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CH2MHILL

January 7, 2013

Ms. Teresita F. Bala
Washington State Department of Ecology
Toxics Cleanup Program
4601 N. Monroe, Suite 202
Spokane, WA 99205-1295

Subject: L-Bar Site Compliance Monitoring Program—2012 Year-End Groundwater Monitoring Data Submittal.

Dear Teresita:

On behalf of Northwest Alloys, CH2M HILL has prepared this letter and associated attachments to summarize the groundwater monitoring data collected in 2012 as part of the *Compliance Monitoring Program* (CMP) at the L-Bar site. As you know, groundwater monitoring has been conducted semi-annually at the L-Bar site in accordance with the *L-Bar Material Removal and Compliance Monitoring Work Plan* (CH2M HILL 2001). Minor adjustments to the CMP were incorporated in May 2012 as described in the *L-Bar Site Compliance Monitoring Program Sampling and Analysis Work Plan, Addendum No. 1, May 2012* (CH2M HILL 2012). The current CMP groundwater monitoring network includes thirteen sampling locations, including twelve (12) shallow resource-protection groundwater monitoring wells and one (1) deep production well.

The following attachments (enclosed with this letter) summarize the groundwater monitoring data collected in 2012:

Attachment A – Monitoring Network and October 2012 Groundwater Flow Map

Attachment B – Groundwater Monitoring Field Parameters for the May and October Events

Attachment C – Groundwater Monitoring Analytical Results - May 2012 Event

Attachment D – Groundwater Monitoring Analytical Results - October 2012 Event

Attachment E – Updated Time-Series Concentration Plots for Indicator Constituents

A detailed summary of the spatial and temporal characteristics of groundwater (and surface water) conditions were discussed with you in a meeting held on October 19, 2011, and as described in the *L-Bar Site Compliance Monitoring and Data Evaluation Report 1996 to 2010* (CH2M HILL 2011). A concise year-end data summary was submitted to you in February 2012 respective of the sampling performed in 2011. Results from the monitoring conducted in May and October of 2012(herein) are generally consistent with the expected groundwater conditions as provided to you in these recent submittals. CH2M HILL understands that the surface water monitoring data collected in 2012 has recently been submitted to you directly by the Stevens County Conservation District.

Surface water and groundwater monitoring will continue into the foreseeable future in accordance with the amended CMP (dated May 2012) to evaluate progress toward established cleanup goals. The next sampling events are scheduled for April and October 2013. Follow-on data summaries will be prepared annually for the data collected in 2013 and 2014. The next 5-year review report is scheduled for 2015, which will be developed in a format similar to the recent *L-Bar Site Compliance Monitoring and Data Evaluation Report, 1996 to 2010* (CH2M HILL 2011).

Please contact me at 509-464-7200 if you have any questions about the enclosed groundwater monitoring data submittal, or if you would like to discuss the status of the CMP for the L-Bar site.

