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January 6, 2014

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—2013 Year-End Groundwater Monitoring Data Submittal.

Dear Chuck:

On behalf of Northwest Alloys, CH2M HILL has prepared this letter and associated attachments to summarize the groundwater monitoring results collected in 2013 as part of the *Compliance Monitoring Program* (CMP) at the L-Bar site.

The following attachments (enclosed with this letter) summarize the groundwater monitoring results from the semi-annual events performed in 2013:

Attachment A – CMP Network and October 2013 Groundwater Flow Map

Attachment B – Field Parameters for April and October 2013 Sampling Events

Attachment C – Groundwater Analytical Results for April 2013 Sampling Event

Attachment D – Groundwater Analytical Results for October 2013 Sampling Event

Attachment E – Time-Series Concentration Plots for Indicator Constituents

As shown in Attachment A, 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. 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 HILL, 2001). Beginning in May 2012, the groundwater suite was modified as described in the *L-Bar Site Compliance Monitoring Program Sampling and Analysis Work Plan Addendum No. 1, May 2012* (CH2M HILL, 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, only the primary indicator parameters were sampled in 2013 as summarized in Attachments C and D.

Groundwater monitoring results through 2013 (herein) are generally consistent with the groundwater conditions as previously summarized to Ecology in recent submittals. Of note, Attachment E shows that groundwater conditions in well SA-10 are showing decreasing concentrations of chloride over the past 3 years (i.e., last 6 sampling events). Recent concentrations of ammonia in well SA-10 appear to be stabilizing following increased concentrations observed during source removal actions conducted from 2001 to 2004. In addition, concentrations of total dissolved solids (TDS) in well SA-10 have been decreasing since 2007.

CH2M HILL understands that the surface water monitoring data collected in 2013 has previously been submitted to Ecology by the Stevens County Conservation District. Similar year-end groundwater data summaries have been submitted respective of the sampling performed in 2007, 2008, and 2009. A detailed summary of the spatial and temporal characteristics of groundwater (and surface water) conditions were discussed with Ecology in a recent meeting held on October 19, 2011, and as described in the *L-Bar Site Compliance Monitoring and Data Evaluation Report 1996 to 2010,* dated September 2011 (CH2M HILL, 2011). More recently, Ecology issued a status update of the L-Bar site in their *Periodic Review for L-Bar Site* (Ecology 2012).

CH2M HILL understands that future year-end annual data summaries will be prepared and submitted following the sampling performed in 2014 and 2015. The next five-year review report as described in the amended plan (CH2M HILL 2012) is anticipated to occur in 2016 in cooperation with Ecology to support the Periodic Review process per Model Toxics Control Act (MTCA).

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

Sincerely,

CH2M HILL

Craig Sauer, L.G.
Project Manager

cc: 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*.

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

Attachment A
CMP Network and October 2013 Groundwater Flow Map

N

0 100 200 300

SCALE 1" = 200'

1640

1635

WEST DITCH

D3

SA-14
1640.85

P-25
1634.46

CR3
(300' DOWNSTREAM OF WEST DITCH MOUTH)

D2

P-20B
1635.45

P-13
1641.33

SOUTH PERIMETER REMOVAL ACTION (1997)

FORMER STOCKPILES OF FLUX BAR AND FLUX BAR RESIDUE (REMOVED 1997-1999)

MAGNESITE RESIDUE PILE

SA-11
1642.95

MAIN DITCH (CLOSED)

P-19
1634.71

COLVILLE

SPRAY EVAPORATION POND

HOLDING POND

P-12
1640.50

SANITARY LAGOON

P-27
1633.80

P-05
1634.86

SA-10
1643.45

NORTH FIELD

RIVER

MONITORING WELL P-08 ABANDONED IN NOVEMBER, 2003 DURING COVERED PILE REMOVAL

P-09
1642.08

FORMER COVERED FLUX BAR RESIDUE PILE (REMOVED 1999-2003)

