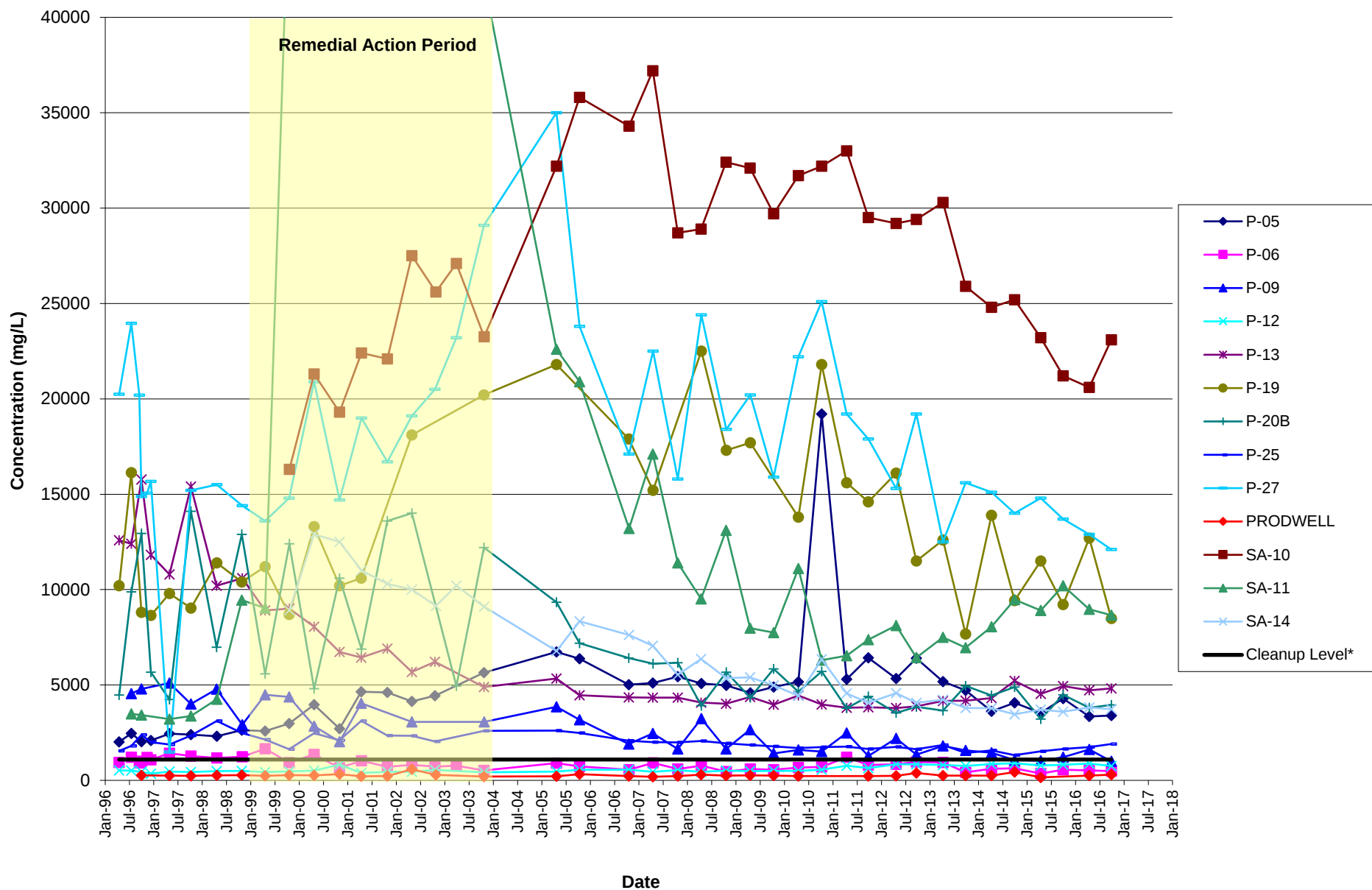
ATTACHMENT E
Chloride Concentrations
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, and Main Ditch Closure in 2003.
2. Concentration scale truncated - some high values not shown for well SA-11
3. *Site-Specific Cleanup Level for Ammonia is 0.13 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

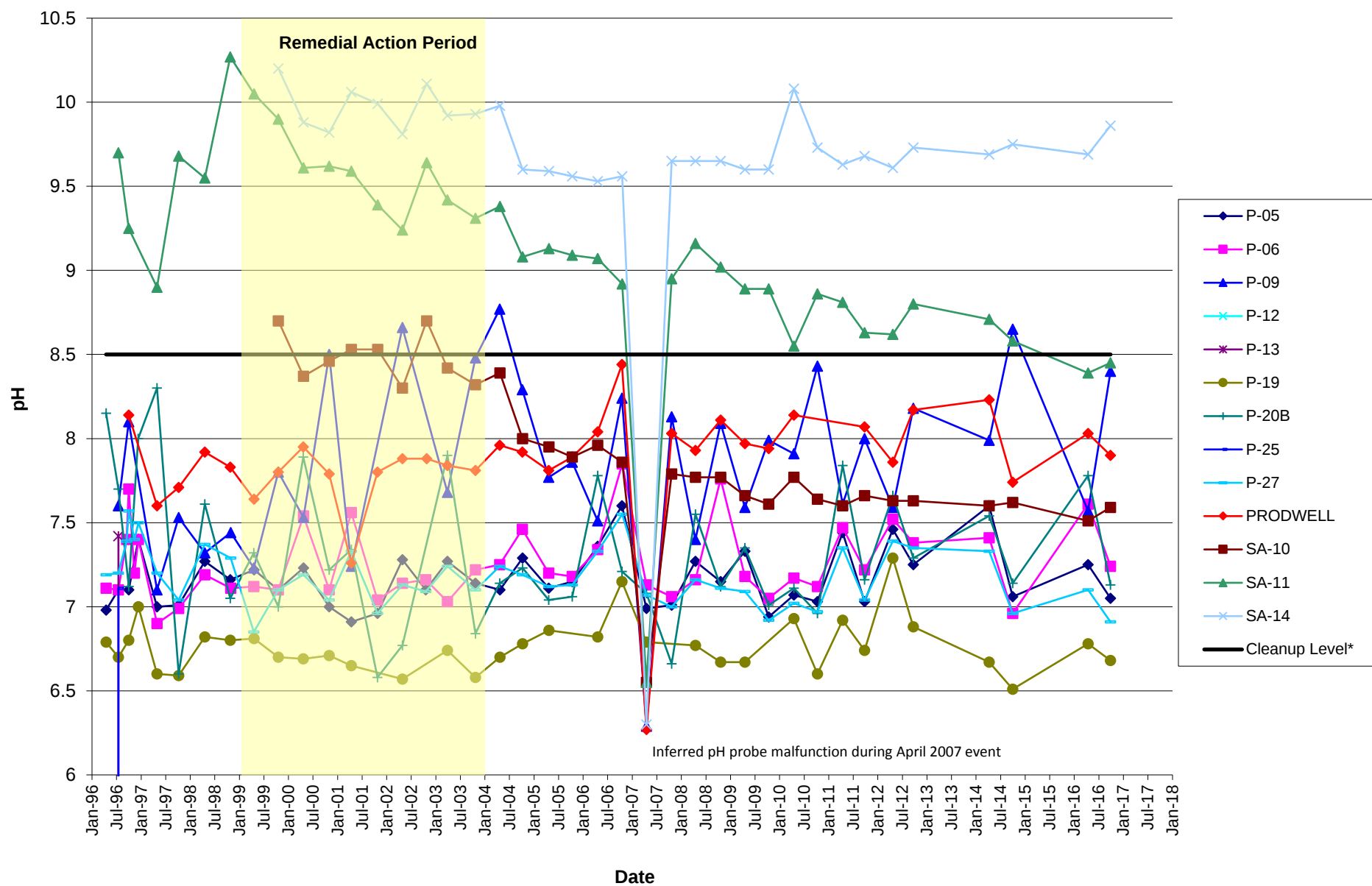
ATTACHMENT E
Ammonia Concentrations
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, and Main Ditch Closure in 2003.
2. Concentration scale truncated - some high values not shown.
3. *Site-Specific Cleanup Level for TDS is 1092.4 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

