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August 20, 2019

Mohsen Kourehdar
Washington State Department of Ecology
PO Box 47600
Olympia, Washington 98504-7600

SUBJECT: B&L WOODWASTE SITE JULY 2019 COMPLIANCE MONITORING REPORT

Dear Mr. Kourehdar:

On behalf of the B&L Woodwaste Custodial Trust, we are submitting the results of compliance monitoring completed at the B&L Woodwaste site in July 2019.

Groundwater and surface water sampling and analysis were completed in accordance with the 2013 Compliance Monitoring Plan and 2017 Compliance Monitoring Plan Addendum. Two additional wells, MW-41 and MW-42, were installed in the agricultural field in June 2019 with the approval of the Department of Ecology. The new monitoring well locations are shown on Figure 1, and well logs are included as Attachment 1. The intent of these monitoring wells is to provide more representative groundwater monitoring samples than the recovery wells that were previously used to monitor these locations, R-22 and R-15, respectively. Previous groundwater results suggested these recovery wells were damaged during treatment injections. They are no longer suitable for groundwater monitoring and will be replaced by MW-41 and MW-42. A Compliance Screening Tier 1 data quality review was performed on arsenic data resulting from laboratory analysis. Data were determined to be of acceptable quality for use as reported by the laboratory. The results are presented in the enclosed table and Attachments 2 and 3.

We look forward to discussing the results with you.

Sincerely,
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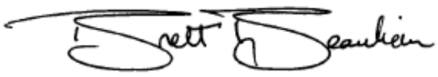


Brett Beaulieu, LHG
Hydrogeologist

Encl.: Table 1 Groundwater Arsenic Results
Figure 1 July 2019 Groundwater Arsenic Results
Attachment 1 Well Logs for MW-41 and MW-42
Attachment 2 Time-Concentration Plots
Attachment 3 Laboratory Analytical Report
Copies: Dan Silver, B&L Woodwaste Custodial Trustee

Table

Table 1

Groundwater Arsenic Results [1]

	Upper Sand Aquifer																										Lower Sand Aquifer				
	Total Arsenic (µg/L)																										Total Arsenic (µg/L)				
Sample Location	D-5U	D-6A	D-7A	D-8A	D-9A	D-10A	MW-13	MW-15	MW-30	MW-31A	MW-33	MW-34	MW-35	MW-41	MW-42	PD-60	PD-141	PD-214	PZ-3A	PZ-4A	PZ-5A	R-14	R-15	R-22	R-23	W-1	W-3	D-5L	D-6B	D-7B	D-8B	MW-40B
Compliance Monitoring Events																																
July 2019	NS	NS	NS	181	NS	NS	NS	NS	NS	NS	181	8.11	NS	37.2	21.2	NS	NS	5.62	162	4.54	258	NS	NS	NS	NS	7.24	NS	NS	NS	NS	6.57	7.97
April 2019	22.8	NS	82.9	209	NS	NS	226	169	NS	NS	160	8.47	NS	NS	NS	NS	178	6.5	182	8.48	223	NS	NS	NS	NS	4.38	NS	NS	NS	NS	8.06	9.41
January 2019	NS	NS	NS	198	NS	NS	NS	NS	NS	NS	146	7.40	NS	NS	NS	NS	NS	5.68	123	4.9	325	NS	NS	NS	NS	3.67	NS	NS	NS	NS	7.9	9.9
October 2018	32.9	29.6	47.6	89.6	43.9	252	146	179	84.1	2.12	206	7.56	23.2	NS	NS	37	211	5.48	274	5.2	318	101	384 [2]	455	67.6	4.5	3.73	3.6	3.7	5.1	8.67	8.7
July 2018	NS	NS	NS	152	NS	NS	NS	NS	NS	NS	188	9.2	NS	NS	NS	NS	NS	6.4	196	6.9	316	NS	503 [2]	NS	NS	9.96	RS	NS	NS	NS	9.05	10.3
April 2018	26.6	NS	-- [3]	133	NS	NS	122	153	NS	NS	188	10.6 [4]	NS	NS	NS	NS	194	10.8	170	7.0	317	NS	392 [2]	NS	NS	10.5	NS	NS	NS	NS	8.22	11.1
January 2018	NS	NS	NS	75.5	NS	NS	NS	NS	NS	NS	124	9.28	NS	NS	NS	NS	NS	8.7	176	5.4	559	NS	443 [2]	NS	NS	10.4	NS	NS	NS	NS	8.23	9.8
October 2017	32.4	53.1	25	74.9	48.8	336	221	153	112	2.77	323	9.76	39.3	NS	NS	NS	240	12.5	563	6.0	706	NS	539 [2]	NS	NS	10.7	NS	4	5	6	9.46	10.7
August 2017	NS	NS	NS	97.4	NS	NS	NS	NS	NS	NS	372	9.10	NS	NS	NS	NS	NS	10.6	215	6.3	NS	NS	215	NS	NS	13.7	NS	NS	NS	NS	8.34	10.0
April 2017	23.7	NS	30	143	NS	NS	270	104	NS	NS	388	9.10	NS	NS	NS	NS	324	13.3	NS	NS	NS	NS	NS	NS	NS	12	NS	NS	NS	NS	12.2	10.2
October 2016	43.6	NS	30	71.6	48.2	300	632	85.3	176	3.10	458	NS	31.4	NS	NS	NS	451	NS	NS	NS	643	NS	NS	NS	NS	18.6	NS	4	NS	6	12.4	9.71
April 2016	22.8	50.2	34	108	41.0	273	1,200	183	170	2.7	431	NS	32.4	NS	NS	NS	413	NS	NS	NS	347	NS	NS	NS	NS	9	NS	4	4	6	10.9	8.00
October 2015	21.1	60.3	37	87.9	43.0	300	1,220	752	139	2.4	423	NS	29.8	NS	NS	NS	441	NS	NS	NS	610	NS	NS	NS	NS	13.5	NS	3	3	5	10.9	7.1
April 2015	22	47.8	45	342	42.0	354	1,580	1,070	204	4.1	399	NS	25.8	NS	NS	NS	407	NS	NS	NS	NS	NS	NS	NS	NS	10.1	NS	4	4	5	9.3	8.4
October 2014	16.3	50.4	57	107	43.6	318	1,650	1,130	117	3.4	436	NS	23.2	NS	NS	NS	323	NS	NS	NS	NS	NS	NS	NS	NS	11.2	NS	3	4	4	10.7	NS
April 2014	17.6	63.7	49	415	37.2	183	1,430	1,260	136	5.4	376	NS	23.2	NS	NS	NS	326	NS	NS	NS	NS	NS	NS	NS	NS	10.1	NS	3	4	4	10.5	NS
October 2013	12.4	107	54	168	40	181	1,740	1,220	174	5.3	404	NS	21.9	NS	NS	NS	302	NS	NS	NS	NS	NS	NS	NS	NS	12	NS	4	3.6	5	13.9	NS
April 2013	16.5	163	30	363	38.0	199	1,910	1,580	252	6.6	398	NS	23.8	NS	NS	NS	296	NS	NS	NS	NS	NS	NS	NS	NS	10.9	NS	3	5	5	16.6	NS
October 2012	40.8	184	17	196	40	231	2,350	1,580	261	12.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	3.0	5	155	NS
April 2012	43.8	287	61	137	38	107	2,180	1,480	305	18.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	4	5	370	NS
September 2011	86.3	885	23	99.6	38	213	2,520	1,520	640	21.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	4	5	28.2	NS
April 2011	90	1,170	32	126	39	203	2,720	1,610	854	5.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3	3	5	21.2	NS
October 2010	86.4	1,290	41	34	37	211	2,220	1,460	1,580	5.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3	3	5	6.1	NS
April 2010	100	1,370	27	31.1	37	159	2,450	1,610	2,410	15.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	4	5	12.8	NS
October 2009	113	1,320	38	39.8	37	202	2,220	1,390	2,060	16.3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3	2	5	11	NS
April 2009	144	1,490	331	68.2	38	175	2,340	1,630	2,190	22.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3	3	5	11.1	NS
October 2008	143	1,430	98	37.7	38	204	2,510	1,720	2,270	22.2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3	2	5	12.2	NS
Historical Events																																
March 2007	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5	3	5	18	NS
August 2006	89	1,900	56	450	38	200	3,800	3,700	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
September 2005	132	1,790	50 U	86.1	50 U	266	3,530	1,810	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
March 2005	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7	2.5 U	5	21.2	NS
December 2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	6	5 U	6	21	NS
September 2003	190	1,900	5	110	31	300	4,600	2,800	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	6	5	8	20	NS
June 2003	240	1,800	5 U	370	38	270	4,600	2,600	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5	5 U	6	30	NS
March 2003	230	1,700	5 U	330	38	240	4,300	2,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	30	NS
December 2002	230	1,600	5 U	58	36	310	4,500	2,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
September 2002	220	1,600	5 U	97	35	280	4,500	2,300	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5	20	NS
June 2002	240	1,800	5	280	38	260	4,700	2,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	6	30	NS
April 2002	300	1,800	5 U	400	50	300	4,300	2,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5	30	NS
December 2001	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	8	8	5 U	30	NS
June 2001	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	4	6	30	NS
March 2001	280	1,800	3	130	39	230	4,300	2,700	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3	3	6	30	NS

Table 1

Groundwater Arsenic Results [(1)]

	Upper Sand Aquifer																									Lower Sand Aquifer				
	Total Arsenic (µg/L)																									Total Arsenic (µg/L)				
Sample Location	**D-5U**	**D-6A**	**D-7A**	**D-8A**	**D-9A**	**D-10A**	**MW-13**	**MW-15**	**MW-30**	**MW-31A**	**MW-33**	**MW-34**	**MW-35**	**MW-41**	**MW-42**	**PD-60**	**PD-141**	**PD-214**	**PZ-3A**	**PZ-4A**	**PZ-5A**	**R-14**	**R-15**	**R-22**	**R-23**	**W-1**	**W-3**	**D-5L**	**D-6B**	**D-7B**	**D-8B**	**MW-40B**
Historical Events																															
December 2000	280	2,100	3	62	39	270	5,300	3,100	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	4	6	20	NS
September 2000	260	2,000	5	68	58	350	4,600	2,700	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	5	6	20	NS
June 2000	180	1,500	5 U	96	40	250	3,200	2,500	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
March 2000	310	1,600	5 U	150	39	220	6,200	2,300	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
January 2000	300	1,400	5 U	130	40	240	4,300	2,600	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	6	30	NS
September 1999	300	1,900	5 U	140	47	310	5,600	3,400	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	4	5	6	20	NS
June 1999	300	1,800	5 U	180	38	260	4,600	2,600	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
March 1999	340	2,000	5 U	200	39	260	4,600	3,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	6	30	NS
December 1998	320	980	6	100	38	260	5,700	3,200	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	7	30	NS
September 1998	290	1,800	5 U	150	52	340	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
June 1998	320	1,900	5 U	69	42	360	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	20	NS
March 1998	380	2,400	5 U	97	38	350	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	40	NS
December 1997	480	2,600	5 U	130	41	490	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	7	60	NS
September 1997	340	2,400	5 U	210	56	390	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	60	NS
June 1997	390	2,200	5 U	200	49	350	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5	60	NS
March 1997	360	1,900	5	110	36	340	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	7	60	NS
January 1997	310	2,000	5 U	130	39	310	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	90	NS
September 1996	300	2,000	5 U	260	73	470	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5	6	5	100	NS
June 1996	NS	NS	5 U	130	49	470	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5	100	NS
March 1996	NS	NS	5 U	150	39	420	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	100	NS
December 1995	NS	NS	5 U	270	44	540	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5	100	NS
June 1995	300	2,200	5 U	170	55	540	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	200	NS
March 1995	350	2,400	5 U	180	34	320	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	200	NS
December 1994	312	2,494	5 U	130	42	492	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	300	NS
August 1994	314	3,252	5 U	145	84	542	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	400	NS
May 1994	307	2,745	5 U	133	39	363	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	9	700	NS
January 1994	284	2,505	5 U	165	64	402	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5 U	5 U	5 U	800	NS
May 1993	170	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	20 U	NS	NS	NS	NS
August 1990	22	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
December 1989	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
September 1989	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

1 Reported value is the maximum concentration per location, per sampling date.

2 Well development conducted during the July 2018 event indicated well damage, and associated sediment were biasing results high beginning in October 2017.