P-06
1635.64

L-BAR PRODUCTION WELL
N/A

ASPHALT PAVEMENT

GRAVEL ACCESS

GATE

CR1

U.S. 395

LEGEND

- P-05 1636.86 — 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 9, 2013

ATTACHMENT A
COMPLIANCE MONITORING NETWORK AND OCTOBER 2013 GROUNDWATER FLOW MAP
L-BAR SITE

CH2MHILL

Attachment B
Field Parameters for April and October 2013 Sampling Events

ATTACHMENT B

Groundwater Monitoring Field Parameter Data - April and October 2013

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)
Background	P-12	4/22/2013	1649.43	4.72	1644.71	8.3	7.5	1,238
		10/9/2013		6.61	1642.82	11.5	7.4	1,230
	Prod. Well	4/22/2013	-- not applicable --					
		10/9/2013						
North of Site	P-05	4/22/2013	1642.99	5.29	1637.70	9.3	7.3	7,080
		10/9/2013		8.13	1634.86	12.6	7.1	8,300
	P-06	4/22/2013	1642.33	3.37	1638.96	10.8	7.0	1,528
		10/9/2013		6.69	1635.64	14.9	7.4	854
	P-19	4/22/2013	1640.03	2.05	1637.98	11.7	6.6	20,480
		10/9/2013		5.32	1634.71	5.32	6.6	13,310
	P-20B	4/22/2013	1642.25	3.90	1638.35	13.7	7.2	6,520
		10/9/2013		5.80	1636.45	18.9	7.1	9,070
	P-25	4/22/2013	1639.41	1.98	1637.43	12.0	6.8	2,315
		10/9/2013		4.95	1634.46	13.5	6.9	2,382
	P-27	4/22/2013	1642.19	3.43	1638.76	11.6	7.2	21,230
		10/9/2013		8.39	1633.80	15.1	7.0	24,790
Site Interior	P-09	4/22/2013	1643.81	1.83	1641.98	11.0	7.3	3,680
		10/9/2013		1.73	1642.08	17.9	7.8	3,161
	P-13	4/22/2013	1645.98	4.53	1641.45	9.0	7.5	6,370
		10/9/2013		4.65	1641.33	11.8	7.2	6,460
Magnesite Residue Pile	SA-10	4/22/2013	1672.07	27.51	1644.56	11.9	8.0	36,780
		10/9/2013		28.62	1643.45	10.8	8.1	39,240
	SA-11	4/22/2013	1668.27	23.94	1644.33	12.1	8.8	13,240
		10/9/2013		25.32	1642.95	11.0	9.1	12,430
	SA-14	4/22/2013	1666.85	25.52	1641.33	10.8	10.1	6,320
		10/9/2013		26.00	1640.85	10.5	10.1	6,190

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 C
Groundwater Analytical Results for April 2013 Sampling Event

ATTACHMENT C

April 2013 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 (NH_4 as N)	0.024 J	0.034 J	0.038 J	0.911	1.38	25.9	0.749	0.037 J	4.73	34.5	934	103	25.9
Chloride (Cl)	10.8	0.56	2,430	269	7,160	1,550	304	7,360	895	1,210	9,190	1,570	1,150
Total Dissolved Solids (TDS)	807	252	5,180	936	12,600	3,660	1,850	12,500	1,800	4,170	30,300	7,500	4,230

Notes:

Samples collected on April 22, 2013.

J = The result is an estimated value.

Units: mg/L

ATTACHMENT D

October 2013 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 (NH4 as N)	0.031	J	0.025	J	0.07	0.237	0.856	21.9	0.506	0.048 J	2.92	32.7	0,941	86.6	26
Chloride (Cl)	9.85		0.55		2,570	30	3,560	1,990	262	8,320	530	908	8,300	2,520	0,920
Total Dissolved Solids (TDS)	760		245		4,720	427	7,670	4,950	1,430	15,600	1,570	4,180	25,900	6,960	3,790