Sincerely,

CH2M HILL

Craig Sauer, L.G.
Project Manager

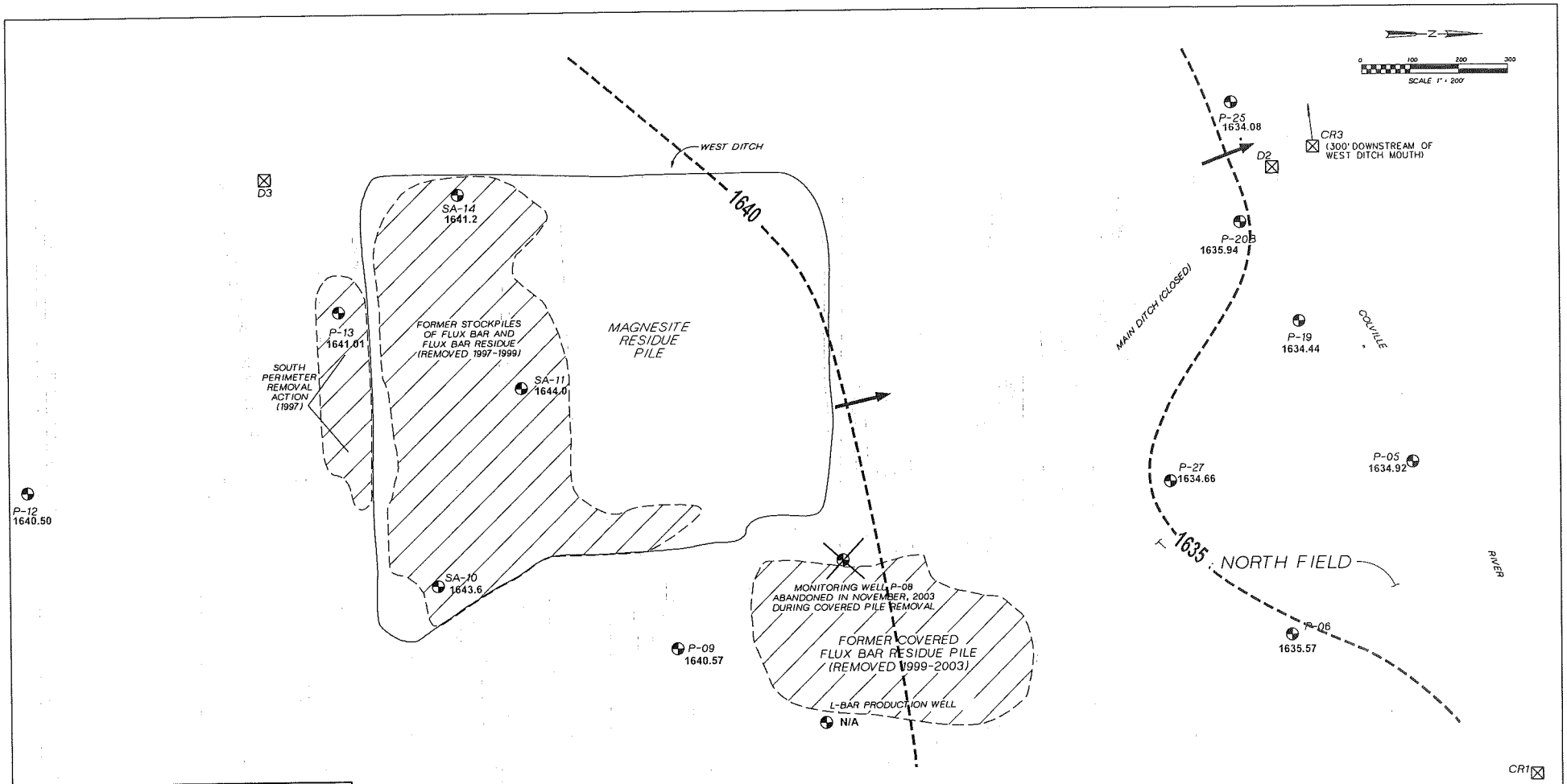
cc: Steve Shaw/Alcoa
Michele Maidman/Alcoa
Johnie McCanna/Northwest Alloys
Charlie Kessler/Stevens County Conservation District

References:

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

CH2M HILL. 2011. *L-Bar Site Compliance Monitoring and Data Evaluation Report 1996 to 2011.*

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



ATTACHMENT A
COMPLIANCE MONITORING NETWORK AND
OCTOBER 2012 GROUNDWATER FLOW MAP
L-BAR SITE

CH2MHILL

ATTACHMENT B

Groundwater Monitoring Field Parameter Data - May and October 2012

L-Bar Site Compliance Monitoring Program

Location	Well	Date	TOC Reference Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Temp. (°C)	pH	Specific Conductance (uS/cm)
Background	P-12	5/3/2012	1649.43	4.57	1644.86	8.7	7.5	1,505
		10/6/2012		8.93	1640.50	10.5	7.4	1,098
	Prod. Well	5/3/2012	-- not applicable --			11.4	7.8	261
		10/6/2012				12.1	7.6	409
North of Site	P-05	5/3/2012	1643.08	4.55	1638.53	6.8	6.9	9,350
		10/3/2012		8.16	1634.92	12.7	6.9	8,320
	P-06	5/3/2012	1642.33	3.12	1639.21	7.4	7.0	1,687
		10/3/2012		6.76	1635.57	15.4	7.0	1,271
	P-19	5/3/2012	1639.97	1.66	1638.31	10.5	6.5	25,520
		10/3/2012		5.53	1634.44	16.6	6.5	16,960
	P-20B	5/3/2012	1642.43	3.41	1639.02	11.0	7.3	5,820
		10/3/2012		6.49	1635.94	20.0	6.9	6,820
	P-25	5/3/2012	1639.41	1.52	1637.89	7.9	6.7	2,570
		10/3/2012		5.33	1634.08	14.7	6.8	2,281
	P-27	5/3/2012	1642.19	3.14	1639.05	6.9	6.9	25,140
		10/3/2012		7.53	1634.66	14.3	6.9	24,500
Site Interior	P-09	5/3/2012	1643.79	1.71	1642.08	10.5	7.2	4,099
		10/3/2012		3.22	1640.57	20.6	8.1	2,497
	P-13	5/3/2012	1646.12	4.48	1641.64	8.7	8.7	6,230
		10/3/2012		5.11	1641.01	13.2	7.6	5,500
Magnesite Residue Pile [1]	SA-10	5/3/2012	1672.4	27.65	1644.8	10.9	7.9	44,920
		10/3/2012		28.79	1643.6	10.9	7.9	39,750
	SA-11	5/3/2012	1668.8	24.82	1644.0	11.1	9.1	10,920
		10/3/2012		24.80	1644.0	11.2	9.1	10,200
	SA-14	5/3/2012	1667.1	25.66	1641.4	10.6	10.2	6,920
		10/3/2012		25.88	1641.2	10.5	10.1	6,240

Notes:

NR - pH not recorded due to probe malfunction. Refer to laboratory pH result.