3 No results are reported. Results from sampling during the April 2018 event and follow-up sampling on May 22, 2018, are both biased high from well damage and associated sediment.

4 Results are from analyses of groundwater collected on May 22, 2018.

Abbreviations:

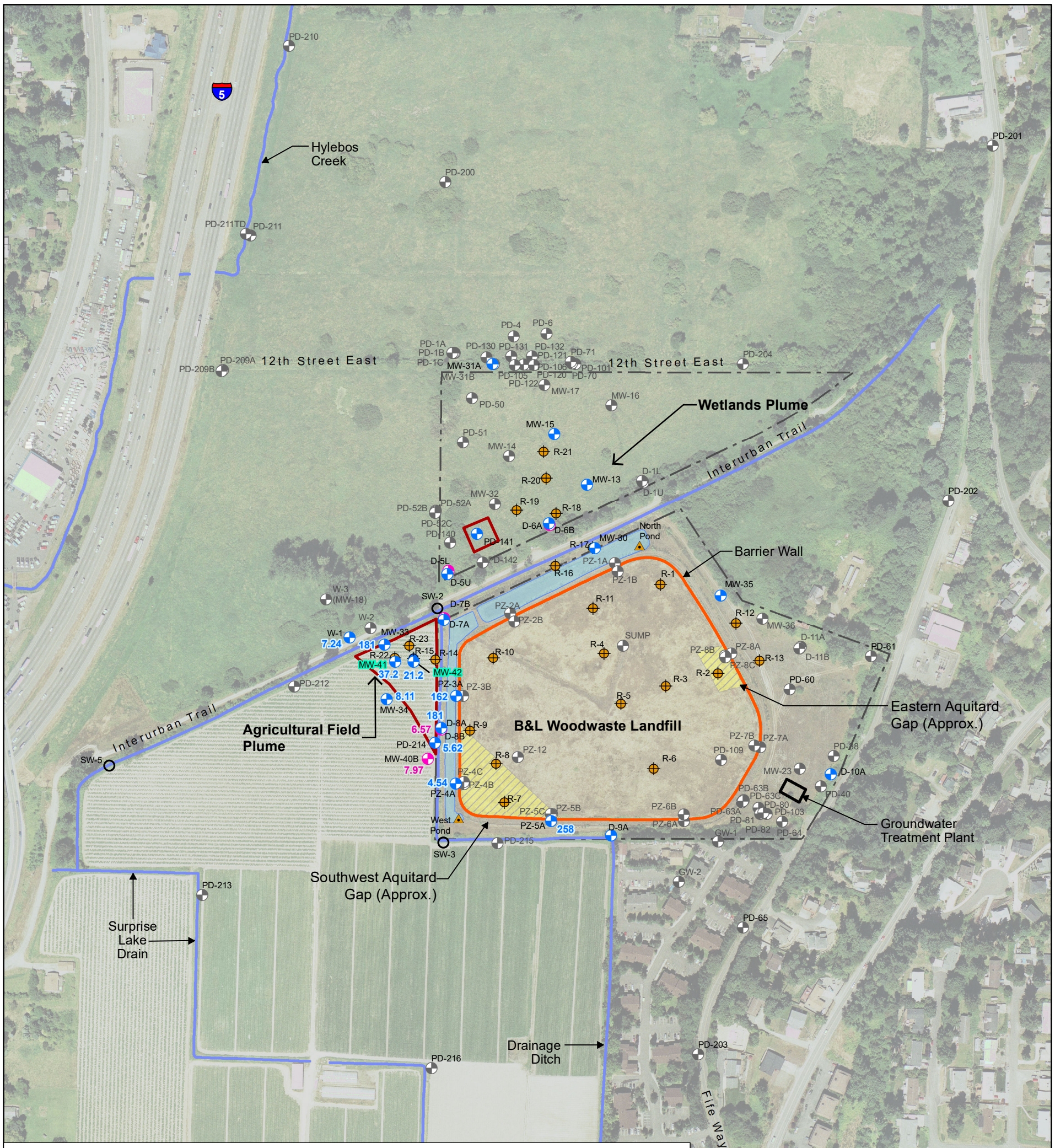
µg/L Micrograms per liter

NS Not sampled

Qualifier:

U Analyte is undetected at given reporting limit.

Figure



Legend

- W-1 — Upper Sand Aquifer Monitoring Location
- D-7B — Lower Sand Aquifer Monitoring Location
- SW-5 — Compliance Surface Water Monitoring Location
- PD-216 — Monitoring Well or Piezometer
- R-10 — Recovery Well Location
- West Pond — Pond Staff Gage Location
- MW-41 — New Well Location
- 23.4 — Total Arsenic Concentation (µg/L), Upper Aquifer
- 16.6 — Total Arsenic Concentration (µg/L), Lower Aquifer
- 2017 In Situ Treatment Zones
- Conditional Point of Compliance (Barrier Wall)
- Property Boundary from Tax Parcel Data
- Stormwater Pond
- Surface Drainage Feature
- Aquitard Gaps

Notes:
- Orthoimage provided by USGS and dated June–July 2005.
- Hylebos Creek and other surface drainage feature locations shown were digitized from the 2005 orthoimage cited above.
- Black and white reproduction of this color figure may affect interpretation of the results.

Abbreviation:
µg/L = Micrograms per liter

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Compliance Monitoring Report
B&L Woodwaste Site
Pierce County, Washington

Figure 1
July 2019
Groundwater Arsenic Results

Path: I:\GIS\Projects\B&L-O&M\MXD\Compliance Monitoring Report\July 2019\Figure 1 July 2019 Groundwater Arsenic Results.mxd
Date: 8/20/2019

Attachment 1
Well Logs for MW-41 and MW-42

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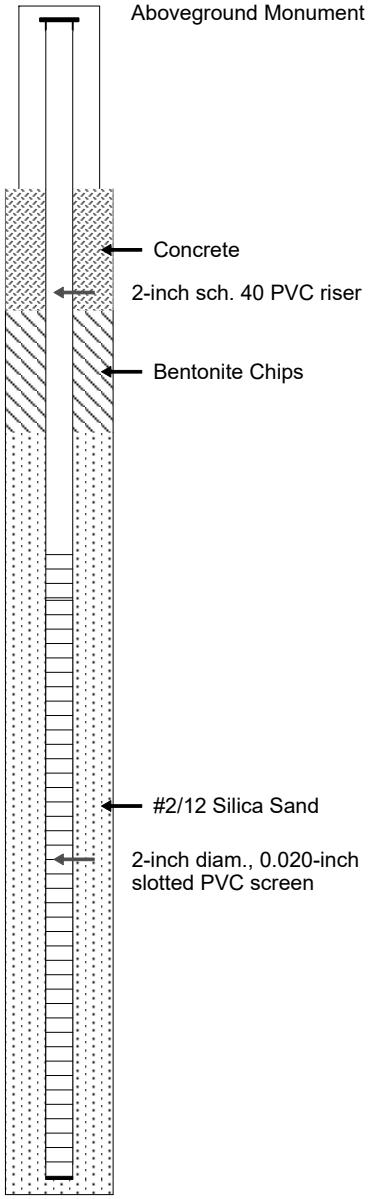
PROJECT: **B&L O&M**	LOCATION: **1522 Fife Way**	WELL ID: **MW-41**	
LOGGED BY: **K.Anderson**	COORDINATE SYSTEM: **WA SP South feet; NAVD88 feet**	ECOLOGY WELL ID: **BLK247**	
DRILLED BY: **Cascade (Curtis Askew)**	BORING LOCATION: **10 feet south of R-22**	NORTHING: **702073**	EASTING: **1185560**
DRILLING EQUIPMENT: **CME 55 HSA Track Rig**	SCREENED INTERVAL: **6 - 16**	GROUND SURFACE ELEV.: **Not measured**	TOC ELEVATION: **16.82**
DRILLING METHOD: **5' x 8" Auger**		TOTAL DEPTH (ft bgs): **17.5**	DEPTH TO WATER (ft bgs): **2.5**
SAMPLING METHOD: **18" Dames & Moore Split Spoon**		BORING DIAMETER: **8"**	DRILL DATE: **6/28/2019**

Depth (feet)	USCS Symbol	Description	Drive/ Recovery	Blow Count per 6"
0		Top Soil		
3	SP	Dark gray brown, poorly-graded, fine **SAND** with red and white grains; wet (upper sand aquifer).		14, 16, 14
6	SP	At 6 feet, coarser grained sand lenses present.		9, 12, 13
8	SP			5, 6, 7
9	SP-SM	Black-brown **SAND** with silt and organic peat. Wood debris and sulfide odor present between 8.6 and 8.8 feet bgs.		
10	SP	Dark gray brown, poorly-graded, fine **SAND** with little silt and few gravels; fine wood fraftments throughout.		10, 12, 14
13	SP	At 12.5 feet bgs, fine sand slightly coarsens; no wood.		14, 17, 17
15	SP	Poor recovery due to sand heave.		7, 12, 6
17	ML	Gray-brown, low plasticity **SILT**; moist (upper silt aquitard).		8, 10
18		Bottom of boring = 17.5 feet bgs.		



ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES:

FLOYD | SNIDER
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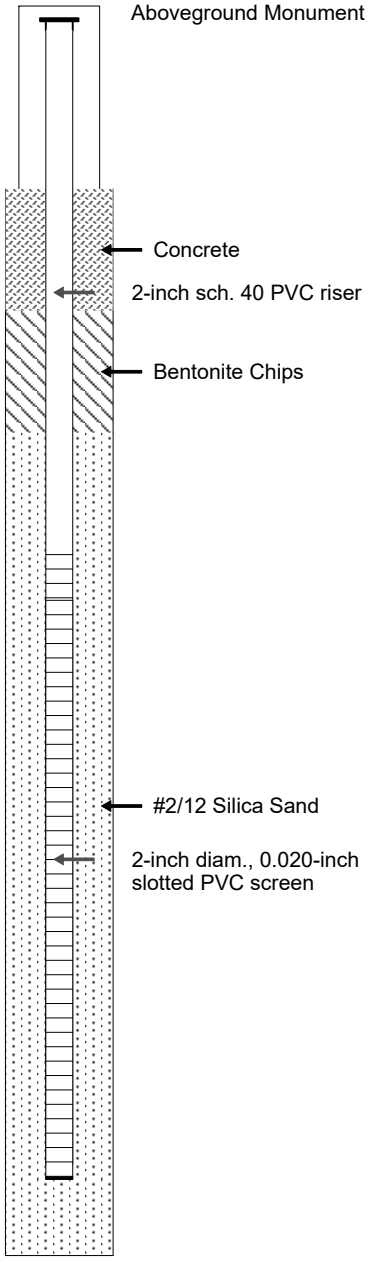
PROJECT: **B&L O&M**	LOCATION: **1522 Fife Way**	WELL ID: **MW-42**	
LOGGED BY: **K.Anderson**	COORDINATE SYSTEM: **WA SP South feet; NAVD88 feet**	ECOLOGY WELL ID: **BLK248**	
DRILLED BY: **Cascade (Curtis Askew)**	BORING LOCATION: **10 feet south of R-15**	NORTHING: **702073**	EASTING: **1185612**
DRILLING EQUIPMENT: **CME 55 HSA Track Rig**	SCREENED INTERVAL: **6 - 16**	GROUND SURFACE ELEV.: **Not measured**	TOC ELEVATION: **16.32**
DRILLING METHOD: **5' x 8" Auger**		TOTAL DEPTH (ft bgs): **18**	DEPTH TO WATER (ft bgs): **2.5**
SAMPLING METHOD: **18" Dames & Moore Split Spoon**		BORING DIAMETER: **8"**	DRILL DATE: **6/28/2019**

Depth (feet)	USCS Symbol	Description	Drive/ Recovery	Blow Count per 6"
0		Top Soil		
3	SP	Dark gray brown, poorly-graded, fine **SAND** with red and white grains; wet. Slightly silty lens at bottom of core (upper sand aquifer).		6 10 10
5	SP-SM	Dark gray brown, poorly-graded, fine **SAND** with silt; few fine wood fragments; wet.		10 12 13
8.5		At 8.5 feet, larger wood fragments present; dense.		8 15 15
10	SP	Dark gray brown, poorly-graded fine **SAND** with trace to little silt; few fine wood fragments.		7 14 15
13.5		At 13.5 feet bgs, fine sand slightly coarsens.		8 20 20
15		At 15 feet bgs, sand coarsens to medium.		8 12 14
16	SM	Brown, silty fine **SAND**.		
17	SP	Dark gray, poorly-graded fine **SAND**		3 4
18	ML	Gray-brown **SILT** (upper silt aquitard).		5
		Bottom of boring = 17.5 feet bgs.		

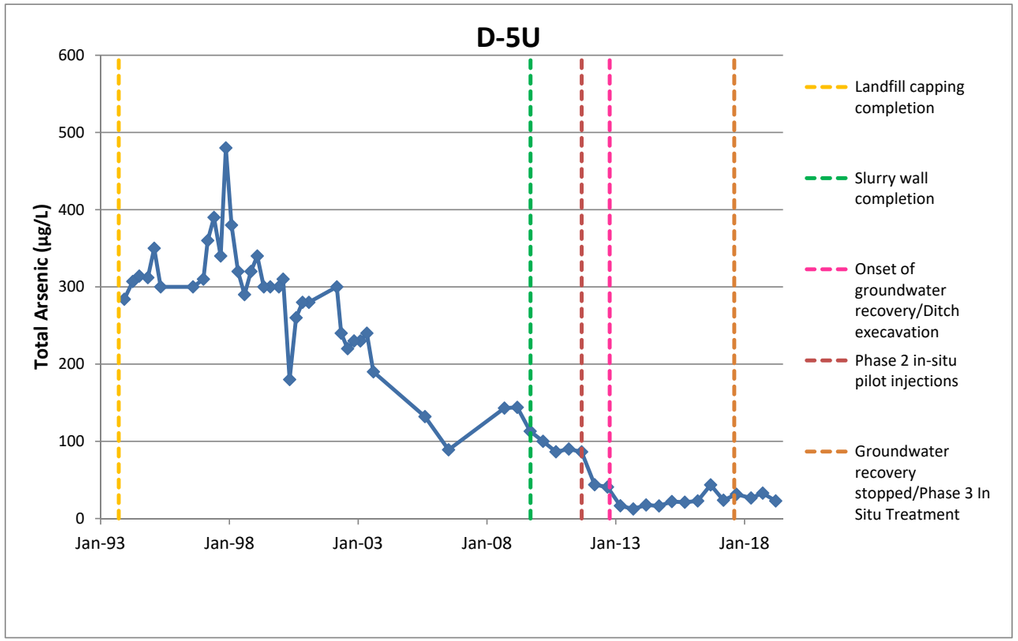


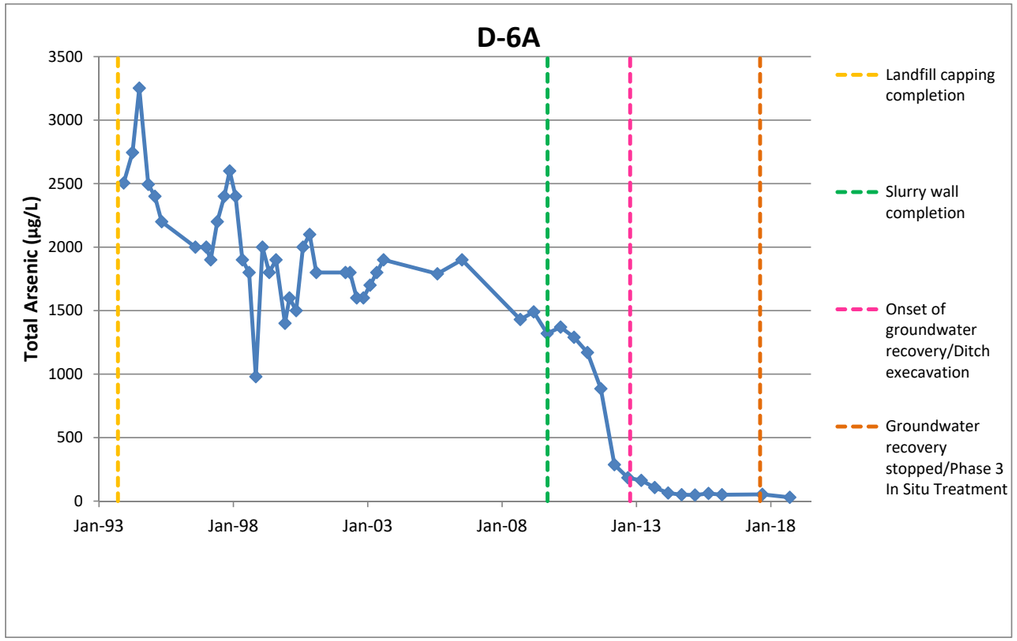
ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

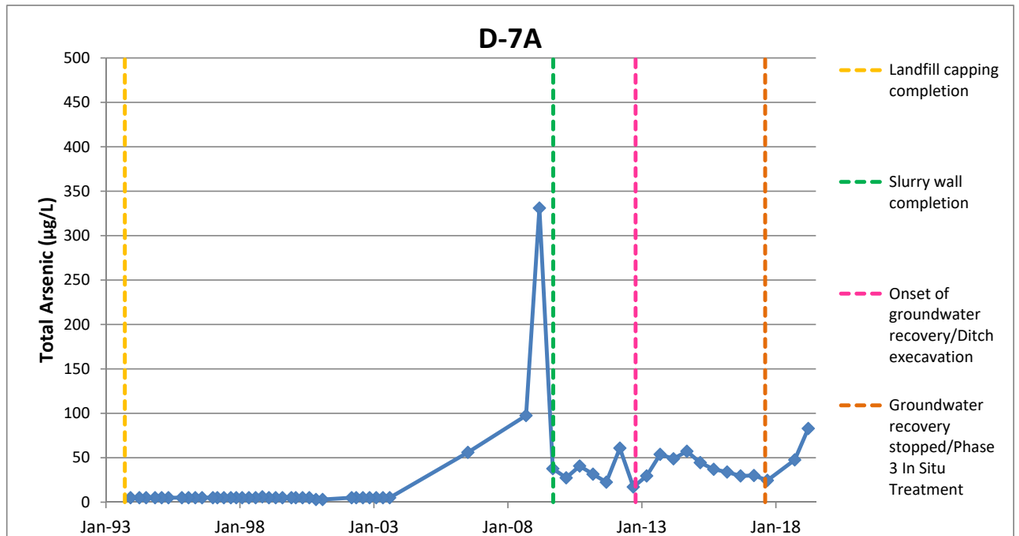
NOTES:

Attachment 2
Time-Concentration Plots

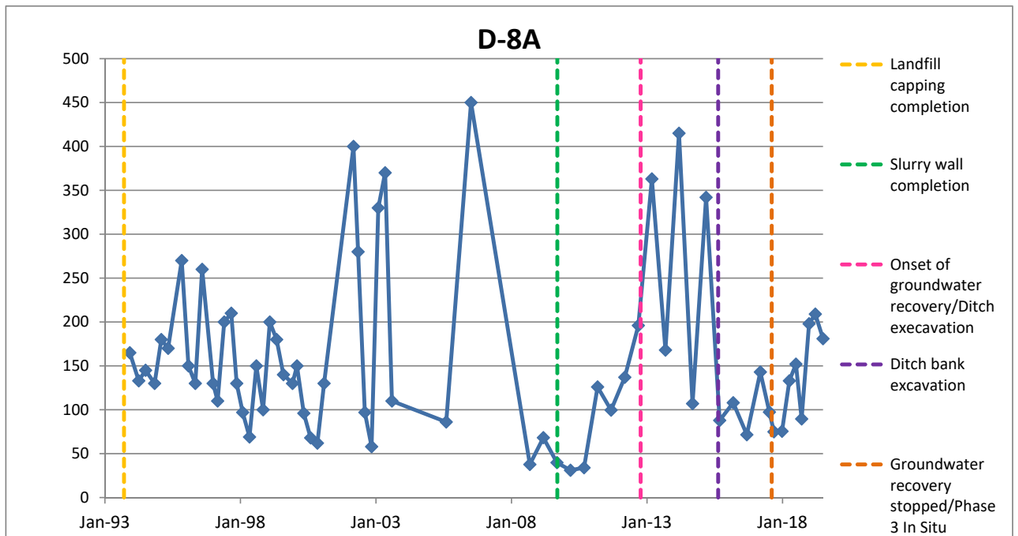
Attachment 1
Time-Concentration Plots



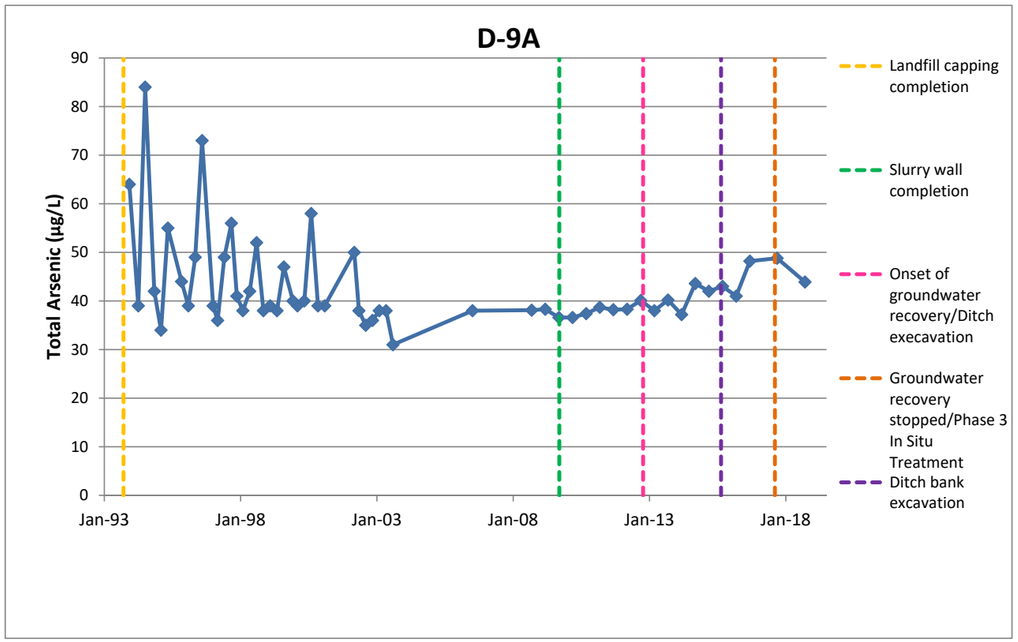


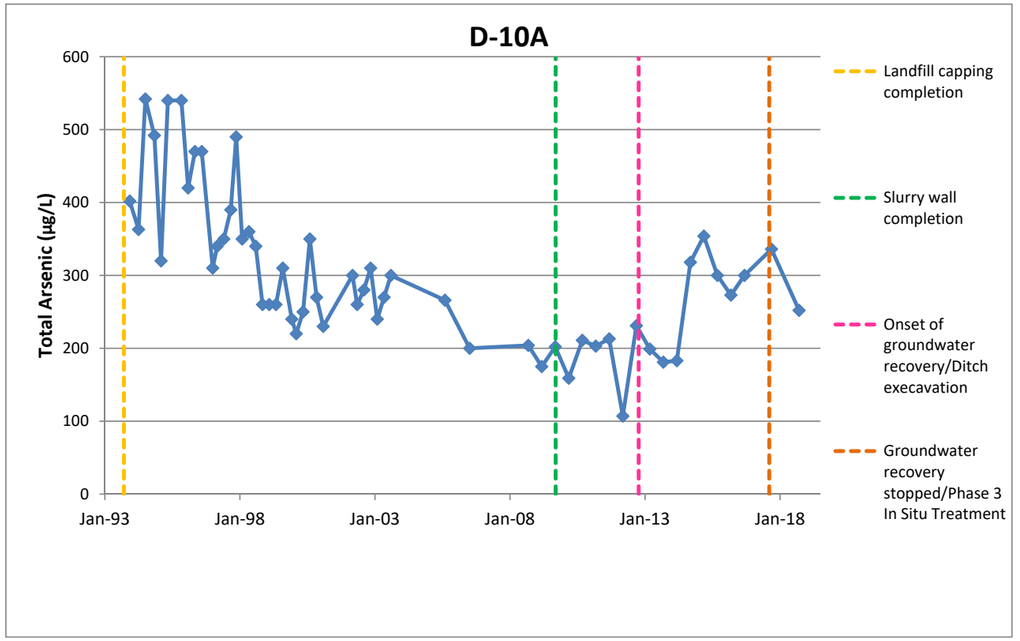


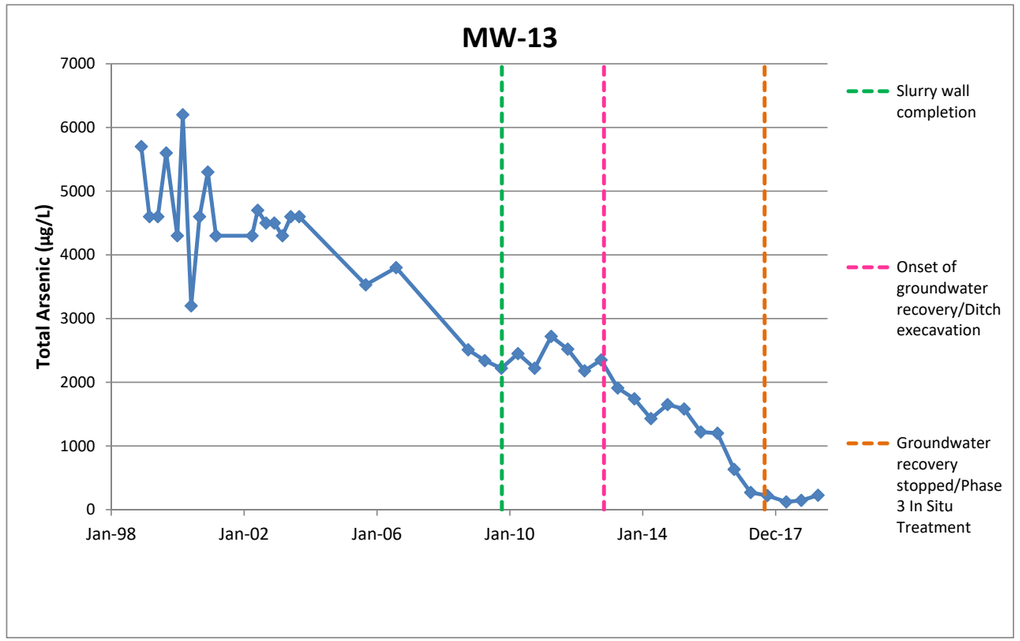
Notes: Detection limits vary. Non-detect results with detection limits of 5 µg/L or less are plotted at the detection limit. Non-detect results with detection limits greater than 5 µg/L have been omitted. Refer to Table 2.3.