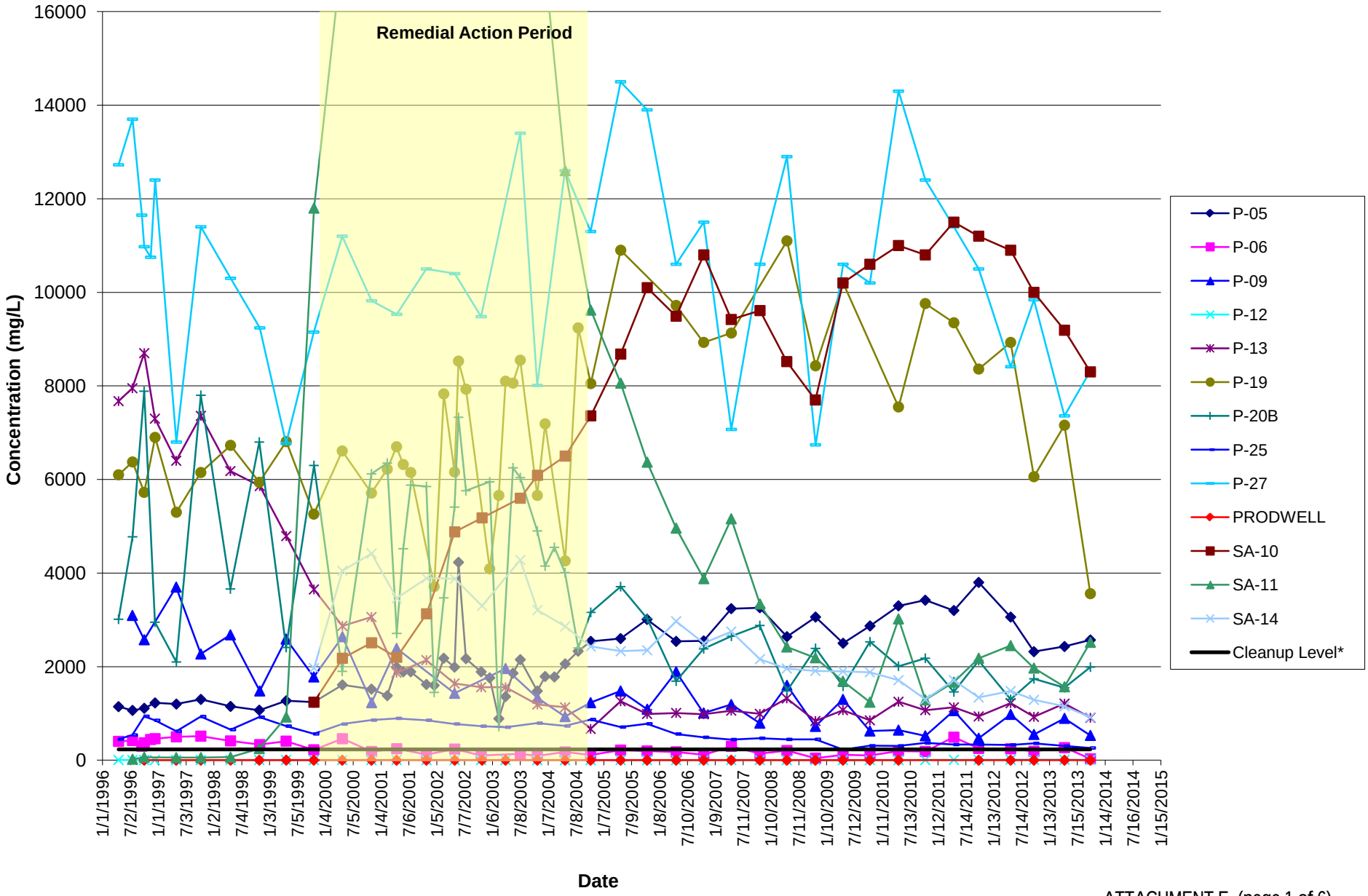
Notes:

Samples collected on October 9, 2013.

J = The result is an estimated value.