1. The well casings and monuments for Magnesite Residue Pile wells (i.e., SA series wells) were modified in 1999 following flux bar removal activities; CH2M HILL re-established top of casing elevations via engineering level/rod and and known elevation at top of PVC at P-13 during the October 2007 event. The TOC elevations and associated groundwater elevations are considered accurate to nearest tenth of foot.

ATTACHMENT C

May 2012 Groundwater Sampling Analytical Results

L-Bar Site Compliance Monitoring Program

	--- Background ---		--- North of Site ---						--- Site Interior ---		--- Magnesite Residue Pile ---		
Analyte	**P-12**	**PROD. WELL**	**P-05**	**P06**	**P-19**	**P-20B**	**P-25**	**P-27**	**P-09**	**P-13**	**SA-10**	**SA-11**	**SA-14**
Ammonia-N	<0.05	<0.05	0.047	0.8	0.12	8.22	0.644	<0.05	4.57	28.6	1,310	184	33.3
Barium	0.0738	0.0784	0.533	0.306	0.132	0.0927	0.0384	3.47	0.334	0.0599	0.0756	0.0232	0.0145
Chloride	11	0.58	3,060	244	8,930	1,300	328	8,410	980	1,220	10,900	2,450	1,480
Conductivity	1,150	446	7,880	1,380	21,600	5,720	2,220	21,700	3,450	5,060	38,300	10,400	6,670
Manganese	0.0021	0.0102	1.08	2.08	1.88	0.23	6.49	0.0155	1.29	0.668	5.81	0.159	0.0084
Nitrate, Nitrite-N, Total CALC	0.175	<0.05	0.021	0.057	0.974	29.4	0.05	2.32	<0.05	12.8	0.162	<0.05	0.135
Nitrate-N	0.169	<0.05	0.013	0.05	0.817	29.4	<0.05 J	2.31	<0.05	12.6	<0.05	<0.05	<0.05
Nitrite-N	0.006 J	0.01 J	0.008 J	0.007 J	0.157	0.033 J	0.012 J	0.009 J	0.005 J	0.202	0.355	0.081	0.365
pH	7.92	7.86	7.46	7.52	7.29	7.66	7.5	7.39	7.59	8.51	7.63	8.62	9.61
Selenium	<0.02	<0.02	<0.02	<0.02	0.0107 J	0.0062 J	<0.02	<0.02	<0.02	0.0061 J	<0.02	<0.02	0.0298
Solids, Total Dissolved	840	240	5,340	848	16,100	3,540	1,750	15,300	2,200	3,790	29,200	8,120	4,570
Thallium	<0.01	<0.01	<0.01	0.002 J	<0.01	<0.01	0.0033 J	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Turbidity	1.07	14.1	7.7	173	3.1	1.14	126	1.27	5.36	1.45	48.8	1.99	0.38

Notes:

Samples collected on May 3, 2012.

Non-detect vaues shown with less than symbol (i.e., "<") followed by lab reporting ilmit.

J = The result is an estimated value.

*Indicates values outside control criteria

Units:

Conductivity	uS/cm
pH	pH Units
Turbidity	NTU
All Others	mg/L

ATTACHMENT D

October 2012 Groundwater Sampling Analytical Results

L-Bar Site Compliance Monitoring Program

	--- Background ---		--- North of Site ---						--- Site Interior ---		--- Magnesite Residue Pile ---		
Analyte	**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	<0.05	<0.05	0.067	0.894	0.648	26.6	0.517	<0.05	1.98	40	1,030	88	27.5
Barium	0.0713	0.0742	0.534	0.345	0.0873	0.057	0.0393	3.74	0.158	0.0619	0.0576	0.0211	0.0131
Chloride	10.5	0.71	2,320	191	6,060	1,740	361	9,840	551	928	10,000	1,970	1,290
Conductivity	1,150	427	8,080	1,220	15,600	6,440	2,340	23,100	2,470	5,440	38,500	8,790	6,000
Manganese	<0.004	0.006	1.33	2.09	2.3	0.729	4.8	0.0689	0.367	2.12	5.91	0.049	<0.004
Nitrate, Nitrite-N, Total CALC	0.239	0.012 J	<0.05	0.027 J	0.021 J	5.59	0.019 J	0.309	0.044 J	2.23	0.333	0.149	0.121
Nitrate-N	0.239	0.012 J	<0.05	0.017 J	0.009 J	5.55	0.013 J	0.301	0.039 J	2.18	<0.05	<0.05	<0.05
Nitrite-N	<0.05	<0.05	<0.05	0.01	0.012 J	0.041 J	0.006 J	0.008 J	0.005 J	0.047 J	0.643	0.212	0.298
pH	7.95	8.17	7.25	7.38	6.88	7.29	7.26	7.35	8.18	7.77	7.63	8.8	9.73
Selenium	<0.02	0.0051 J	0.0051 J	<0.02	<0.02	0.0115 J	<0.02	0.0066 J	<0.02	<0.02	0.0061 J	0.011 J	0.0269
Solids, Total Dissolved	837	388	6,400	968	11,500	3,860	1,630	19,200	1,350	3,880	29,400	6,440	4,060
Thallium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Turbidity	0.49	9.08	16.4	214	14.1	1.14	70.4	0.74	2.06	0.49	16.5	1.45	0.38