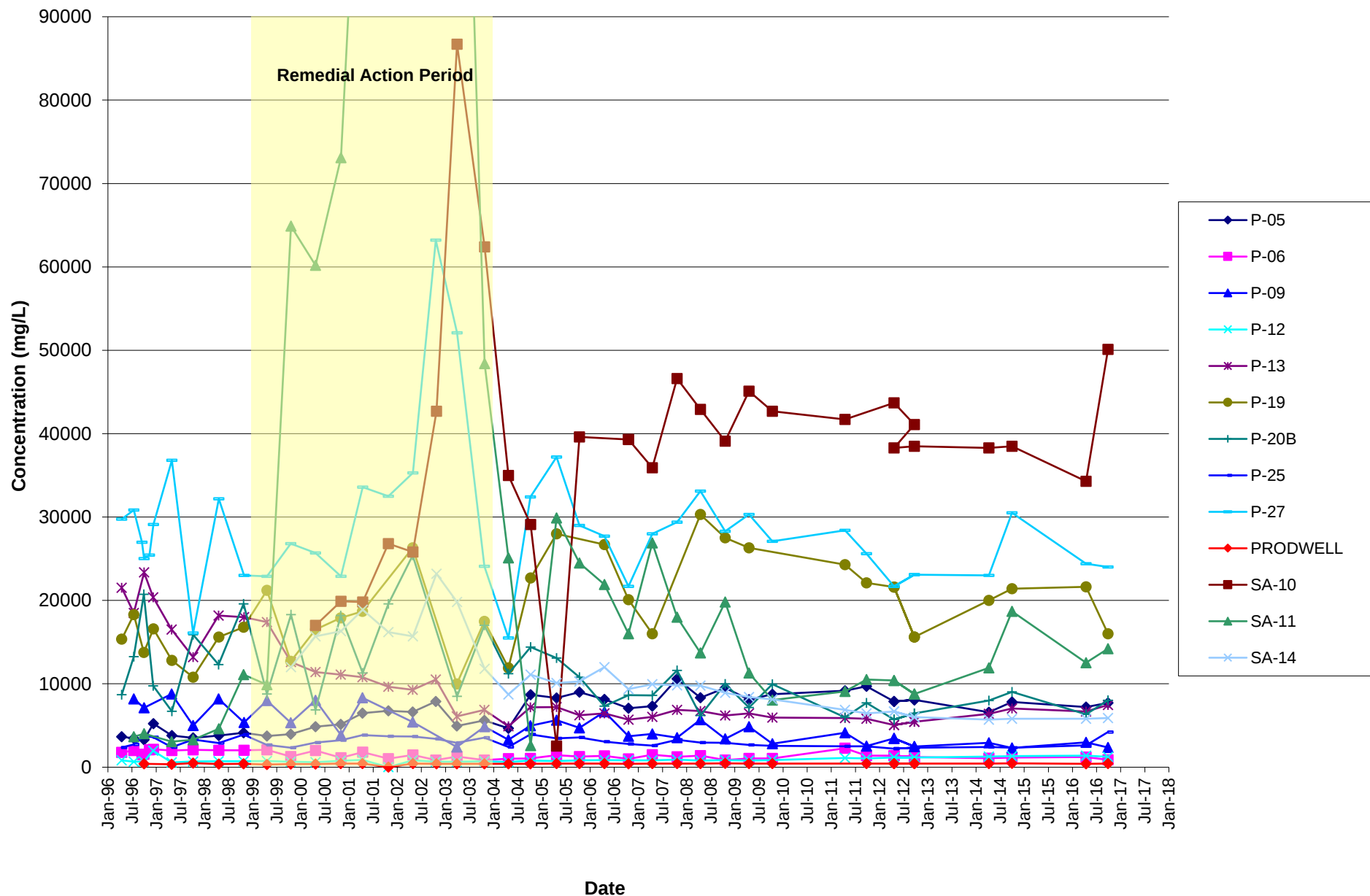
ATTACHMENT E
Total Dissolved
Solids
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, & Main Ditch Closure in 2003.
2. *Site-Specific Cleanup Level for pH is 8.5 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

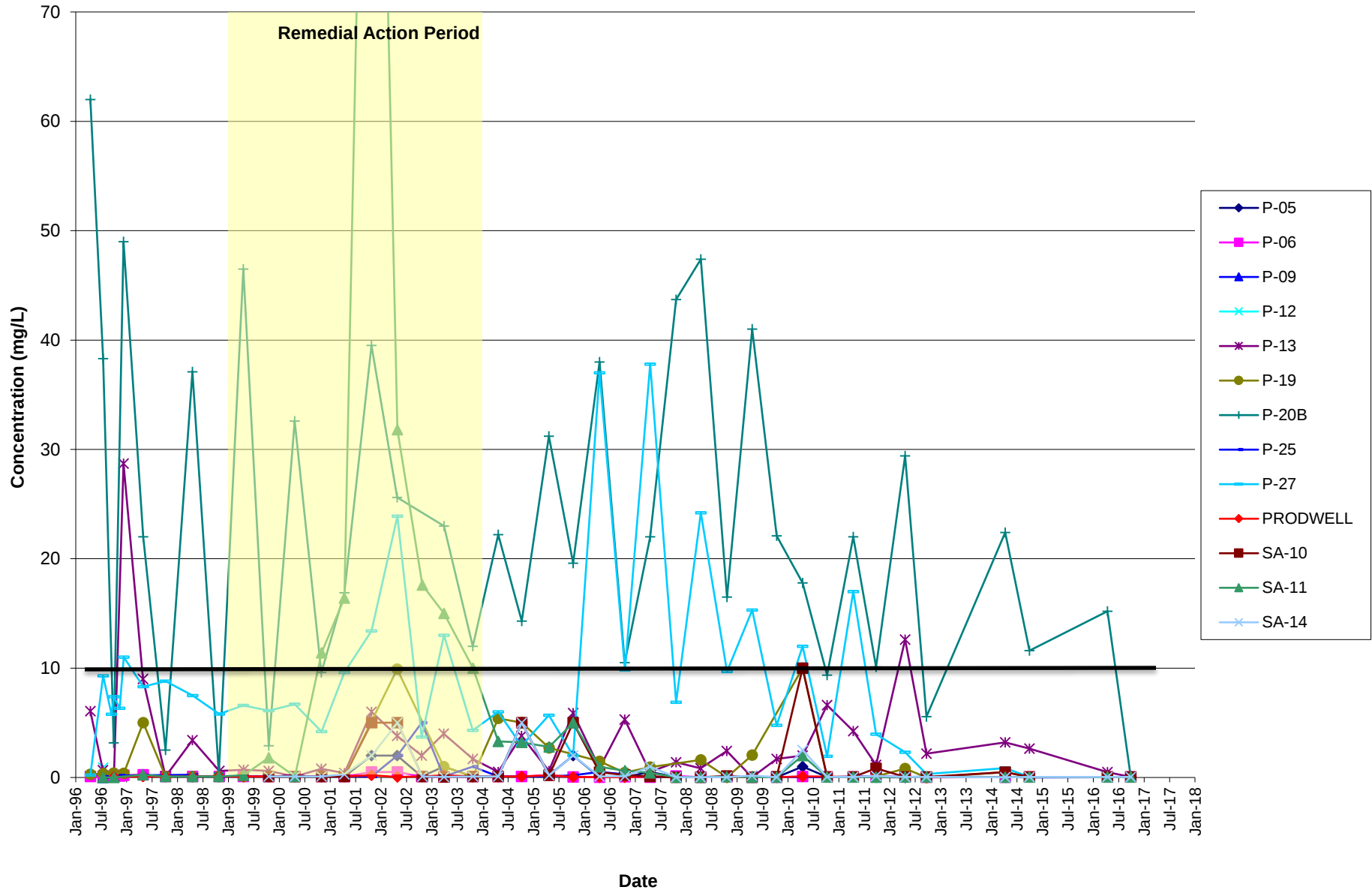
ATTACHMENT E
pH
L-Bar Site
CH2M HILL



Notes:

1. Remedial Action Period 1999 -2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, and Main Ditch Closure in 2003.
2. Concentration scale truncated - some high values not shown for well SA-11
3. There is no established cleanup level for conductance - this parameter is evaluated qualitatively to assess relative changes.

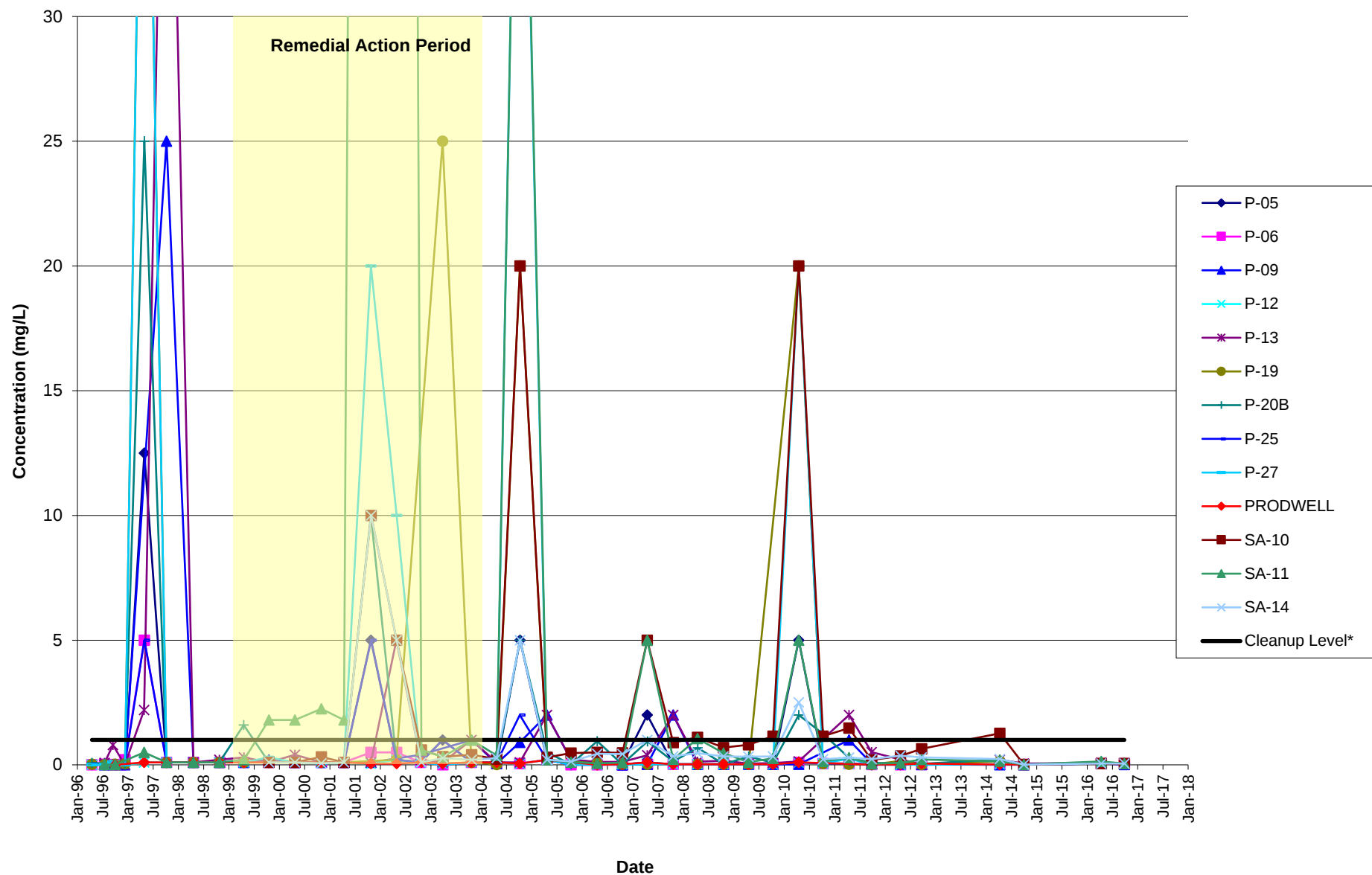
ATTACHMENT E
Conductivity
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, and Main Ditch Closure in 2003.
2. Concentration scale truncated - some high values not shown for well SA-11.
3. *Site-Specific Cleanup Level for Nitrate is 10.0 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

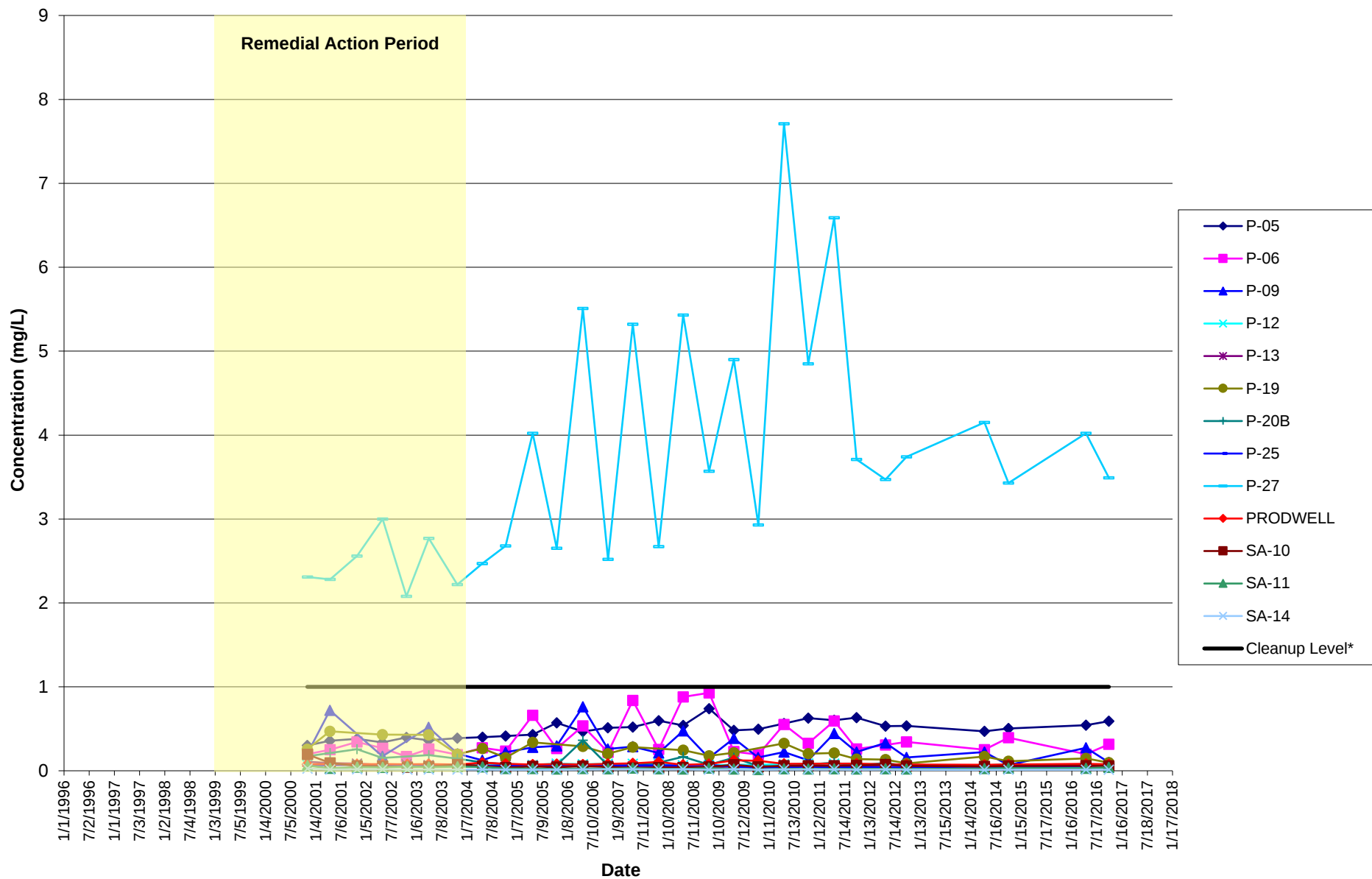
ATTACHMENT E
Nitrate Concentrations
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, and Main Ditch Closure in 2003.
2. Concentration scale truncated - some high values not shown.
3. *Site-Specific Cleanup Level for Nitrite is 1.0 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