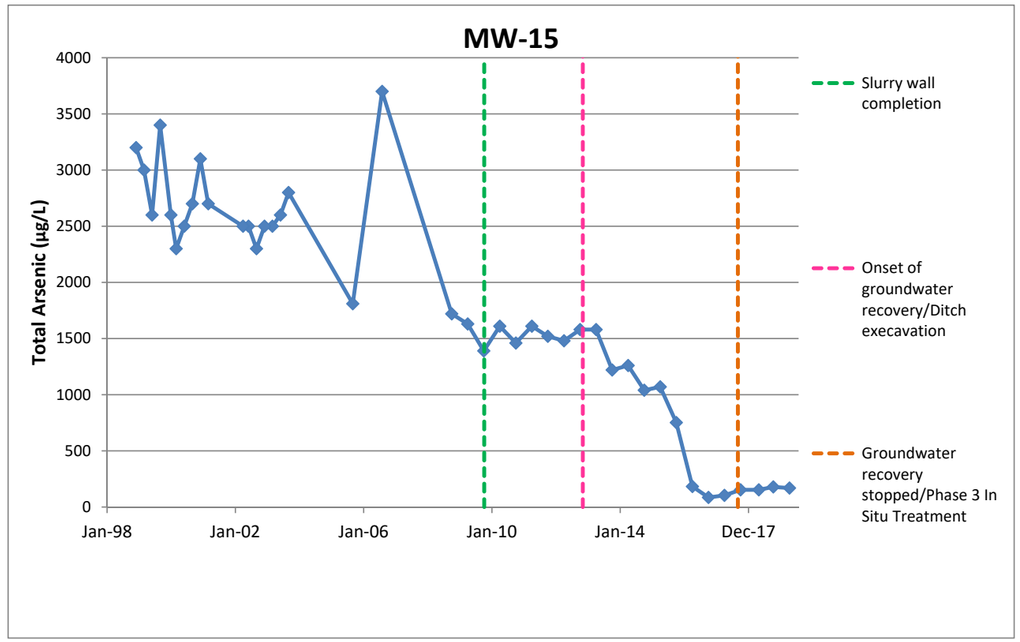


Attachment 1
Time-Concentration Plots









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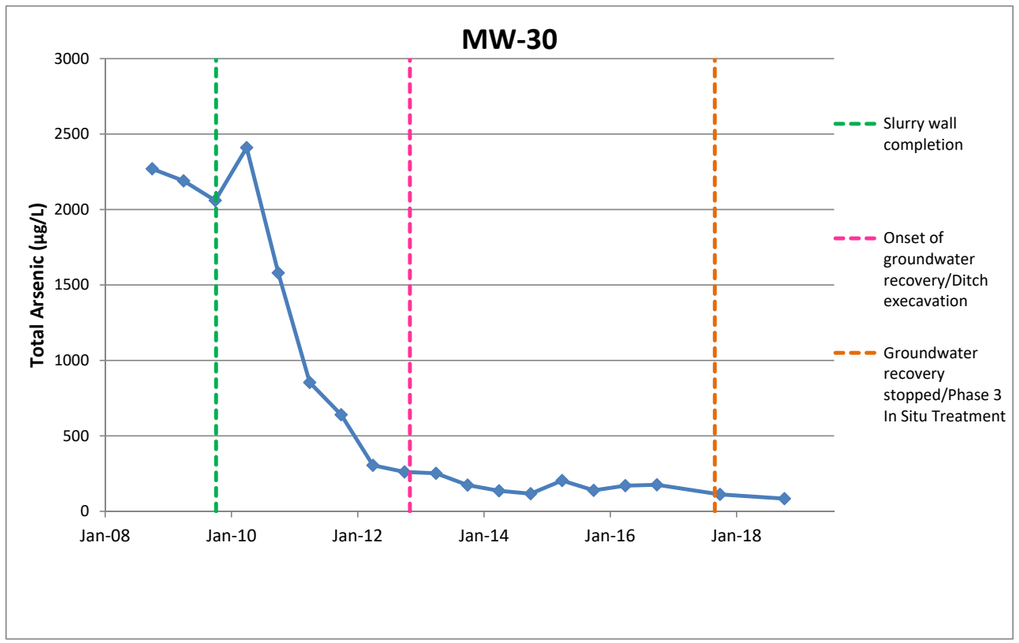
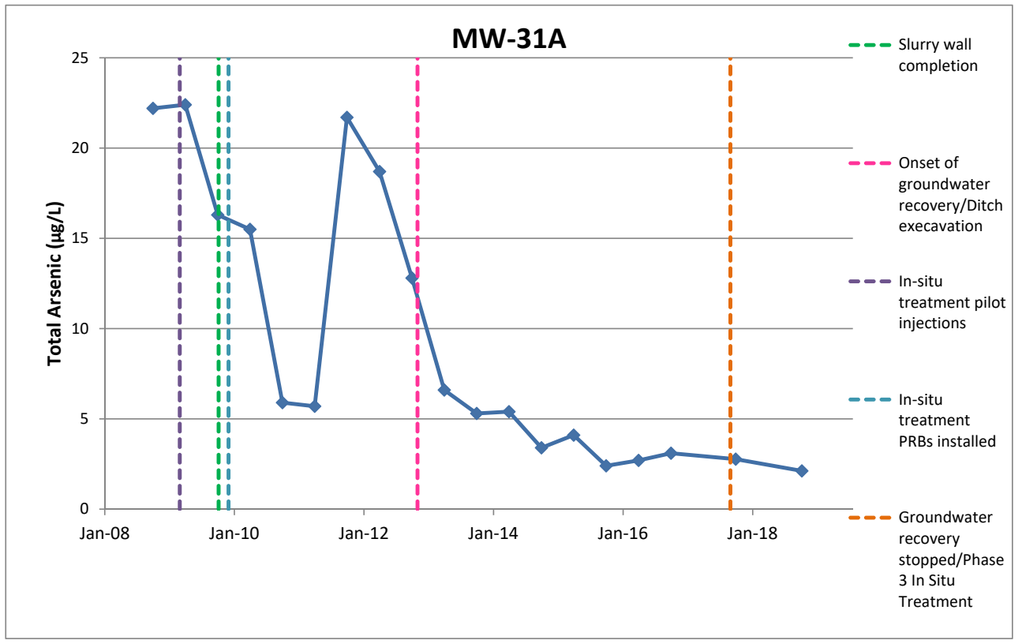
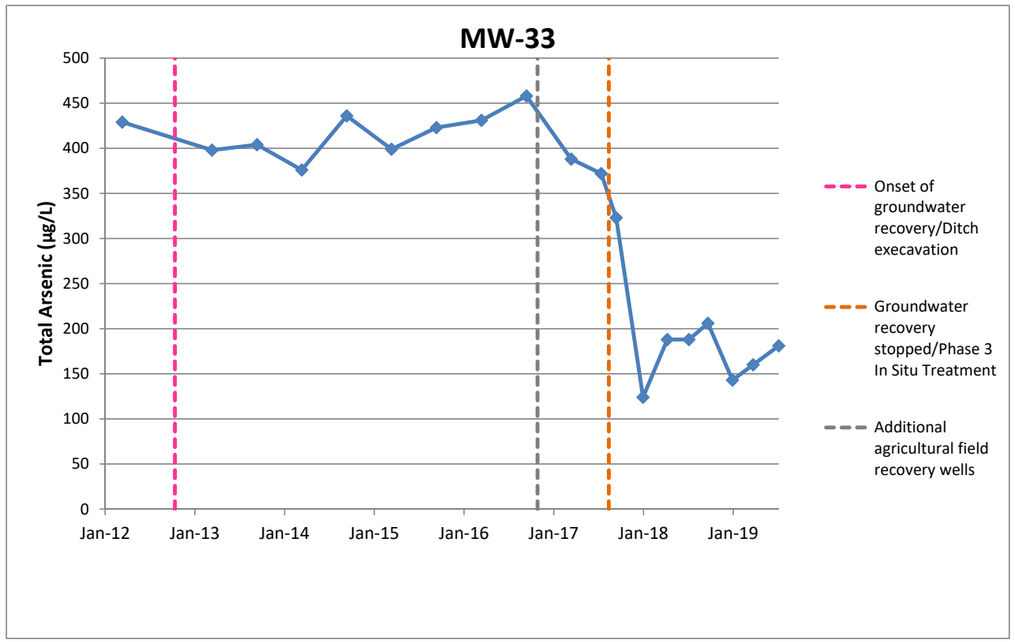
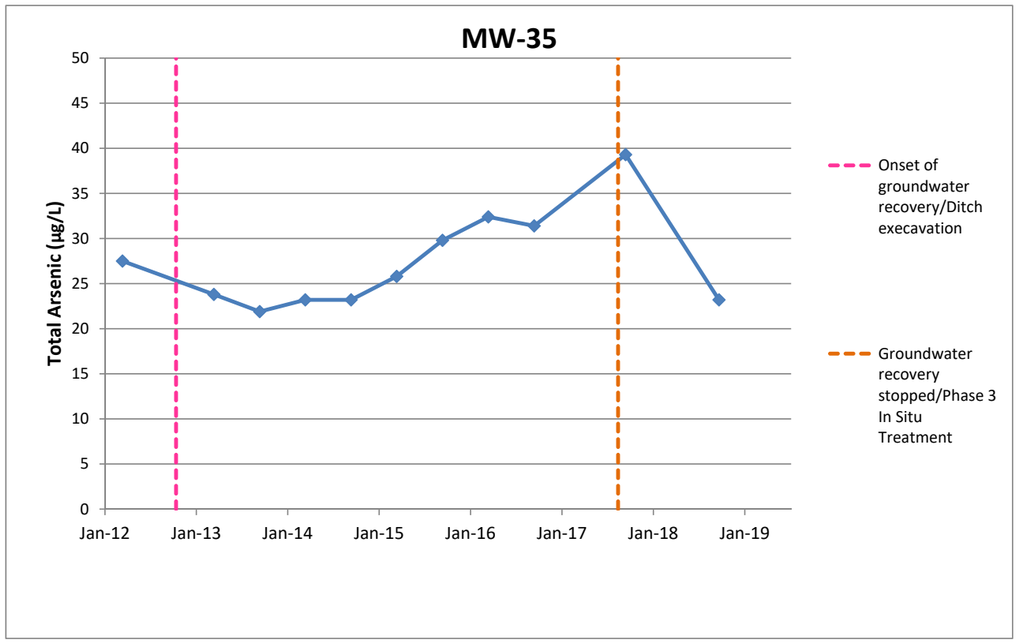
Time-Concentration Plots









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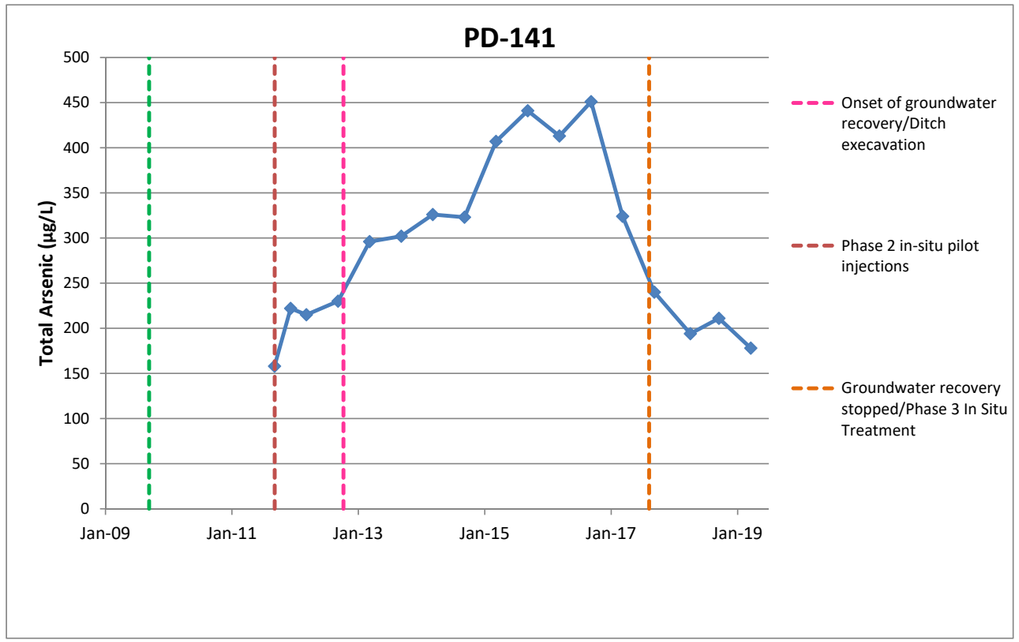

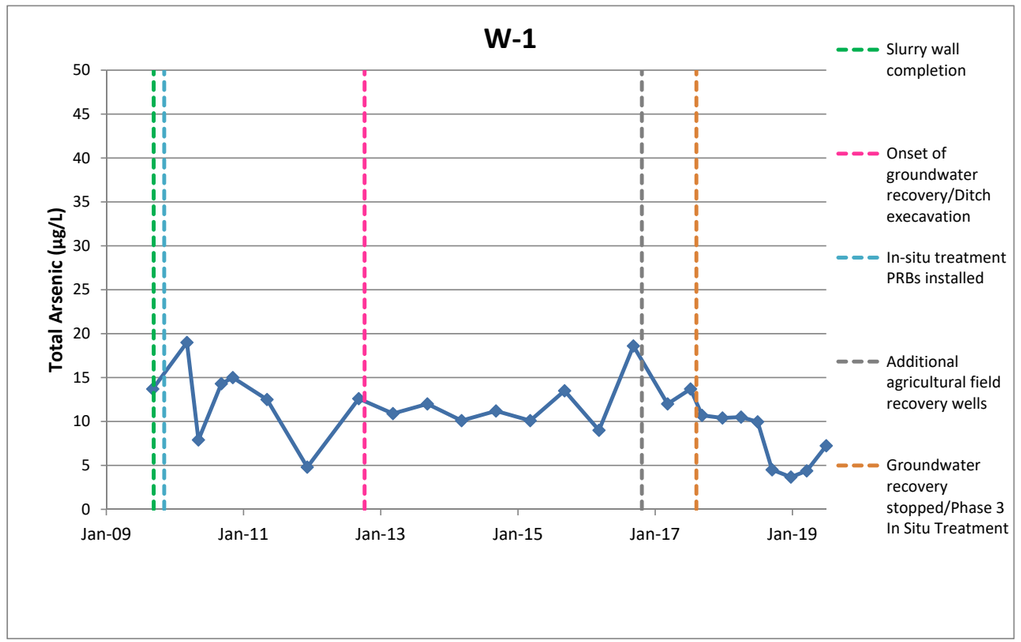

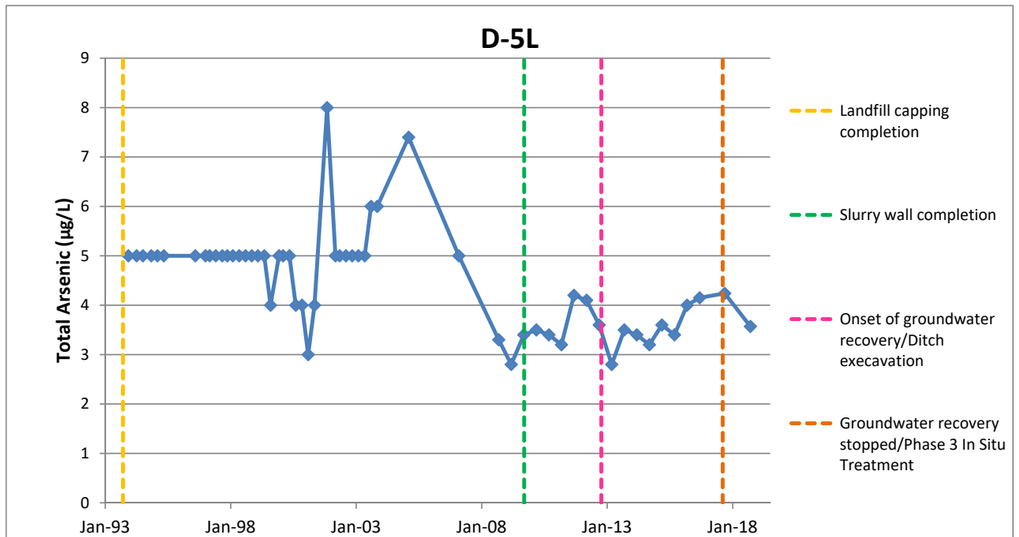

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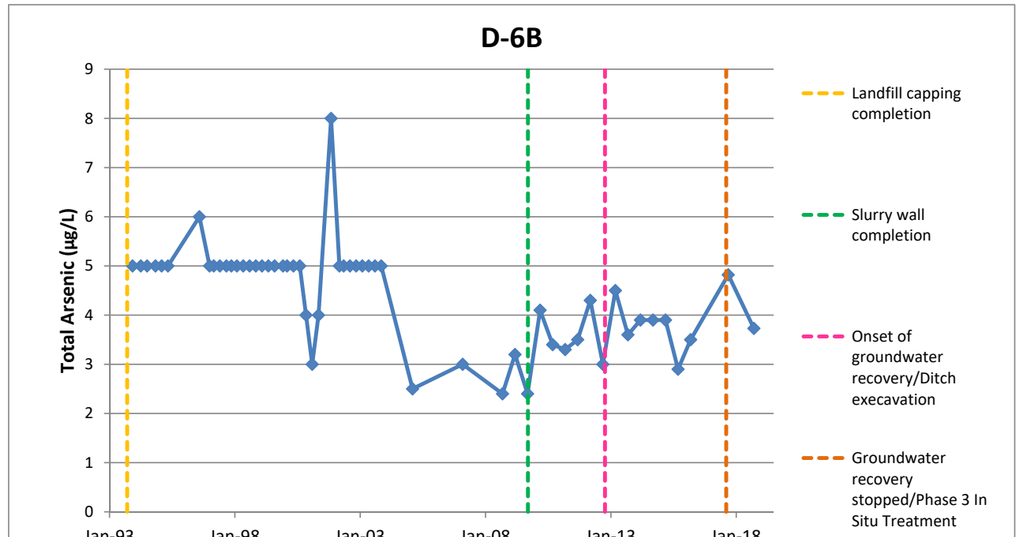