Notes:

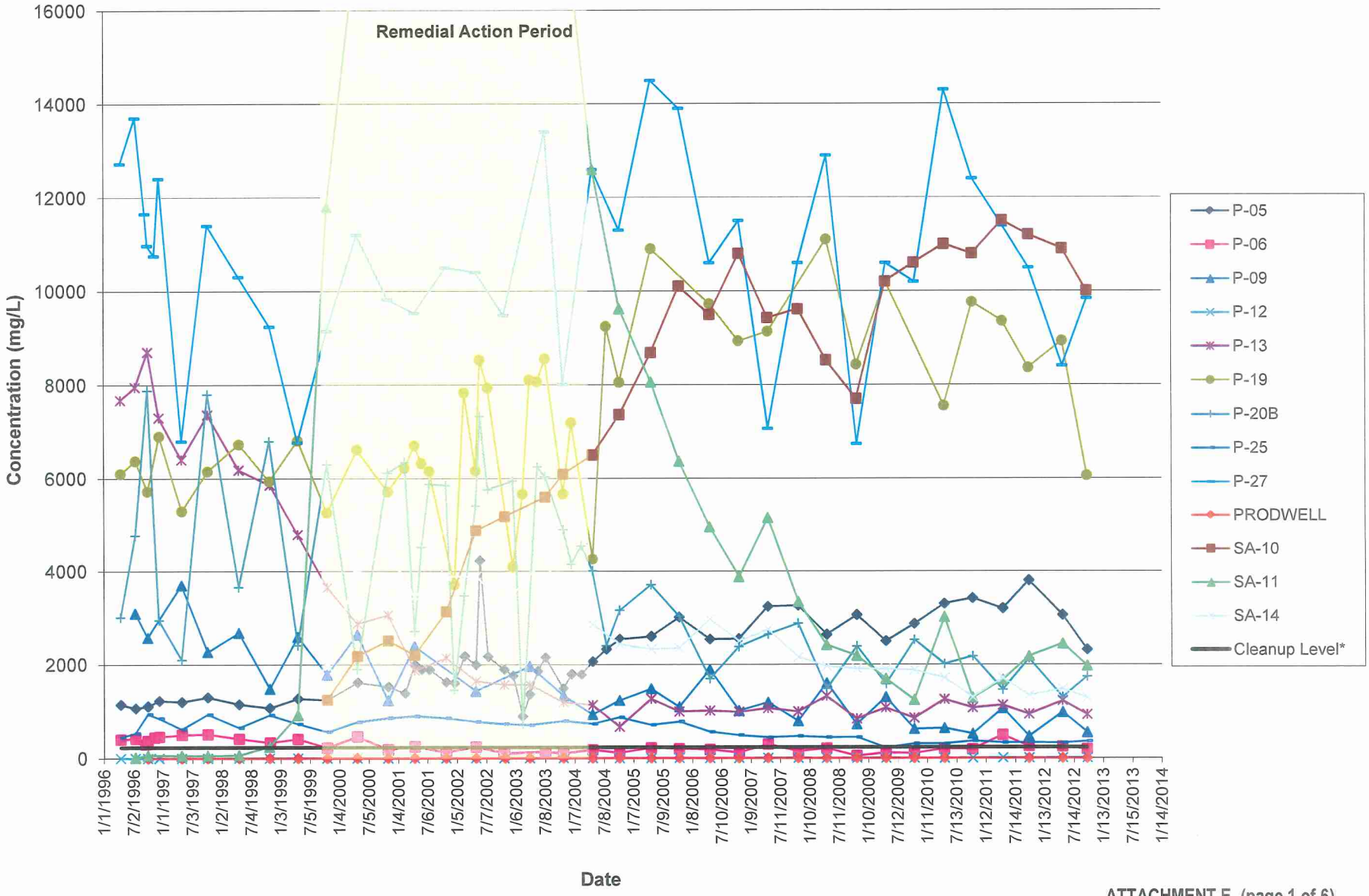
Samples collected on October 3, 2012.

Non-detect vaues shown with less than symbol (i.e., "<") followed by lab reporting ilmit.

J = The result is an estimated value.