Units: mg/L

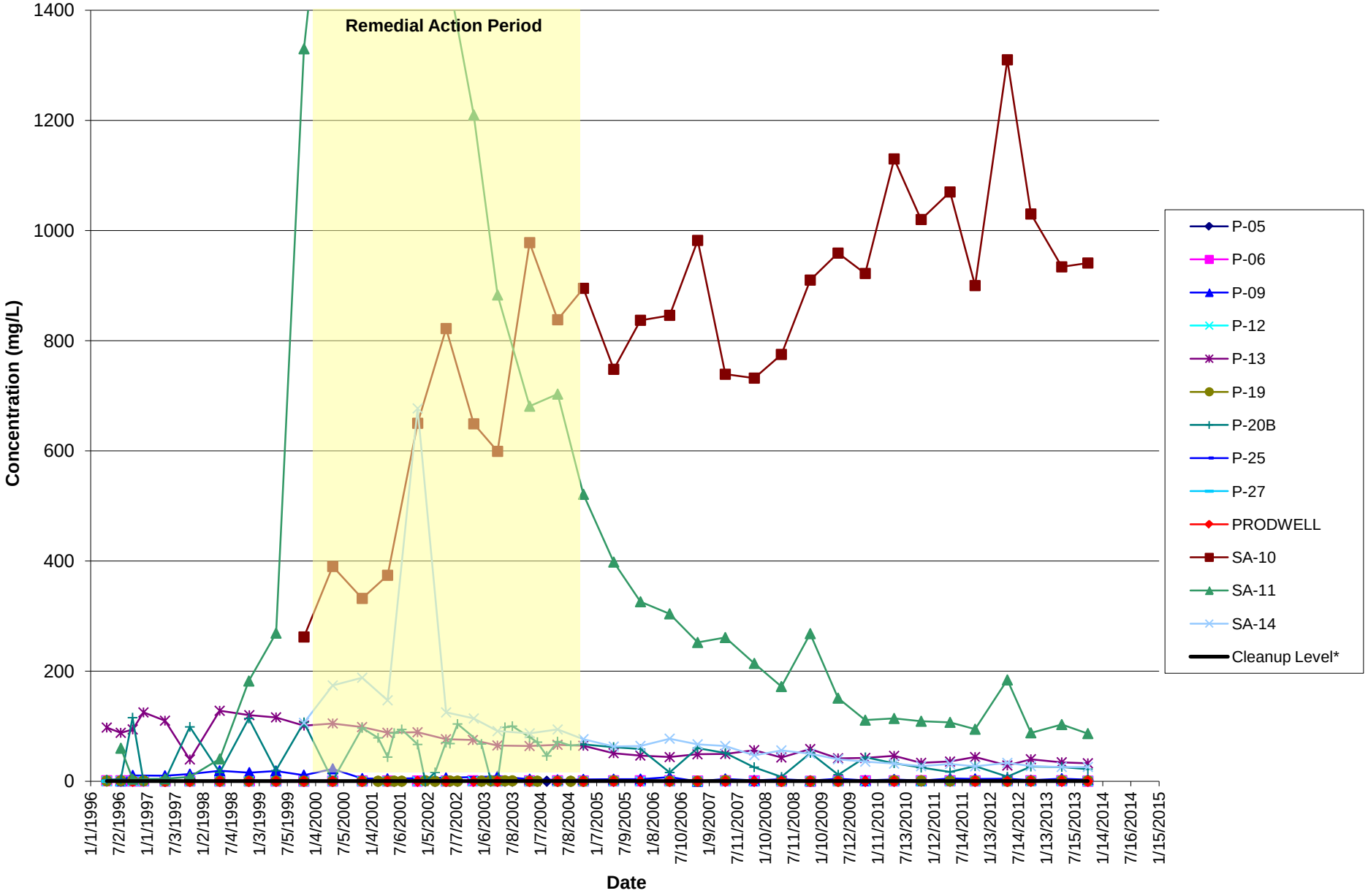
Attachment E
TimeSeries Concentration Plots for Indicator Constituents