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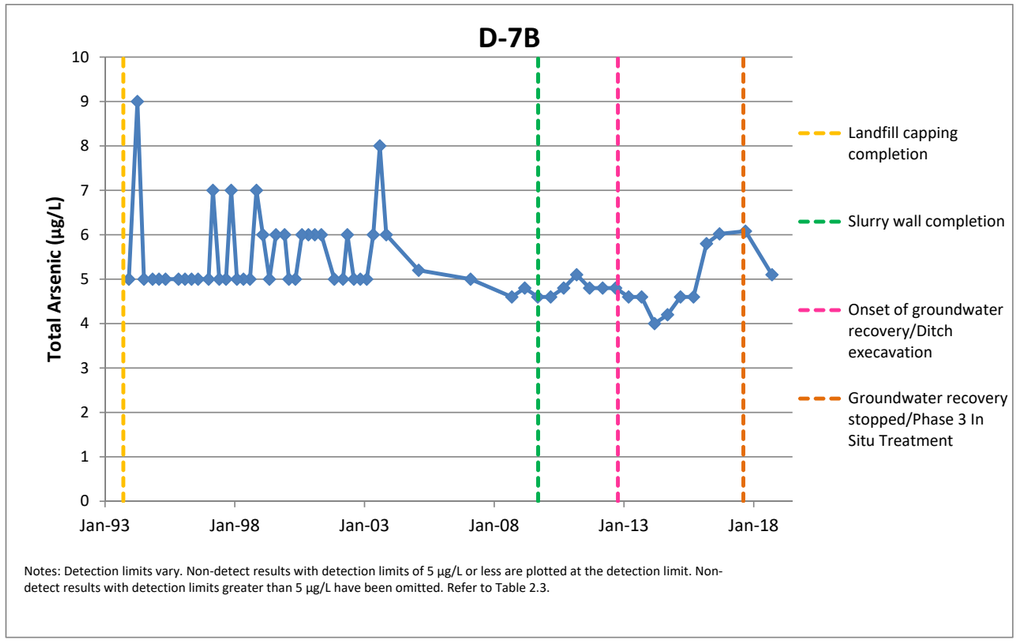

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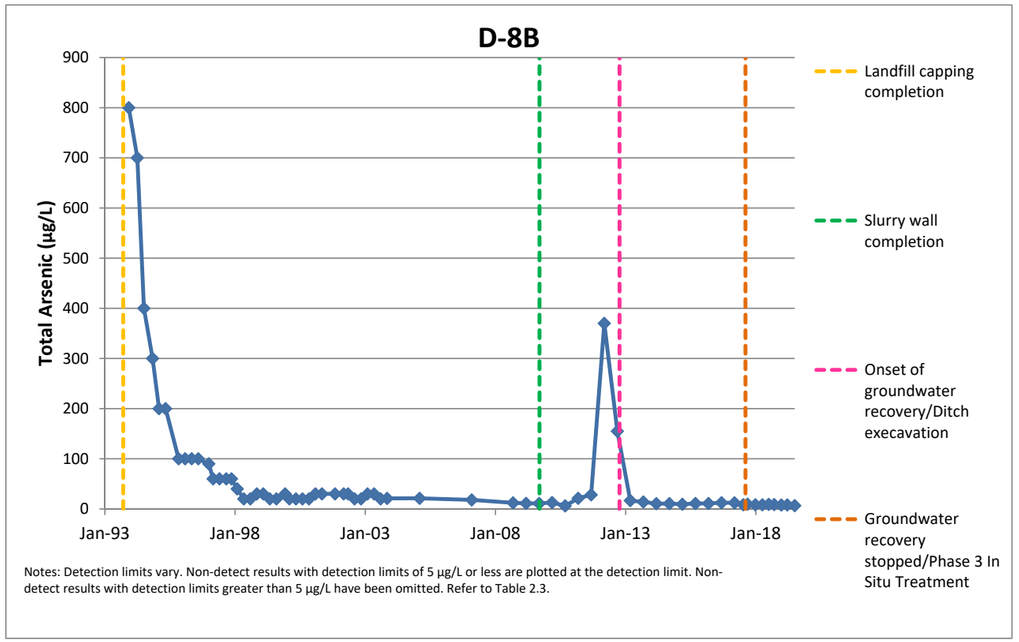

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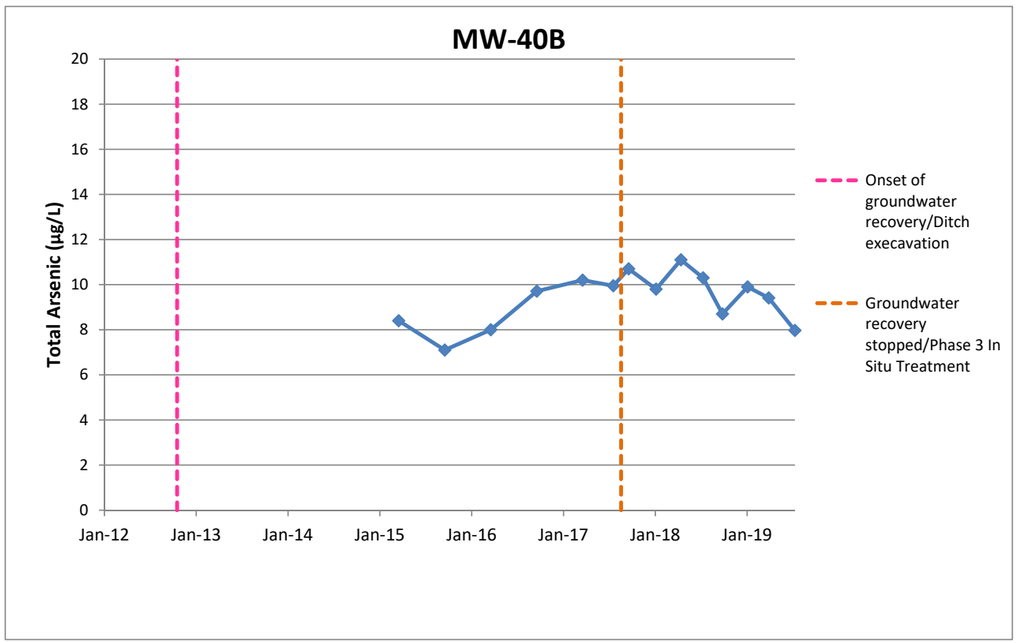