Units:

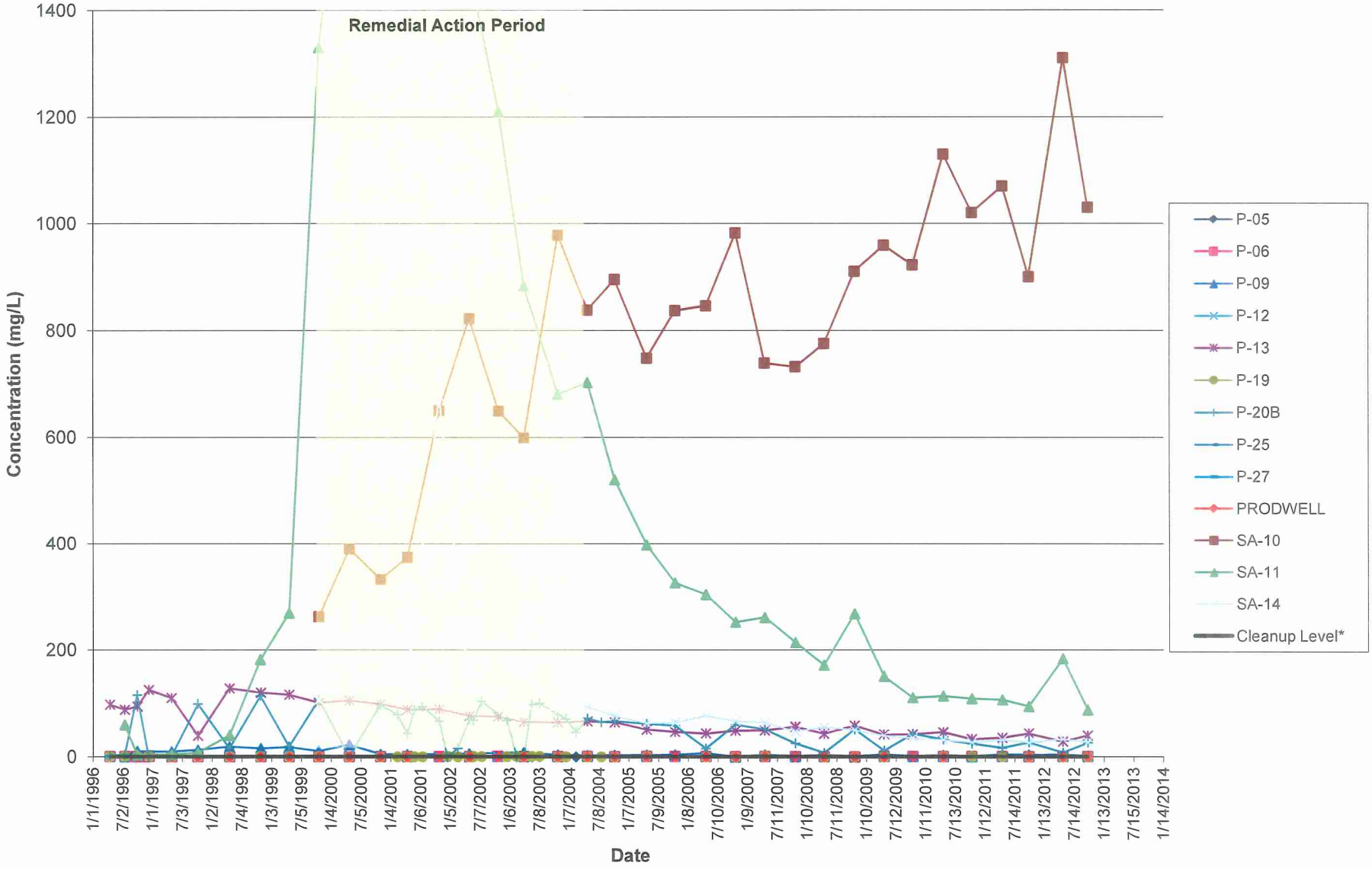
Conductivity	uS/cm
pH	pH Units
Turbidity	NTU
All Others	mg/L