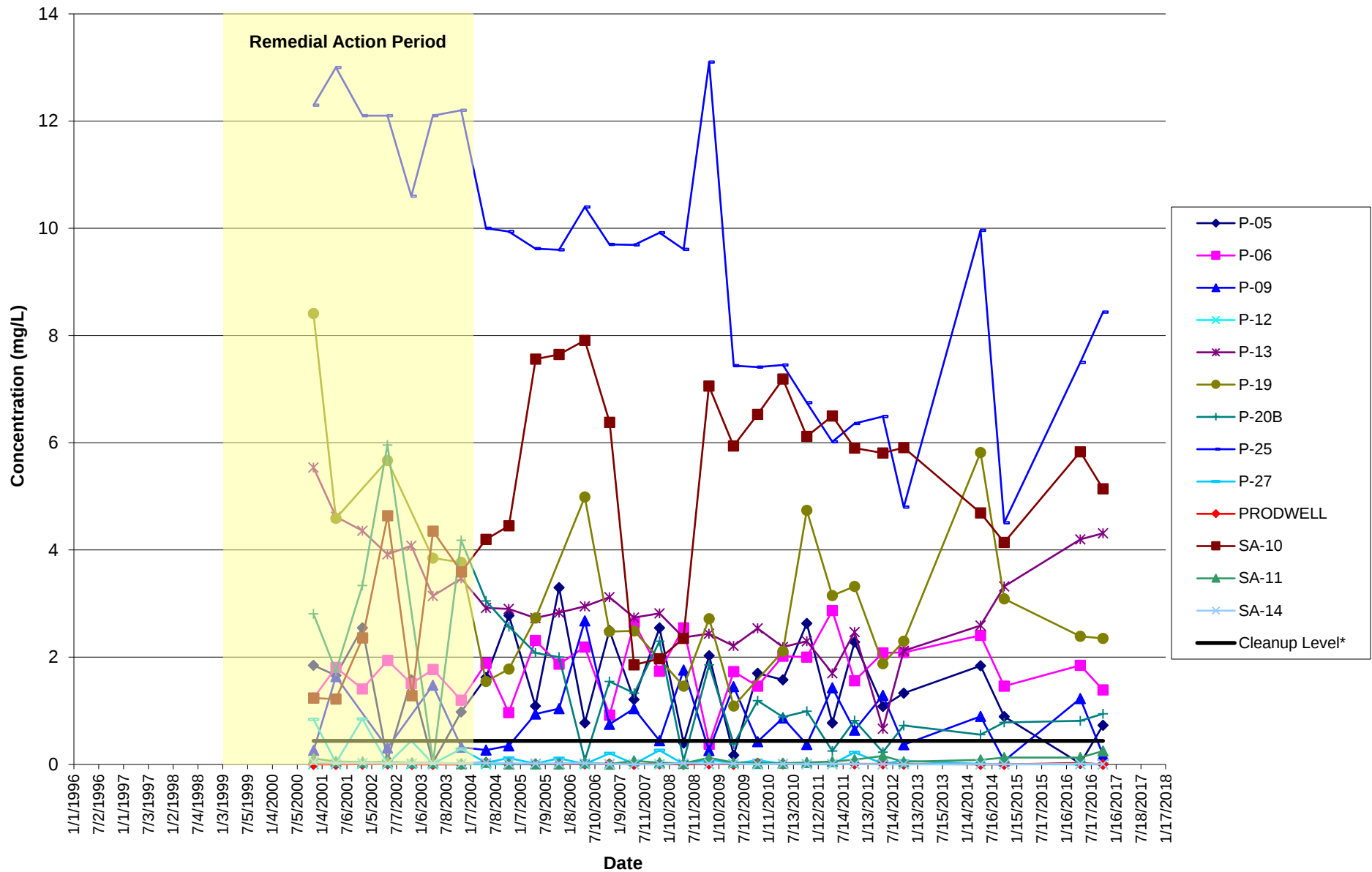
ATTACHMENT E
Nitrite Concentrations
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, & Main Ditch Closure in 2003.
2. *Site-Specific Cleanup Level for barium is 1.0 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