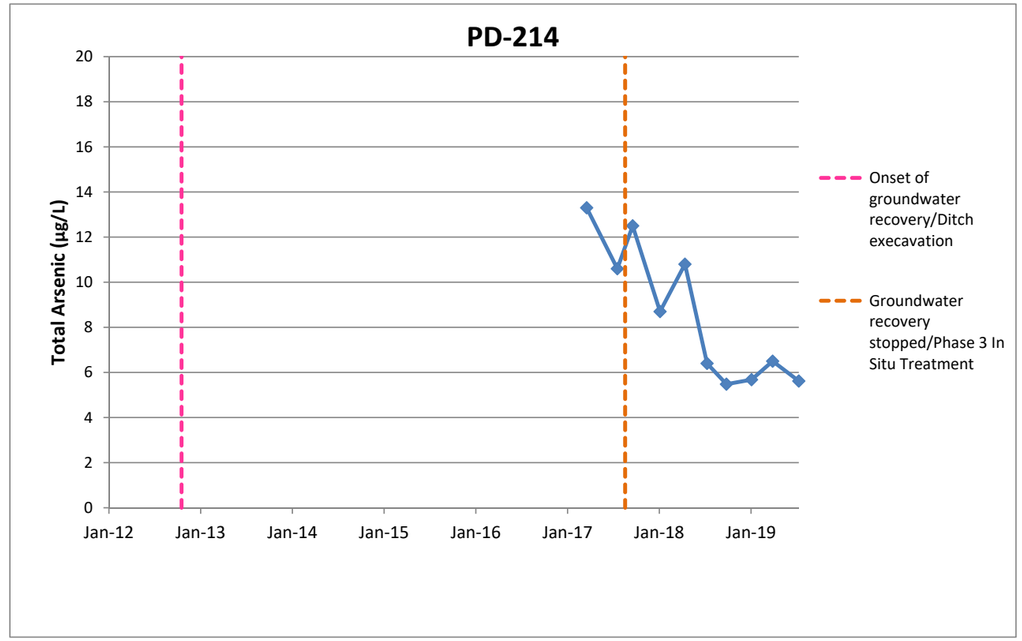

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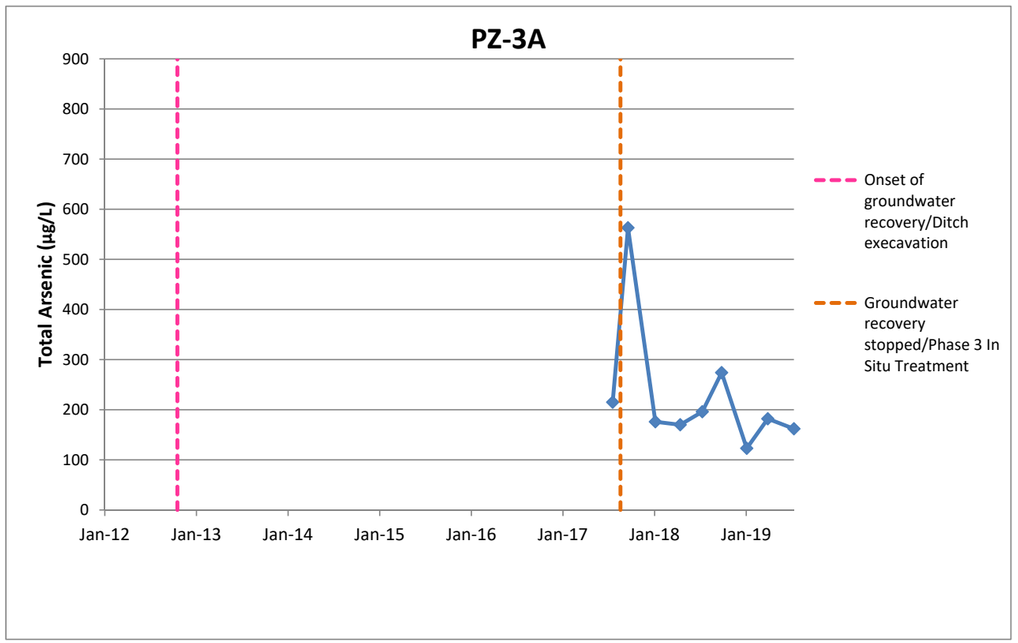
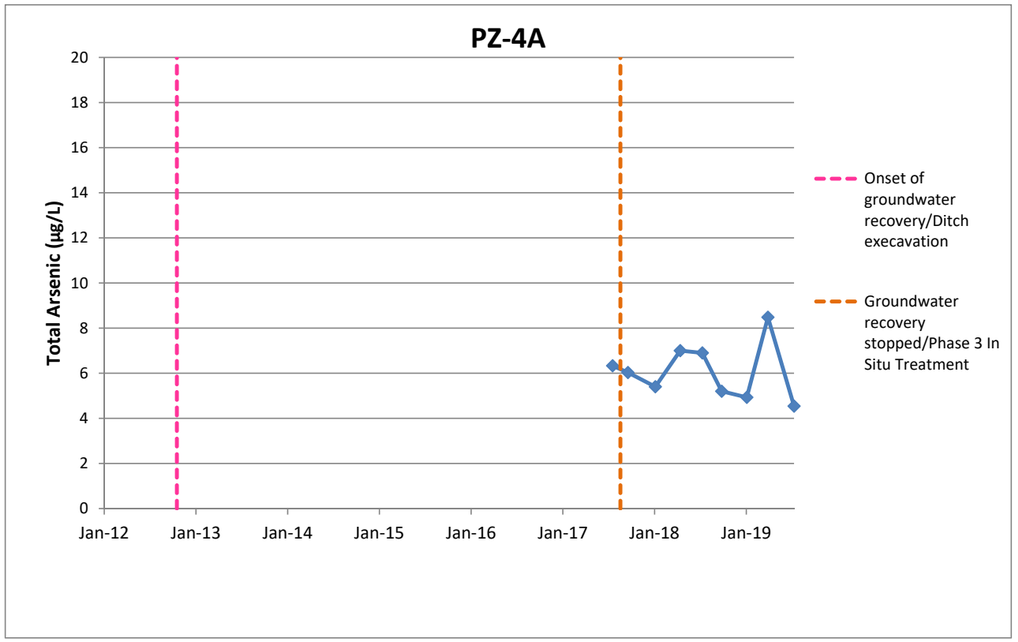
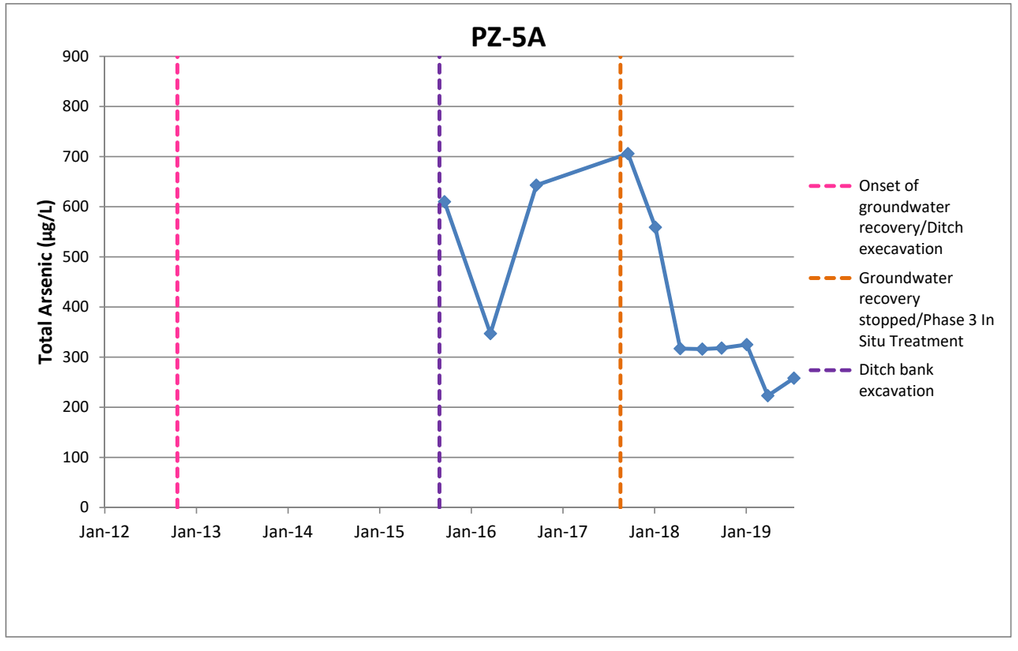
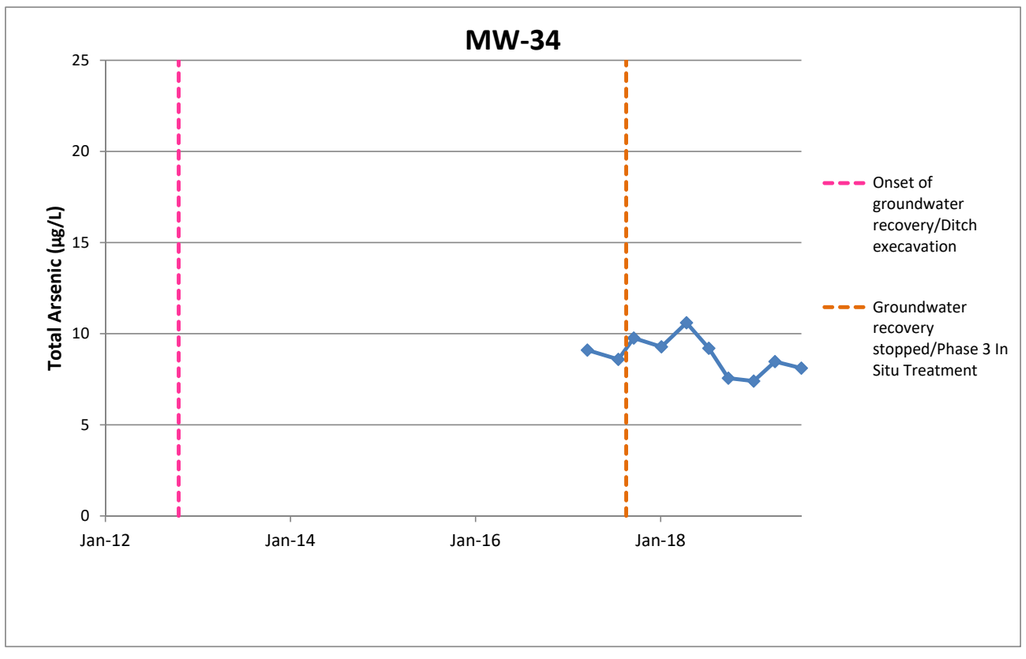
Time-Concentration Plots









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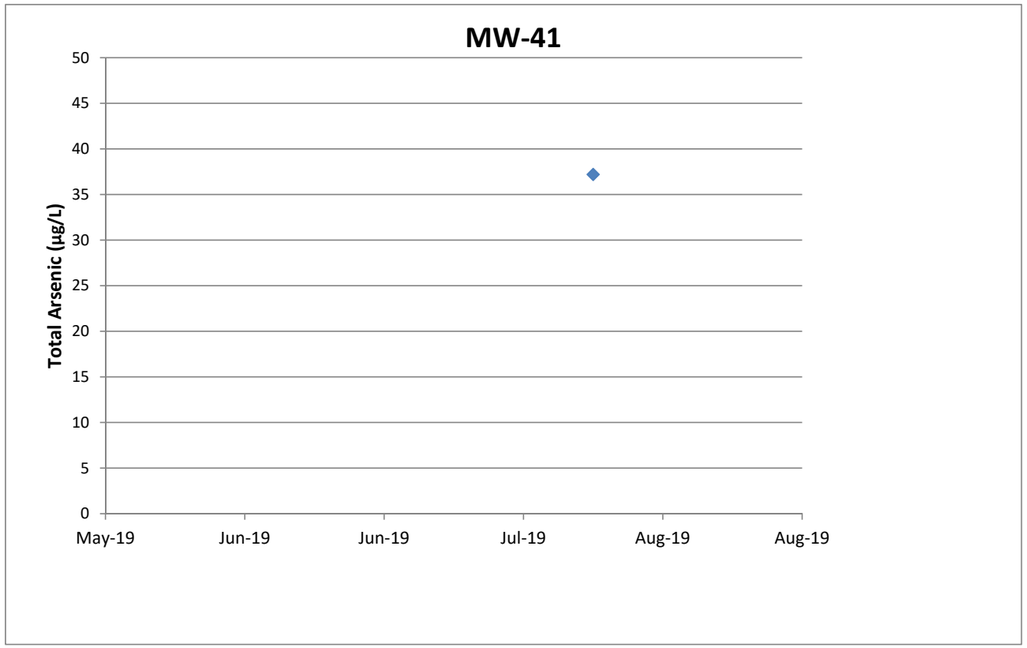