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).*

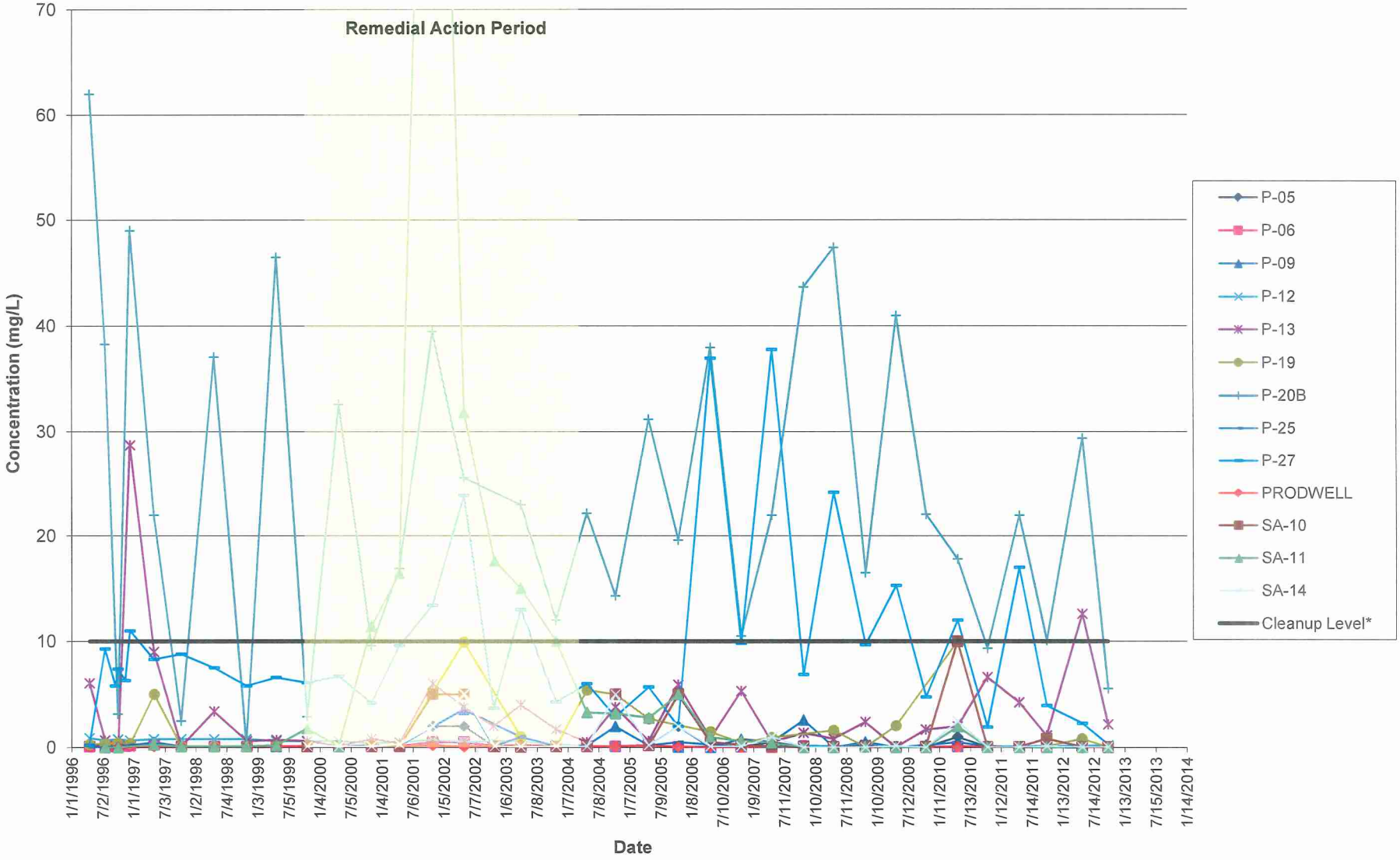
ATTACHMENT E (page 1 of 6)
Chloride Concentrations
L-Bar Site
CH2M HILL



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).*

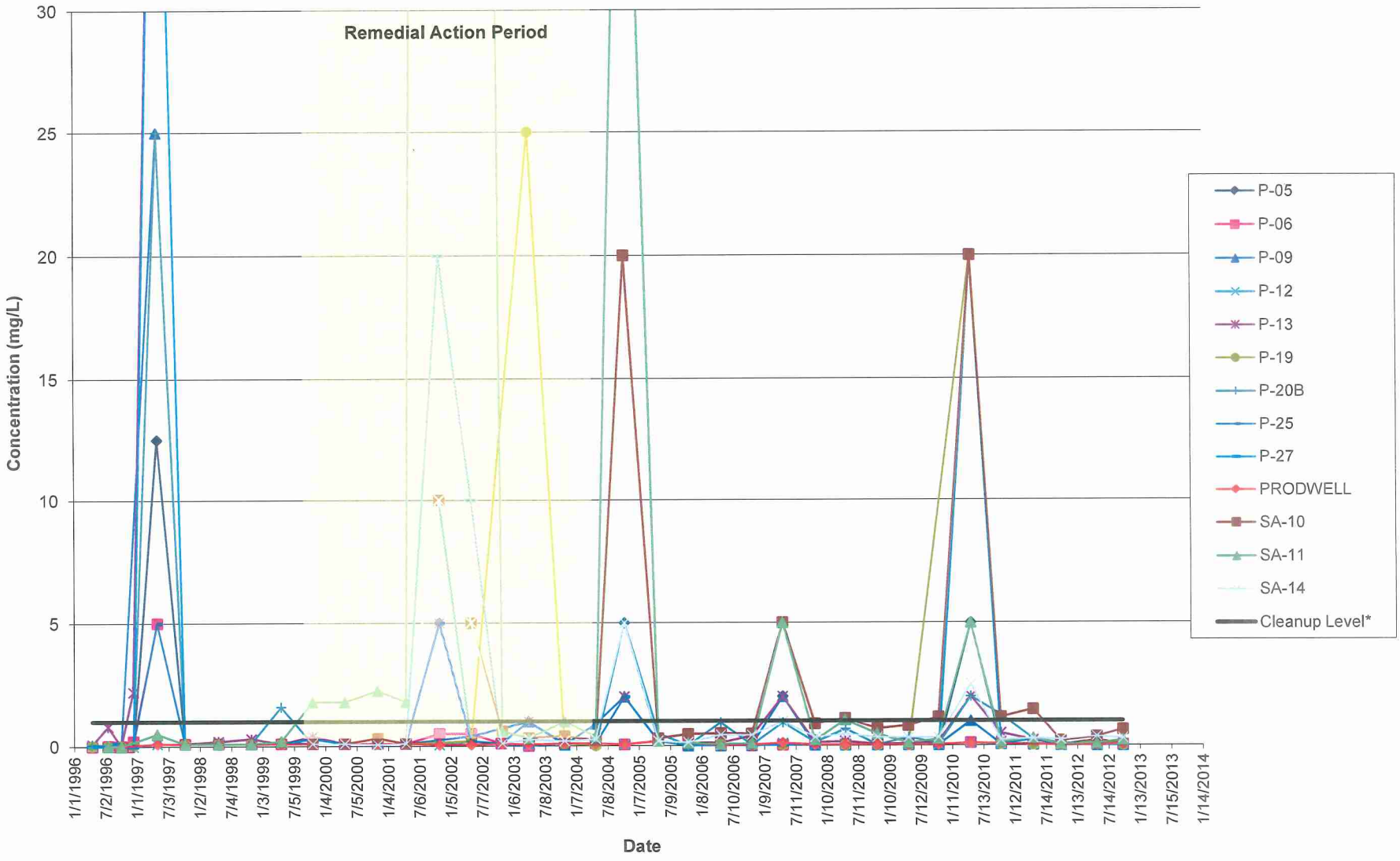
ATTACHMENT E (page 2 of 6)
Ammonia Concentrations
L-Bar Site
CH2M HILL