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).*

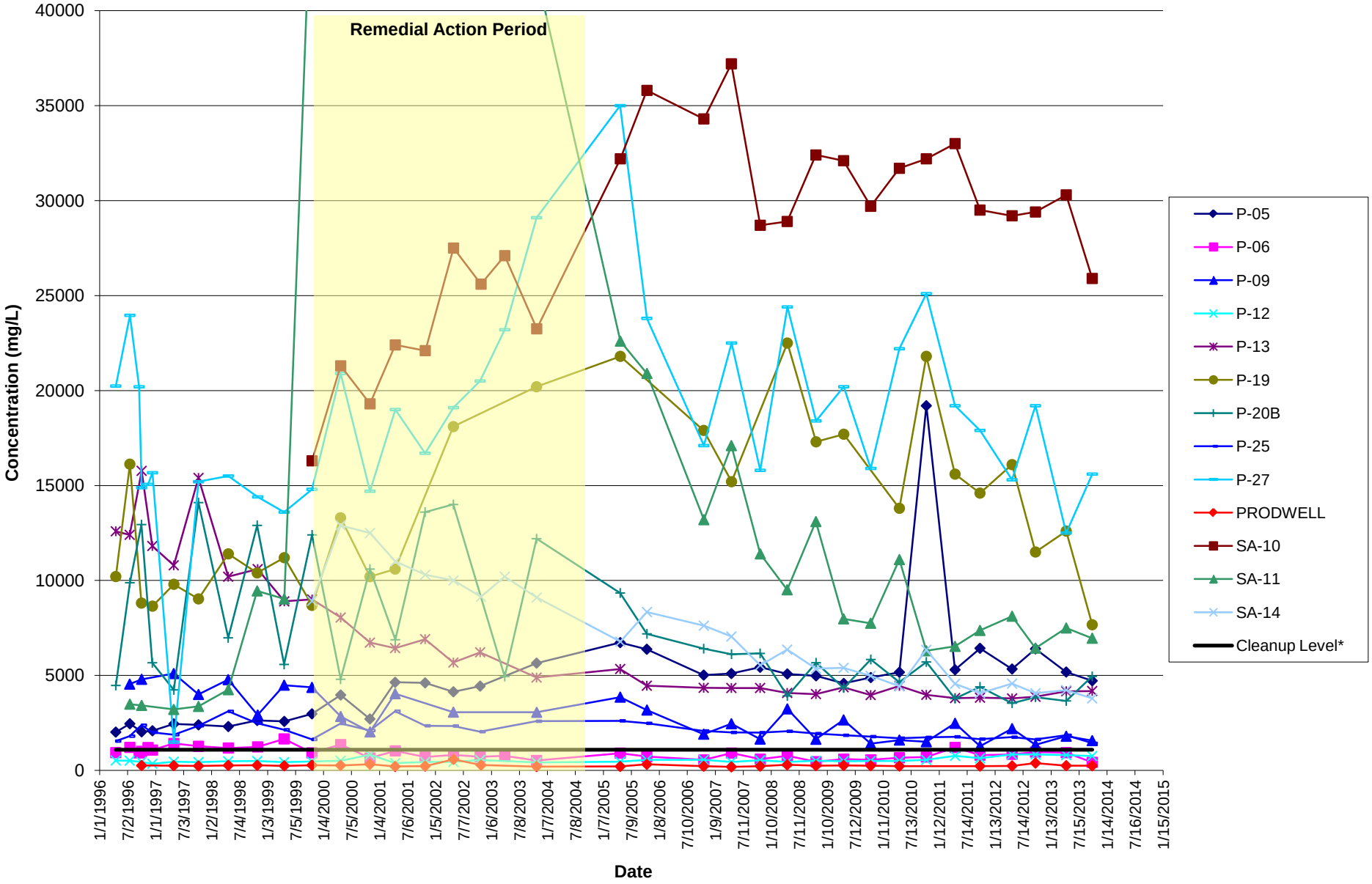
ATTACHMENT E (page 1 of 6)
Chloride Concentrations
L-Bar Site
CH2M HILL