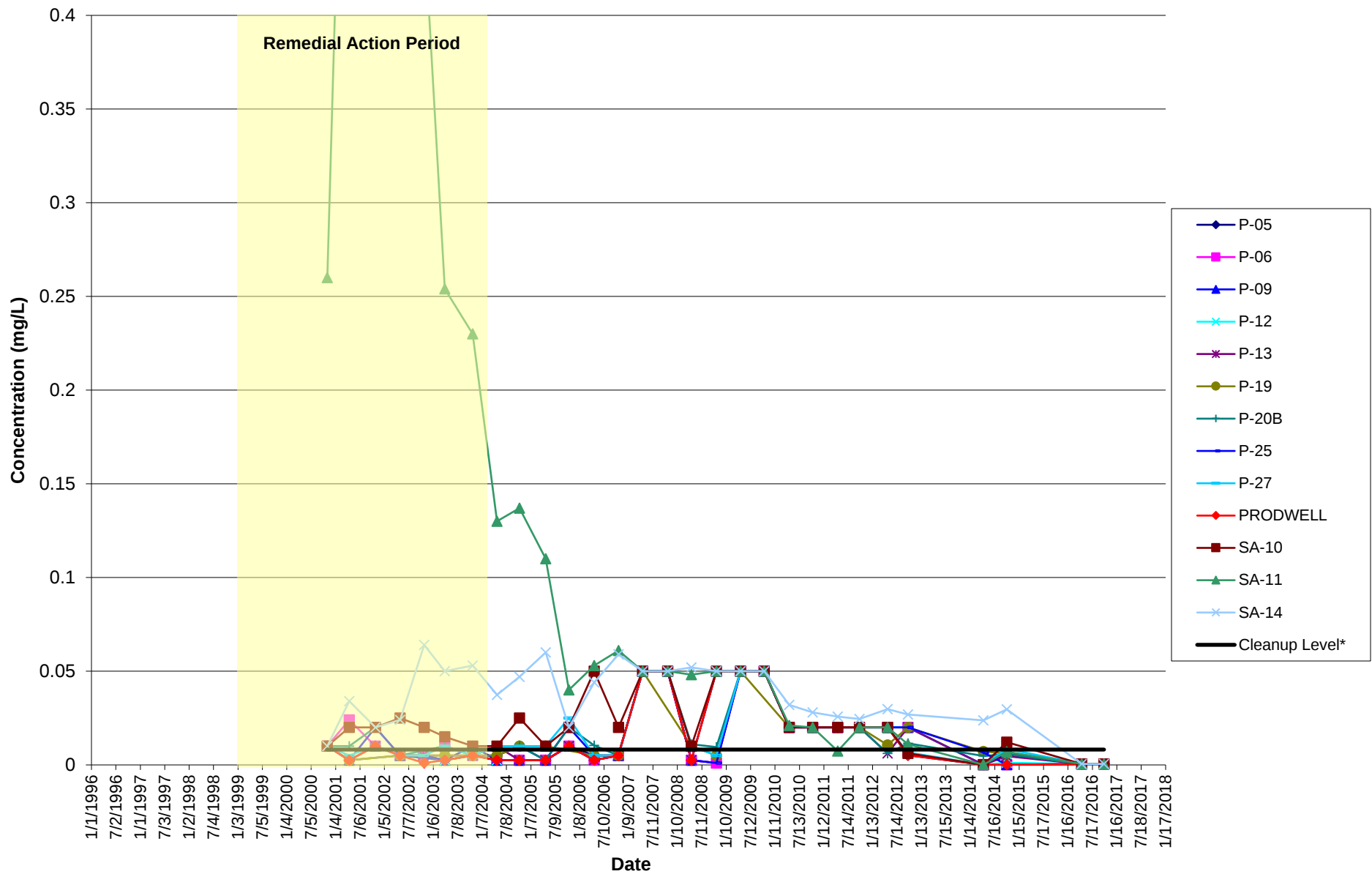
ATTACHMENT E
Barium Concentrations
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, & Main Ditch Closure in 2003.
2. *Site-Specific Cleanup Level for manganese is 0.44 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

ATTACHMENT E
Manganese Concentrations
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, & Main Ditch Closure in 2003.
2. *Site-Specific Cleanup Level for selenium is 0.001 mg/L; reference *L-Bar Cleanup Levels Development and Feasibility Study Report (CH2M HILL, 1999)*.

ATTACHMENT E
Selenium Concentrations
L-Bar Site
CH2M HILL

Attachment F
Laboratory Analytical Data for April &
October 2016 Events

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: CH2M HILL
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: CRAIG SAUER

Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-001	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM		
Client Sample ID	1610LBARP25	Sampling Time	8:30 AM	Extraction Date			
Matrix	Water	Sample Location	P25				
Comments							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.489	mg/L	0.02	10/14/2016 1:36:00 PM	KAS	SM4500NH3G	
Barium	0.0781	mg/L	0.01	10/20/2016 4:05:00 PM	KEB	EPA 200.8	
Chloride	807	mg/L	5	10/14/2016 1:06:00 AM	JDB	EPA 300.0	
Conductivity	4220	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	8.44	mg/L	0.01	10/20/2016 4:05:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	5	10/14/2016 1:06:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	5	10/14/2016 1:06:00 AM	JDB	EPA 300.0	
pH	6.72	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.01	10/20/2016 4:05:00 PM	KEB	EPA 200.8	
TDS	1904	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.01	10/20/2016 4:05:00 PM	KEB	EPA 200.8	

Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

Client: CH2M HILL
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: CRAIG SAUER

Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-002	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARP05	Sampling Time	9:45 AM	Extraction Date	
Matrix	Water	Sample Location	P05		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.0371	mg/L	0.02	10/14/2016 1:38:00 PM	KAS	SM4500NH3G	
Barium	0.590	mg/L	0.005	10/20/2016 4:12:00 PM	KEB	EPA 200.8	
Chloride	2430	mg/L	10	10/12/2016 10:51:00 PM	JDB	EPA 300.0	
Conductivity	7700	µmhos/cm	10	10/13/2016 5:45:00 PM	ACS	SM2510B	
Manganese	0.730	mg/L	0.005	10/20/2016 4:12:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	10	10/12/2016 10:51:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	10	10/12/2016 10:51:00 PM	JDB	EPA 300.0	
pH	7.05	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/20/2016 4:12:00 PM	KEB	EPA 200.8	
TDS	3400	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/20/2016 4:12:00 PM	KEB	EPA 200.8	

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Client: CH2M HILL
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: CRAIG SAUER

Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-003	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARP19	Sampling Time	9:00 AM	Extraction Date	
Matrix	Water	Sample Location	P19		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.268	mg/L	0.02	10/14/2016 1:39:00 PM	KAS	SM4500NH3G	
Barium	0.0969	mg/L	0.005	10/20/2016 4:20:00 PM	KEB	EPA 200.8	
Chloride	5680	mg/L	40	10/12/2016 10:29:00 PM	JDB	EPA 300.0	
Conductivity	16000	µmhos/cm	10	10/13/2016 5:45:00 PM	ACS	SM2510B	
Manganese	2.35	mg/L	0.005	10/20/2016 4:20:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	40	10/12/2016 10:29:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	40	10/12/2016 10:29:00 PM	JDB	EPA 300.0	
pH	6.68	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/20/2016 4:20:00 PM	KEB	EPA 200.8	
TDS	8490	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/20/2016 4:20:00 PM	KEB	EPA 200.8	

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Attn: CRAIG SAUER

Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-004	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARP06	Sampling Time	10:15 AM	Extraction Date	
Matrix	Water	Sample Location	P06		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.381	mg/L	0.02	10/14/2016 1:40:00 PM	KAS	SM4500NH3G	
Barium	0.317	mg/L	0.005	10/20/2016 4:27:00 PM	KEB	EPA 200.8	
Chloride	61.6	mg/L	1	10/12/2016 11:35:00 PM	JDB	EPA 300.0	
Conductivity	892	µmhos/cm	10	10/13/2016 5:45:00 PM	ACS	SM2510B	
Manganese	1.39	mg/L	0.005	10/20/2016 4:27:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	1	10/12/2016 11:35:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	1	10/12/2016 11:35:00 PM	JDB	EPA 300.0	
pH	7.24	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/20/2016 4:27:00 PM	KEB	EPA 200.8	
TDS	490	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/20/2016 4:27:00 PM	KEB	EPA 200.8	

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Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-005	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARP27	Sampling Time	10:45 AM	Extraction Date	
Matrix	Water	Sample Location	P27		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	<0.02	mg/L	0.02	10/14/2016 1:41:00 PM	KAS	SM4500NH3G	
Barium	3.49	mg/L	0.005	10/20/2016 4:34:00 PM	KEB	EPA 200.8	
Chloride	8990	mg/L	100	10/14/2016 1:28:00 AM	JDB	EPA 300.0	
Conductivity	24000	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	0.00942	mg/L	0.005	10/20/2016 4:34:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	100	10/14/2016 1:28:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	100	10/14/2016 1:28:00 AM	JDB	EPA 300.0	
pH	6.91	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/20/2016 4:34:00 PM	KEB	EPA 200.8	
TDS	12100	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/20/2016 4:34:00 PM	KEB	EPA 200.8	