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 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).*

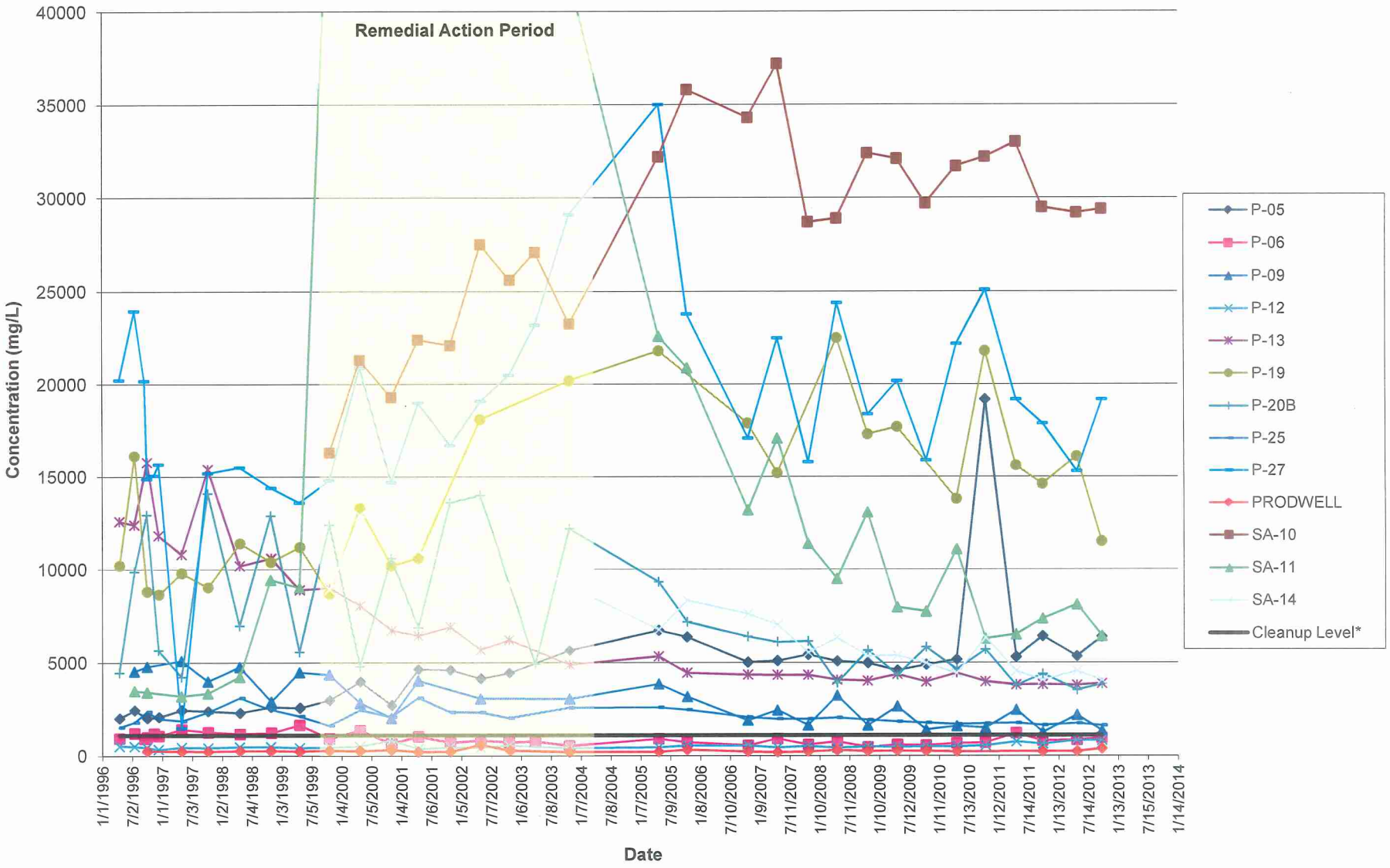
ATTACHMENT E (page 3 of 6)
Nitrate Concentrations
L-Bar Site
CH2M HILL