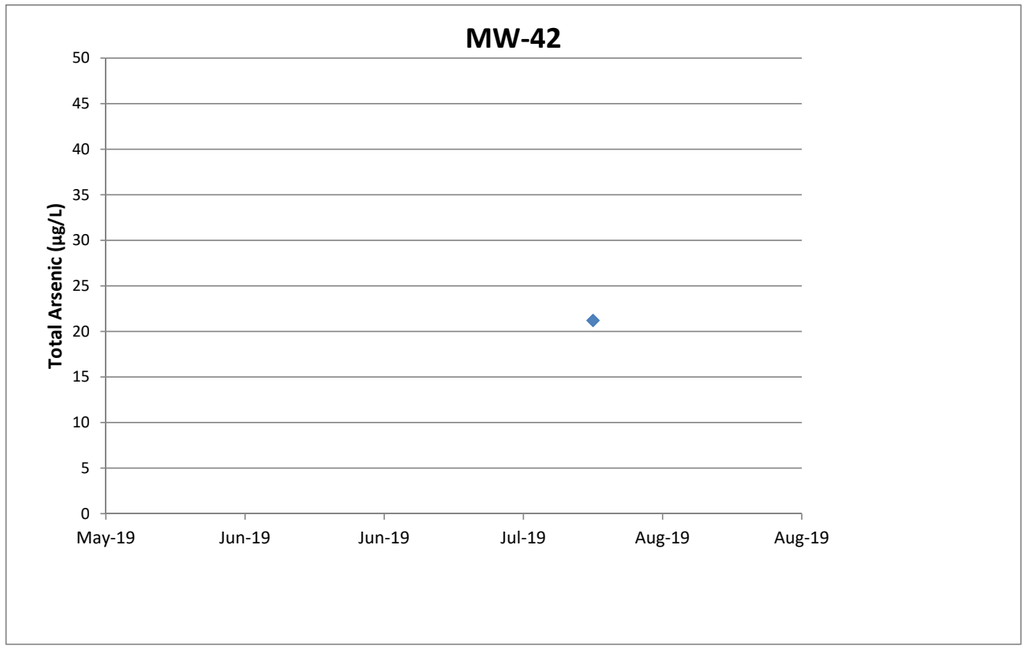

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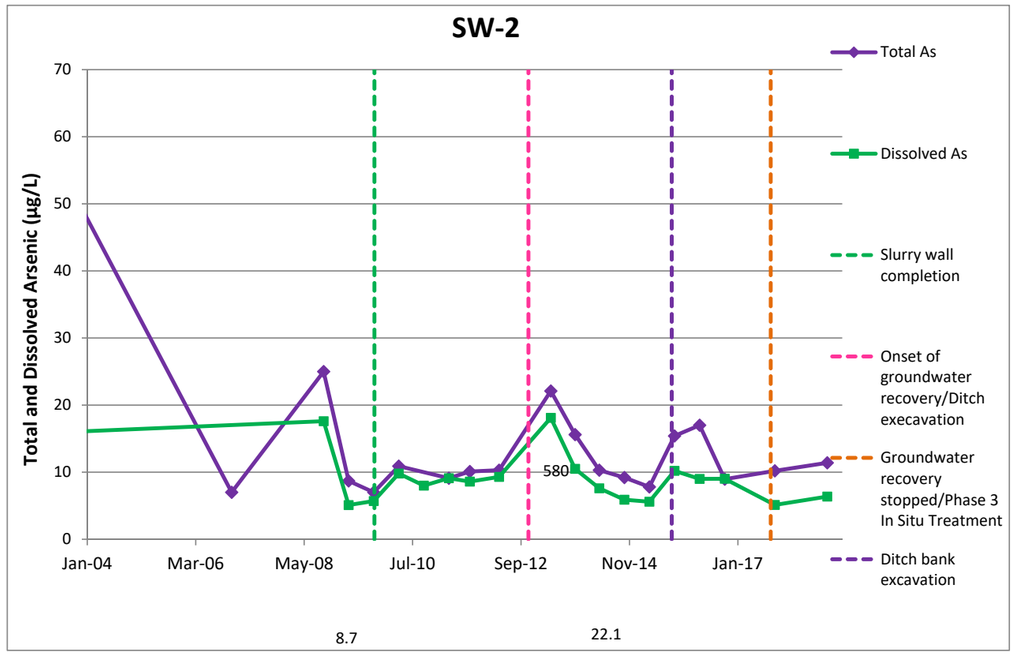
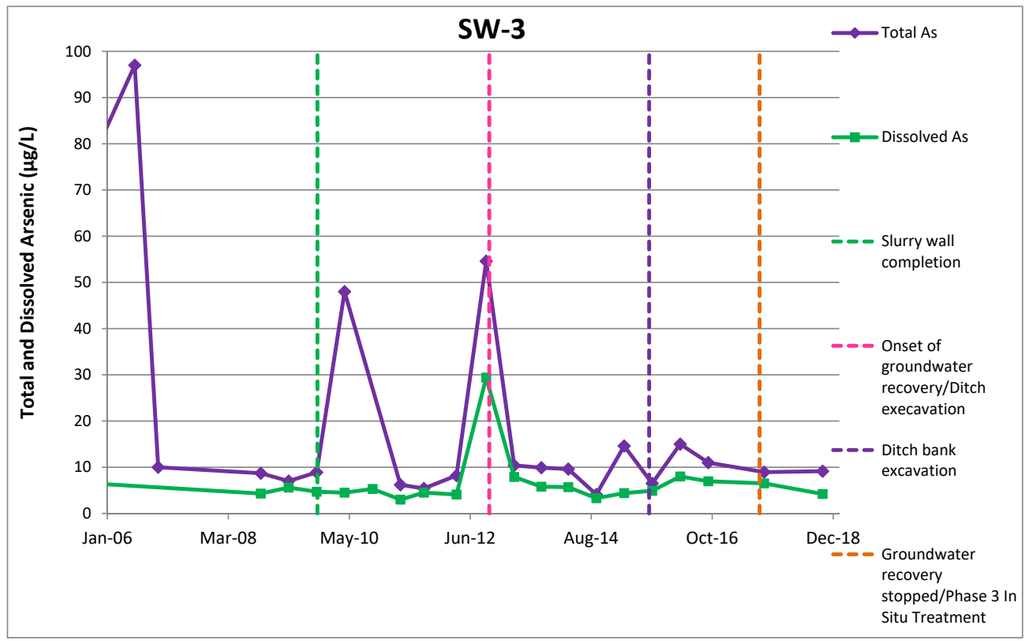
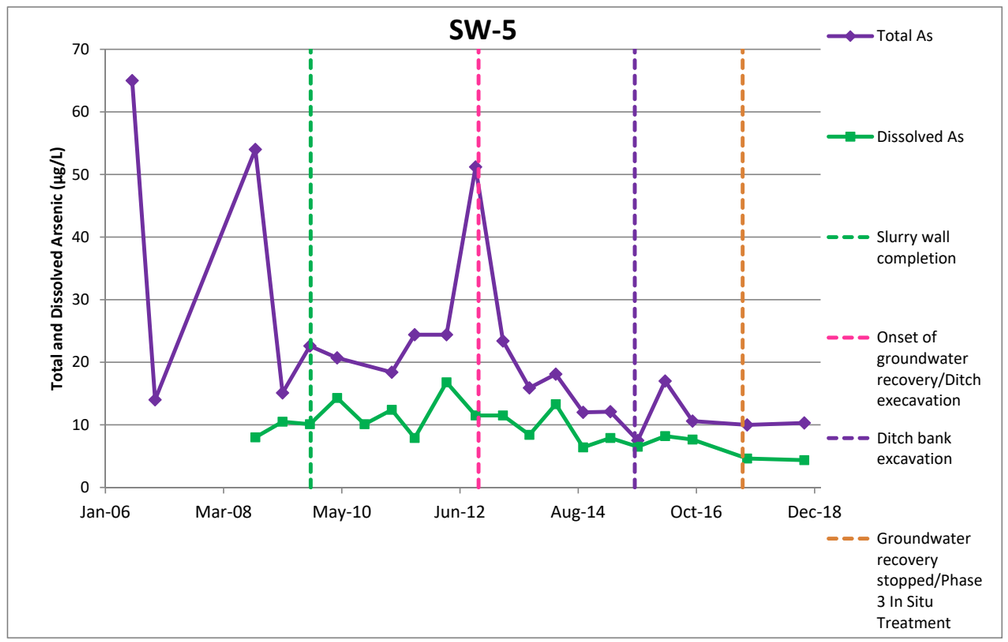
Time-Concentration Plots







Attachment 3
Laboratory Analytical Report

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 2, 2019

Brett Beaulieu, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Beaulieu:

Included are the results from the testing of material submitted on July 25, 2019 from the B and L, PO 1507.1, F&BI 907446 project. There are 17 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
FDS0802R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 25, 2019 by Friedman & Bruya, Inc. from the Floyd-Snider B and L, PO 1507.1, F&BI 907446 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
907446 -01	BLW-GW-PZ5A
907446 -02	BLW-GW-MW40B
907446 -03	BLW-GW-PD214
907446 -04	BLW-GW-PZ4A
907446 -05	BLW-GW-MW42
907446 -06	BLW-GW-MW172
907446 -07	BLW-GW-D-8B
907446 -08	BLW-GW-MW41
907446 -09	BLW-GW-D8A
907446 -10	BLW-GW-MW33
907446 -11	BLW-GW-GW-MW34
907446 -12	BLW-GW-GW-PZ3A
907446 -13	BLW-GW-GW-W1

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-PZ5A	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-01 x10
Date Analyzed:	07/30/19	Data File:	907446-01 x10.085
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	258

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-MW40B	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-02
Date Analyzed:	07/26/19	Data File:	907446-02.076
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	7.97

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-PD214	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-03
Date Analyzed:	07/26/19	Data File:	907446-03.077
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	5.62

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-PZ4A	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-04
Date Analyzed:	07/26/19	Data File:	907446-04.078
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	4.54

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-MW42	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-05
Date Analyzed:	07/26/19	Data File:	907446-05.079
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	19.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-MW172	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-06
Date Analyzed:	07/26/19	Data File:	907446-06.178
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	21.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-D-8B	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-07
Date Analyzed:	07/26/19	Data File:	907446-07.179
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	6.57

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-MW41	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-08
Date Analyzed:	07/26/19	Data File:	907446-08.180
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	37.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-D8A	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-09 x10
Date Analyzed:	07/30/19	Data File:	907446-09 x10.086
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	181

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-MW33	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-10 x10
Date Analyzed:	07/30/19	Data File:	907446-10 x10.087
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	181

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-GW-MW34	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-11
Date Analyzed:	07/30/19	Data File:	907446-11.088
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	8.11

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-GW-PZ3A	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-12 x10
Date Analyzed:	07/30/19	Data File:	907446-12 x10.089
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	162

Analysis For Total Metals By EPA Method 6020B

Client ID:	BLW-GW-GW-W1	Client:	Floyd-Snider
Date Received:	07/25/19	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	907446-13
Date Analyzed:	07/30/19	Data File:	907446-13.090
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	7.24

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	B and L, PO 1507.1, F&BI 907446
Date Extracted:	07/25/19	Lab ID:	I9-450 mb
Date Analyzed:	07/25/19	Data File:	I9-450 mb.052
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1

Date of Report: 08/02/19
Date Received: 07/25/19
Project: B and L, PO 1507.1, F&BI 907446

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 907446-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	262	174 b	258 b	75-125	39 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	101	80-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

907446

SAMPLE CHAIN OF CUSTODY

ME 07-25-19

Page # 1 of 2

Report To Brett Beaulieu

Company Floyd Snider

Address 601 Union St, Suite 600

City, State, ZIP Seattle, WA 98101

Phone 206 292-2078 Email Brett.Beaulieu@FloydSnider.com

SAMPLERS (signature) Pam Osterhout

PROJECT NAME: B+L

PO #: 1507.1

REMARKS

INVOICE TO

TURNAROUND TIME
- ☑ Standard Turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☑ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Total Arsenic				Notes
BLW-GW-PZ5A	~~1025~~ 01	7/24/19	1025	GW	1								X				
BLW-GW-MW40B	02		1030		1								X				
BLW-GW-PD214	03		1105		1								X				
BLW-GW-PZ4A	04		1128		1								X				
BLW-GW-MW42	05		1145		1								X				
BLW-GW-MW172	06		1200		1								X				
BLW-GW-D-8B	07		1224		1								X				
BLW-GW-MW41	08		1250		1								X				
BLW-GW-DBA	09		13:01		1								X				
BLW-GW-MW33	10		1323		1								X				Samples received at 5 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Pam Osterhout	Pamela Osterhout	F|S	7/25/19	0826
Received by: Dave	DAVE	F+B+	7-25	8.26
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

907446

SAMPLE CHAIN OF CUSTODY

07-25-19

Page # 2 of 2 BI4

Report ~~To: Brett~~ Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #: 1507.1

REMARKS

INVOICE TO

TURNAROUND TIME
- ☑ Standard Turnaround
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Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Total Arsenic				Notes
BLW-GW-MW34	11	7/24/19	14:02	GW	1								X				
BLW-GW-PZ3A	12	↓	14:08	↓	1								X				
BLW-GW-W1	13	↓	15:22	↓	1								X				

ANALYSES REQUESTED

Samples received at 5 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Pamela Osterhout	F/S	7/25/19	0826
Received by:	DO VO	F-BI	7-25	8.26
Relinquished by:				
Received by:				

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