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Attn: CRAIG SAUER

Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-006	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARP20B	Sampling Time	11:40 AM	Extraction Date	
Matrix	Water	Sample Location	P20B		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	24.6	mg/L	0.2	10/14/2016 2:24:00 PM	KAS	SM4500NH3G	
Barium	0.0807	mg/L	0.005	10/20/2016 4:41:00 PM	KEB	EPA 200.8	
Chloride	1980	mg/L	10	10/14/2016 1:50:00 AM	JDB	EPA 300.0	
Conductivity	8030	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	0.945	mg/L	0.005	10/20/2016 4:41:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	10	10/14/2016 1:50:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	10	10/14/2016 1:50:00 AM	JDB	EPA 300.0	
pH	7.13	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/20/2016 4:41:00 PM	KEB	EPA 200.8	
TDS	3950	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/20/2016 4:41:00 PM	KEB	EPA 200.8	

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Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-007	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARP12	Sampling Time	12:20 PM	Extraction Date	
Matrix	Water	Sample Location	P12		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	<0.02	mg/L	0.02	10/14/2016 1:47:00 PM	KAS	SM4500NH3G	
Barium	0.0440	mg/L	0.005	10/21/2016 1:01:00 PM	KEB	EPA 200.8	
Chloride	11.3	mg/L	0.1	10/14/2016 2:12:00 AM	JDB	EPA 300.0	
Conductivity	1239	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	ND	mg/L	0.005	10/21/2016 1:01:00 PM	KEB	EPA 200.8	
NO3/N	0.547	mg/L	0.1	10/14/2016 2:12:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	10/14/2016 2:12:00 AM	JDB	EPA 300.0	
pH	7.61	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/21/2016 1:01:00 PM	KEB	EPA 200.8	
TDS	758	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/21/2016 1:01:00 PM	KEB	EPA 200.8	

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Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-008	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARP13	Sampling Time	12:50 PM	Extraction Date	
Matrix	Water	Sample Location	P13		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	38.7	mg/L	0.2	10/14/2016 2:27:00 PM	KAS	SM4500NH3G	
Barium	0.0639	mg/L	0.01	10/21/2016 1:09:00 PM	KEB	EPA 200.8	
Chloride	1190	mg/L	10	10/14/2016 2:34:00 AM	JDB	EPA 300.0	
Conductivity	7450	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	4.31	mg/L	0.01	10/21/2016 1:09:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	10	10/14/2016 2:34:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	10	10/14/2016 2:34:00 AM	JDB	EPA 300.0	
pH	7.28	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.01	10/21/2016 1:09:00 PM	KEB	EPA 200.8	
TDS	4820	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.01	10/21/2016 1:09:00 PM	KEB	EPA 200.8	

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Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-009	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARSA14	Sampling Time	1:15 PM	Extraction Date	
Matrix	Water	Sample Location	SA14		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	22.2	mg/L	0.2	10/14/2016 2:29:00 PM	KAS	SM4500NH3G	
Barium	0.0140	mg/L	0.005	10/21/2016 1:16:00 PM	KEB	EPA 200.8	
Chloride	963	mg/L	10	10/14/2016 2:55:00 AM	JDB	EPA 300.0	
Conductivity	5900	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	0.00628	mg/L	0.005	10/21/2016 1:16:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	10	10/14/2016 2:55:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	10	10/14/2016 2:55:00 AM	JDB	EPA 300.0	
pH	9.86	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	0.0268	mg/L	0.005	10/21/2016 1:16:00 PM	KEB	EPA 200.8	
TDS	3730	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/21/2016 1:16:00 PM	KEB	EPA 200.8	

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Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
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Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-010	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARSA11	Sampling Time	1:30 PM	Extraction Date	
Matrix	Water	Sample Location	SA11		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	54.9	mg/L	0.2	10/14/2016 2:32:00 PM	KAS	SM4500NH3G	
Barium	0.0395	mg/L	0.005	10/21/2016 1:23:00 PM	KEB	EPA 200.8	
Chloride	3740	mg/L	20	10/14/2016 4:01:00 AM	JDB	EPA 300.0	
Conductivity	14200	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	0.251	mg/L	0.005	10/21/2016 1:23:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	10/14/2016 4:01:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	10/14/2016 4:01:00 AM	JDB	EPA 300.0	
pH	8.45	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	0.0111	mg/L	0.005	10/21/2016 1:23:00 PM	KEB	EPA 200.8	
TDS	8660	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/21/2016 1:23:00 PM	KEB	EPA 200.8	

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Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-011	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARSA10	Sampling Time	1:45 PM	Extraction Date	
Matrix	Water	Sample Location	SA10		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	606	mg/L	2	10/14/2016 2:54:00 PM	KAS	SM4500NH3G	
Barium	0.0570	mg/L	0.01	10/21/2016 2:24:00 PM	KEB	EPA 200.8	
Chloride	7890	mg/L	50	10/14/2016 4:23:00 AM	JDB	EPA 300.0	
Conductivity	32900	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	5.14	mg/L	0.01	10/21/2016 2:24:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	50	10/14/2016 4:23:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	50	10/14/2016 4:23:00 AM	JDB	EPA 300.0	
pH	7.59	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.01	10/21/2016 2:24:00 PM	KEB	EPA 200.8	
TDS	23100	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.01	10/21/2016 2:24:00 PM	KEB	EPA 200.8	

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Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-012	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARPW	Sampling Time	1:50 PM	Extraction Date	
Matrix	Water	Sample Location	PW		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.0980	mg/L	0.02	10/14/2016 1:56:00 PM	KAS	SM4500NH3G	
Barium	0.0784	mg/L	0.005	10/21/2016 2:31:00 PM	KEB	EPA 200.8	
Chloride	0.803	mg/L	0.1	10/14/2016 4:44:00 AM	JDB	EPA 300.0	
Conductivity	435	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	ND	mg/L	0.005	10/21/2016 2:31:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	10/14/2016 4:44:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	10/14/2016 4:44:00 AM	JDB	EPA 300.0	
pH	7.90	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/21/2016 2:31:00 PM	KEB	EPA 200.8	
TDS	295	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/21/2016 2:31:00 PM	KEB	EPA 200.8	

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Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-013	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARP09	Sampling Time	2:30 PM	Extraction Date	
Matrix	Water	Sample Location	P09		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.490	mg/L	0.02	10/14/2016 1:57:00 PM	KAS	SM4500NH3G	
Barium	0.0983	mg/L	0.005	10/21/2016 2:38:00 PM	KEB	EPA 200.8	
Chloride	484	mg/L	5	10/14/2016 5:06:00 AM	JDB	EPA 300.0	
Conductivity	2360	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	0.179	mg/L	0.005	10/21/2016 2:38:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	5	10/14/2016 5:06:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	5	10/14/2016 5:06:00 AM	JDB	EPA 300.0	
pH	8.40	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	ND	mg/L	0.005	10/21/2016 2:38:00 PM	KEB	EPA 200.8	
TDS	997	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/21/2016 2:38:00 PM	KEB	EPA 200.8	

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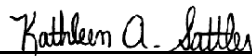
Batch #: 161012082
Project Name: LBAR