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).*

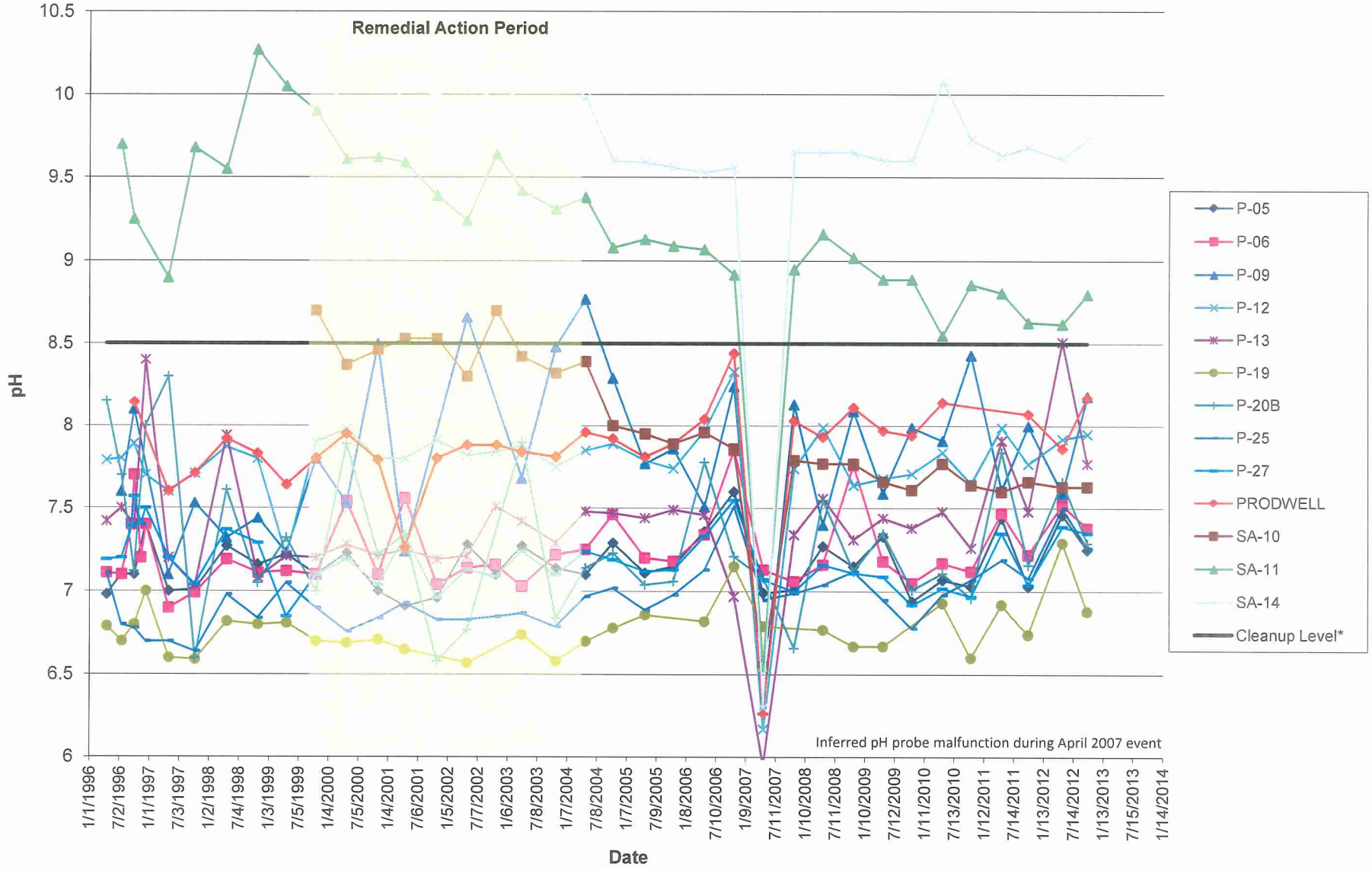
ATTACHMENT E (page 4 of 6)
Nitrite Concentrations
L-Bar Site
CH2M HILL



Notes:

1. Remedial Actions Performed from 1999 to 2003; Magnesite Residue Pile Removal in 1999, Covered Pile Removal in 2003, 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 (page 5 of 6)
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, and 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 (page 6 of 6)
pH
L-Bar Site
CH2M HILL