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).*

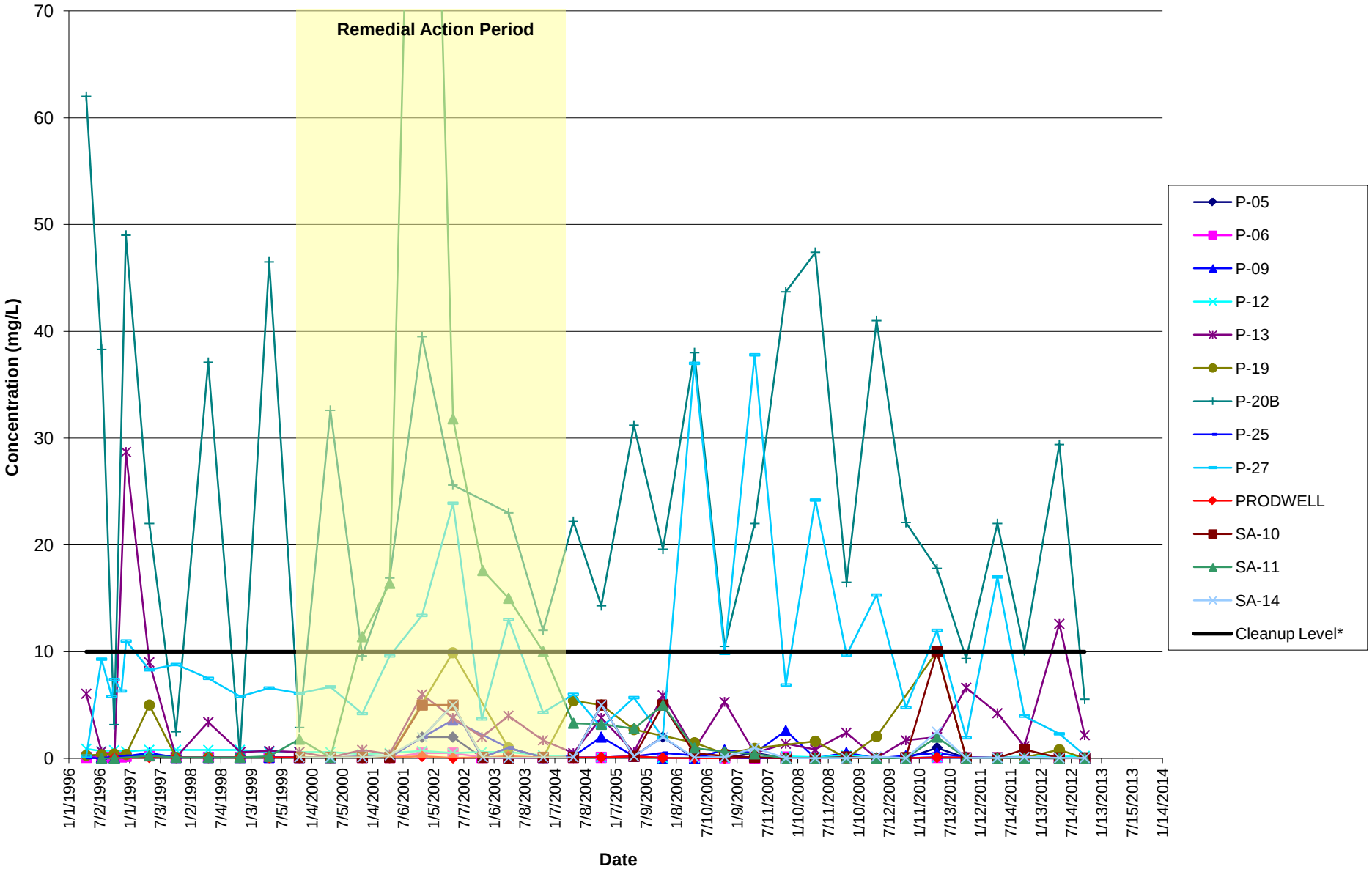
ATTACHMENT E (page 2 of 6)
Ammonia Concentrations
L-Bar Site
CH2M HILL



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.
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).*