Analytical Results Report

Sample Number	161012082-014	Sampling Date	10/12/2016	Date/Time Received	10/12/2016 4:05 PM
Client Sample ID	1610LBARSFDF	Sampling Time	4:00 PM	Extraction Date	
Matrix	Water	Sample Location	SAFD		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	25.0	mg/L	1	10/14/2016 3:02:00 PM	KAS	SM4500NH3G	
Barium	0.0138	mg/L	0.005	10/21/2016 2:45:00 PM	KEB	EPA 200.8	
Chloride	930	mg/L	10	10/14/2016 5:28:00 AM	JDB	EPA 300.0	
Conductivity	5850	µmhos/cm	10	10/14/2016 11:15:00 AM	ACS	SM2510B	
Manganese	0.00608	mg/L	0.005	10/21/2016 2:45:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	10	10/14/2016 5:28:00 AM	JDB	EPA 300.0	
NO2/N	ND	mg/L	10	10/14/2016 5:28:00 AM	JDB	EPA 300.0	
pH	9.73	ph Units		10/12/2016 4:55:00 PM	ACS	SM 4500pH-B	
Selenium	0.0239	mg/L	0.005	10/21/2016 2:45:00 PM	KEB	EPA 200.8	
TDS	3790	mg/L	5	10/19/2016 8:25:00 AM	KAS	SM 2540C	
Thallium	ND	mg/L	0.005	10/21/2016 2:45:00 PM	KEB	EPA 200.8	

Authorized Signature


Kathleen A. Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Client: CH2M HILL
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: CRAIG SAUER

Batch #: 160429002
Project Name: LBAR-NWA

Analytical Results Report

Sample Number	160429002-001	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP25	Sampling Time	8:20 AM	Extraction Date	
Matrix	Water	Sample Location	P25		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.535	mg/L	0.02	5/2/2016 3:20:00 PM	RAW	SM4500NH3G	
Barium	0.0610	mg/L	0.001	5/9/2016 4:59:00 PM	KEB	EPA 200.8	
Chloride	447	mg/L	2	5/2/2016 6:44:00 PM	JDB	EPA 300.0	
Conductivity	2630	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	7.50	mg/L	0.01	5/10/2016 11:30:00 AM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 2:18:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 2:18:00 PM	JDB	EPA 300.0	
pH	6.59	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	ND	mg/L	0.001	5/9/2016 4:59:00 PM	KEB	EPA 200.8	
TDS	1740	mg/L	5	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 4:59:00 PM	KEB	EPA 200.8	

Sample Number	160429002-002	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARSA10	Sampling Time	3:15 PM	Extraction Date	
Matrix	Water	Sample Location	SA10		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	937	mg/L	20	5/2/2016 4:12:00 PM	RAW	SM4500NH3G	
Barium	0.0593	mg/L	0.01	5/10/2016 11:34:00 AM	KEB	EPA 200.8	
Chloride	9350	mg/L	40	5/2/2016 6:20:00 PM	JDB	EPA 300.0	
Conductivity	34100	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	5.83	mg/L	0.01	5/10/2016 11:34:00 AM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 3:08:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 3:08:00 PM	JDB	EPA 300.0	
pH	7.51	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.0170	mg/L	0.01	5/10/2016 11:34:00 AM	KEB	EPA 200.8	
TDS	20600	mg/L	50	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.01	5/10/2016 11:34:00 AM	KEB	EPA 200.8	

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Client: CH2M HILL
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SPOKANE, WA 99201
Attn: CRAIG SAUER

Batch #: 160429002
Project Name: LBAR-NWA

Analytical Results Report

Sample Number	160429002-003	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARSA11	Sampling Time	2:50 PM	Extraction Date	
Matrix	Water	Sample Location	SA11		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	59.0	mg/L	0.8	5/2/2016 3:51:00 PM	RAW	SM4500NH3G	
Barium	0.0283	mg/L	0.001	5/9/2016 2:31:00 PM	KEB	EPA 200.8	
Chloride	3490	mg/L	20	5/2/2016 11:16:00 PM	JDB	EPA 300.0	
Conductivity	12540	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	0.130	mg/L	0.001	5/9/2016 2:31:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 3:32:00 PM	JDB	EPA 300.0	
NO2/N	0.136	mg/L	0.1	4/29/2016 3:32:00 PM	JDB	EPA 300.0	
pH	8.39	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.0195	mg/L	0.001	5/9/2016 2:31:00 PM	KEB	EPA 200.8	
TDS	8970	mg/L	50	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 2:31:00 PM	KEB	EPA 200.8	

Sample Number	160429002-004	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARSA14	Sampling Time	2:20 PM	Extraction Date	
Matrix	Water	Sample Location	SA14		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	25.9	mg/L	0.4	5/2/2016 3:53:00 PM	RAW	SM4500NH3G	
Barium	0.0137	mg/L	0.001	5/9/2016 2:52:00 PM	KEB	EPA 200.8	
Chloride	1190	mg/L	5	5/2/2016 7:09:00 PM	JDB	EPA 300.0	
Conductivity	5820	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	0.00911	mg/L	0.001	5/9/2016 2:52:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 3:57:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 3:57:00 PM	JDB	EPA 300.0	
pH	9.69	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.0259	mg/L	0.001	5/9/2016 2:52:00 PM	KEB	EPA 200.8	
TDS	3820	mg/L	10	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 2:52:00 PM	KEB	EPA 200.8	

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Batch #: 160429002
Project Name: LBAR-NWA

Analytical Results Report

Sample Number	160429002-005	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARSF0D	Sampling Time	4:00 PM	Extraction Date	
Matrix	Water	Sample Location	FD		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	26.1	mg/L	0.4	5/2/2016 3:56:00 PM	RAW	SM4500NH3G	
Barium	0.0132	mg/L	0.001	5/9/2016 3:49:00 PM	KEB	EPA 200.8	
Chloride	1220	mg/L	5	5/2/2016 5:30:00 PM	JDB	EPA 300.0	
Conductivity	5790	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	0.00835	mg/L	0.001	5/9/2016 3:49:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 4:22:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 4:22:00 PM	JDB	EPA 300.0	
pH	9.58	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.0237	mg/L	0.001	5/9/2016 3:49:00 PM	KEB	EPA 200.8	
TDS	3650	mg/L	50	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 3:49:00 PM	KEB	EPA 200.8	

Sample Number	160429002-006	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP09	Sampling Time	1:45 PM	Extraction Date	
Matrix	Water	Sample Location	P09		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	2.87	mg/L	0.1	5/2/2016 3:58:00 PM	RAW	SM4500NH3G	
Barium	0.274	mg/L	0.001	5/9/2016 3:56:00 PM	KEB	EPA 200.8	
Chloride	725	mg/L	2.5	5/2/2016 7:59:00 PM	JDB	EPA 300.0	
Conductivity	2990	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	1.23	mg/L	0.01	5/10/2016 11:38:00 AM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 4:47:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 4:47:00 PM	JDB	EPA 300.0	
pH	7.57	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	ND	mg/L	0.001	5/9/2016 3:56:00 PM	KEB	EPA 200.8	
TDS	1620	mg/L	5	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 3:56:00 PM	KEB	EPA 200.8	

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Batch #: 160429002
Project Name: LBAR-NWA

Analytical Results Report

Sample Number	160429002-007	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP13	Sampling Time	1:05 PM	Extraction Date	
Matrix	Water	Sample Location	P13		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	40.2	mg/L	0.4	5/2/2016 4:01:00 PM	RAW	SM4500NH3G	
Barium	0.0551	mg/L	0.001	5/9/2016 5:23:00 PM	KEB	EPA 200.8	
Chloride	1204	mg/L	5	5/2/2016 7:34:00 PM	JDB	EPA 300.0	
Conductivity	6680	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	4.20	mg/L	0.01	5/10/2016 11:43:00 AM	KEB	EPA 200.8	
NO3/N	0.479	mg/L	0.1	4/29/2016 5:12:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 5:12:00 PM	JDB	EPA 300.0	
pH	7.56	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.00186	mg/L	0.001	5/9/2016 5:23:00 PM	KEB	EPA 200.8	
TDS	4720	mg/L	5	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 5:23:00 PM	KEB	EPA 200.8	