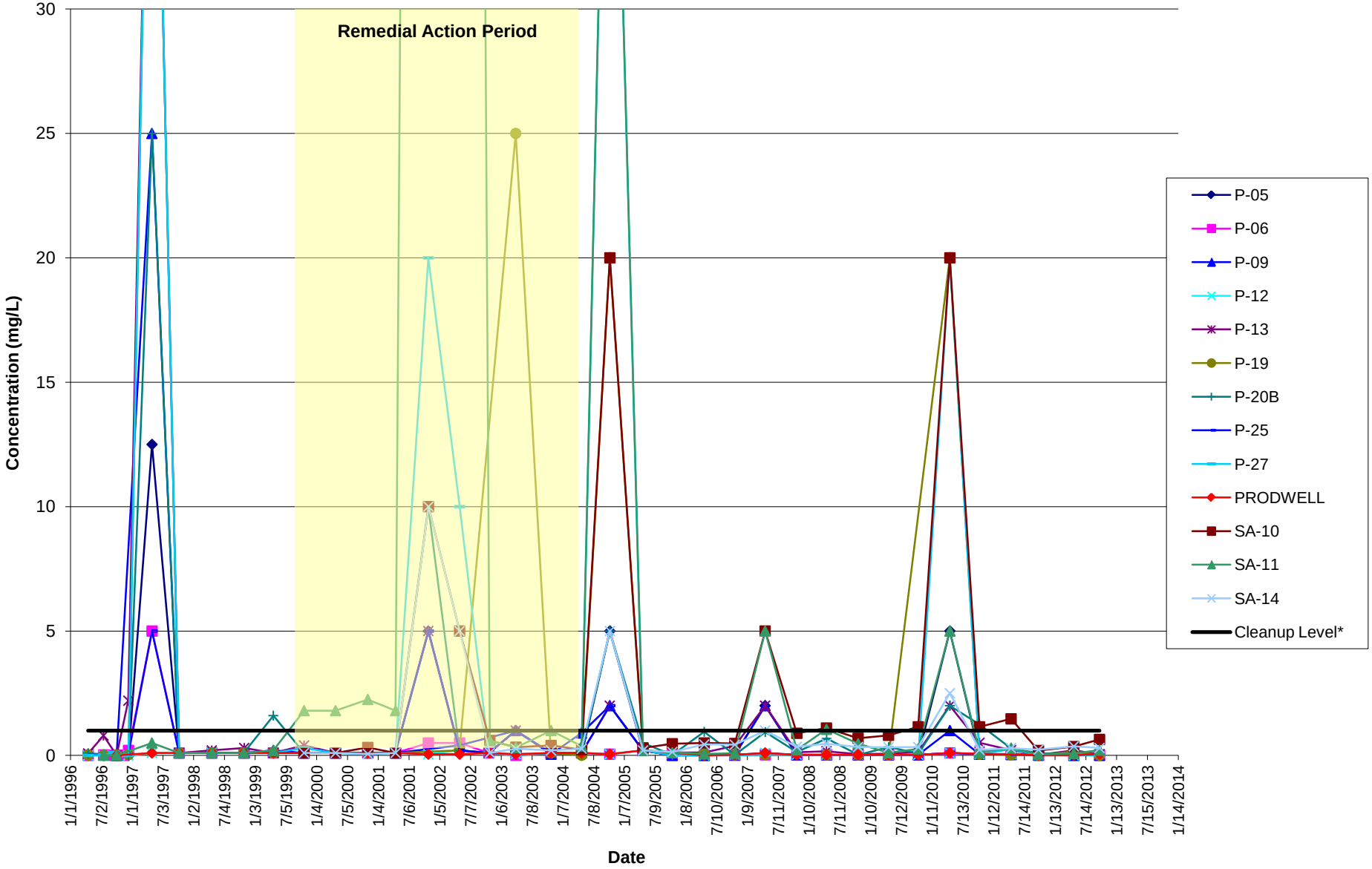
ATTACHMENT E (page 3 of 6)
Total Dissolved Solids
L-Bar Site
CH2M HILL



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. 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).*

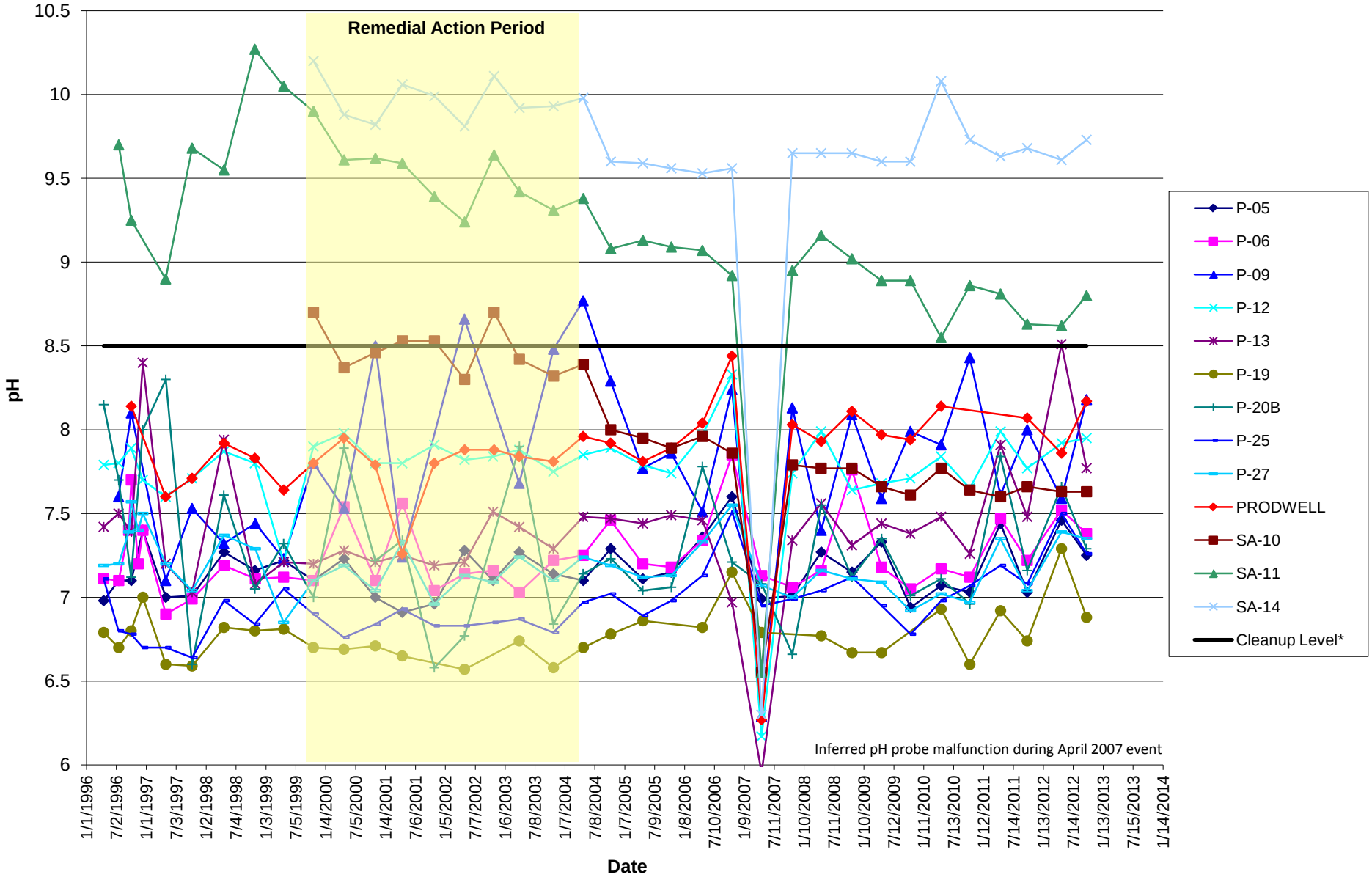
ATTACHMENT E (page 4 of 6)
Nitrate Concentrations
L-Bar Site
CH2M HILL



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 5 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. *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