Sample Number	160429002-008	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP12	Sampling Time	12:30 PM	Extraction Date	
Matrix	Water	Sample Location	P12		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	<0.02	mg/L	0.02	5/2/2016 4:02:00 PM	RAW	SM4500NH3G	
Barium	0.0430	mg/L	0.001	5/9/2016 4:03:00 PM	KEB	EPA 200.8	
Chloride	0.758	mg/L	0.1	4/29/2016 5:36:00 PM	JDB	EPA 300.0	
Conductivity	1373	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	0.00136	mg/L	0.001	5/9/2016 4:03:00 PM	KEB	EPA 200.8	
NO3/N	0.758	mg/L	0.1	4/29/2016 5:36:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 5:36:00 PM	JDB	EPA 300.0	
pH	7.81	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	ND	mg/L	0.001	5/9/2016 4:03:00 PM	KEB	EPA 200.8	
TDS	879	mg/L	5	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 4:03:00 PM	KEB	EPA 200.8	

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Attn: CRAIG SAUER

Batch #: 160429002
Project Name: LBAR-NWA

Analytical Results Report

Sample Number	160429002-009	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARPW	Sampling Time	11:30 AM	Extraction Date	
Matrix	Water	Sample Location	PW		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.0330	mg/L	0.02	5/2/2016 3:16:00 PM	RAW	SM4500NH3G	
Barium	0.0839	mg/L	0.001	5/9/2016 4:10:00 PM	KEB	EPA 200.8	
Chloride	0.921	mg/L	0.1	4/29/2016 6:26:00 PM	JDB	EPA 300.0	
Conductivity	412	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	0.0286	mg/L	0.001	5/9/2016 4:10:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 6:26:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 6:26:00 PM	JDB	EPA 300.0	
pH	8.03	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	ND	mg/L	0.001	5/9/2016 4:10:00 PM	KEB	EPA 200.8	
TDS	248	mg/L	5	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 4:10:00 PM	KEB	EPA 200.8	

Sample Number	160429002-010	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP20B	Sampling Time	11:20 AM	Extraction Date	
Matrix	Water	Sample Location	P20B		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	15.9	mg/L	0.4	5/2/2016 4:05:00 PM	RAW	SM4500NH3G	
Barium	0.0605	mg/L	0.001	5/9/2016 4:31:00 PM	KEB	EPA 200.8	
Chloride	1840	mg/L	10	5/2/2016 10:52:00 PM	JDB	EPA 300.0	
Conductivity	6340	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	0.816	mg/L	0.001	5/9/2016 4:31:00 PM	KEB	EPA 200.8	
NO3/N	15.2	mg/L	0.1	4/29/2016 6:51:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 6:51:00 PM	JDB	EPA 300.0	
pH	7.78	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.00346	mg/L	0.001	5/9/2016 4:31:00 PM	KEB	EPA 200.8	
TDS	3810	mg/L	10	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 4:31:00 PM	KEB	EPA 200.8	

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Attn: CRAIG SAUER

Batch #: 160429002
Project Name: LBAR-NWA

Analytical Results Report

Sample Number	160429002-011	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP27	Sampling Time	10:55 AM	Extraction Date	
Matrix	Water	Sample Location	P27		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.176	mg/L	0.02	5/2/2016 3:32:00 PM	RAW	SM4500NH3G	
Barium	4.02	mg/L	0.005	5/10/2016 11:47:00 AM	KEB	EPA 200.8	
Chloride	11400	mg/L	50	5/2/2016 4:40:00 PM	JDB	EPA 300.0	
Conductivity	24400	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	0.00338	mg/L	0.001	5/9/2016 5:20:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 7:16:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 7:16:00 PM	JDB	EPA 300.0	
pH	7.10	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.00247	mg/L	0.001	5/9/2016 5:20:00 PM	KEB	EPA 200.8	
TDS	12900	mg/L	50	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.005	5/10/2016 11:47:00 AM	KEB	EPA 200.8	

Sample Number	160429002-012	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP06	Sampling Time	10:05 AM	Extraction Date	
Matrix	Water	Sample Location	P06		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	0.669	mg/L	0.02	5/2/2016 3:33:00 PM	RAW	SM4500NH3G	
Barium	0.198	mg/L	0.001	5/9/2016 5:38:00 PM	KEB	EPA 200.8	
Chloride	88.5	mg/L	0.4	5/2/2016 5:05:00 PM	JDB	EPA 300.0	
Conductivity	1214	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	1.85	mg/L	0.01	5/10/2016 11:51:00 AM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 7:40:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 7:40:00 PM	JDB	EPA 300.0	
pH	7.61	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	ND	mg/L	0.001	5/9/2016 5:38:00 PM	KEB	EPA 200.8	
TDS	518	mg/L	5	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 5:38:00 PM	KEB	EPA 200.8	

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Batch #: 160429002
Project Name: LBAR-NWA

Analytical Results Report

Sample Number	160429002-013	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP05	Sampling Time	9:35 AM	Extraction Date	
Matrix	Water	Sample Location	P05		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	<0.02	mg/L	0.02	5/2/2016 3:34:00 PM	RAW	SM4500NH3G	
Barium	0.542	mg/L	0.001	5/9/2016 4:38:00 PM	KEB	EPA 200.8	
Chloride	2610	mg/L	10	5/2/2016 4:16:00 PM	JDB	EPA 300.0	
Conductivity	7220	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	0.0185	mg/L	0.001	5/9/2016 4:38:00 PM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 8:05:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 8:05:00 PM	JDB	EPA 300.0	
pH	7.25	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.00187	mg/L	0.001	5/9/2016 4:38:00 PM	KEB	EPA 200.8	
TDS	3350	mg/L	10	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.001	5/9/2016 4:38:00 PM	KEB	EPA 200.8	

Sample Number	160429002-014	Sampling Date	4/28/2016	Date/Time Received	4/29/2016 8:30 AM
Client Sample ID	1604LBARP19	Sampling Time	9:00 AM	Extraction Date	
Matrix	Water	Sample Location	P19		
Comments					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ammonia-nitrogen	<0.02	mg/L	0.02	5/2/2016 3:37:00 PM	RAW	SM4500NH3G	
Barium	0.146	mg/L	0.005	5/10/2016 11:56:00 AM	KEB	EPA 200.8	
Chloride	9050	mg/L	40	5/5/2016 11:19:00 PM	JDB	EPA 300.0	
Conductivity	21640	µmhos/cm	10	5/6/2016 11:15:00 AM	JAO	SM2510B	
Manganese	2.39	mg/L	0.005	5/10/2016 11:56:00 AM	KEB	EPA 200.8	
NO3/N	ND	mg/L	0.1	4/29/2016 8:30:00 PM	JDB	EPA 300.0	
NO2/N	ND	mg/L	0.1	4/29/2016 8:30:00 PM	JDB	EPA 300.0	
pH	6.78	ph Units		4/29/2016 3:34:00 PM	JAO	SM 4500pH-B	
Selenium	0.00503	mg/L	0.005	5/10/2016 11:56:00 AM	KEB	EPA 200.8	
TDS	12700	mg/L	50	5/4/2016 9:30:00 AM	KEB	SM 2540C	
Thallium	ND	mg/L	0.005	5/10/2016 11:56:00 AM	KEB	EPA 200.8	

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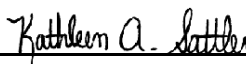
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Client: CH2M HILL
Address: 999 W RIVERSIDE AVE #500
SPOKANE, WA 99201
Attn: CRAIG SAUER

Batch #: 160429002
Project Name: LBAR-NWA

Analytical Results Report

Authorized Signature


Kathleen A. Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.