Mead Custodial Trust

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NOV 21 2016
Ecology W2R-Ind

November 16, 2016

Guy Barrett
Department of Ecology
P.O. Box 47706
Olympia, WA 98504-7706

SUBJECT: 4th Quarter Groundwater Monitoring Report

Dear Guy:

Enclosed is the 4th Quarter 2016 Groundwater Monitoring Report for Kaiser Mead. You will note some interesting new lows being reported. I will also send you some current trend data via e-mail that I got recently received from Tony Chavez.

Please let me know if you have any questions about this report.

Sincerely,

Dan Silver
Trustee

Enclosure

CDC Mead

Facility:	
Year: 16	Left Right
Air	Corr
Water	Reports
NPDES	Permit
WET-TOX	Enf
DW/RCRA	Eng
Cleanup	Sub
SW	
HWP2	

Hydrometrics, Inc.
consulting scientists and engineers

2736 White Pines Drive
Coeur d'Alene ID 83815
(208) 660-8548
Fax: (208) 765-5286
www.hydrometrics.com

November 9, 2016

VIA EMAIL

Mr. Daniel J. Silver, Custodial Trustee
Mead Custodial Trust
606 Columbia Street NW, Ste. 212
Olympia, WA 98501

Subject: Kaiser Mead NPL Site - Submittal of Letter Report for 4th Quarter 2016 Groundwater Monitoring Activities

Dear Mr. Silver:

This letter report documents the monitoring activity as stipulated in the Consent Decree dated October 7, 2004 between Kaiser Aluminum and Chemical Corporation, the U.S. Environmental Protection Agency, the Washington State Department of Ecology, and AIG Insurance Company. The requirement for groundwater monitoring activity is identified in the Remedial Action Plan (Exhibit A to the Scope of Work) as Task 2 Groundwater Monitoring Program. The following paragraphs describe the groundwater monitoring activities conducted by Hydrometrics, Inc. (Hydrometrics) for the 4th Quarter of 2016.

By letter dated November 1, 2006 the Washington Department of Ecology approved the discontinuance of monitoring for fluoride and cyanide in the A-zone for the following wells, KMCP-1, KMCP-2, KMCP-3, KMCP-4 and KMCP-5. The weather during sampling was cool and dry (temperatures in the fifties).

Prior to each sampling event, the field equipment was calibrated using standard buffers and conductivity solutions. The equipment used for measuring field parameters was an Oakton multiparameter-meter.

All wells targeted for sampling are outfitted with dedicated bladder pumps. The pumps are operated with an oil-less air compressor powered by a portable gas-powered generator. Samples were collected using low-flow methods. Well KM-4 was sampled with a disposable bailer.

pH, conductivity, and temperature were monitored during purging and a sample was collected when parameters appeared to stabilize.

Pre cleaned sample bottles were obtained from the analytical laboratory, SVL Analytical (SVL). The Total, free and weak acid dissociable (WAD) Cyanide bottles were 250 milliliter (ml) polyethylene with sodium hydroxide (NaOH) added as a preservative following sample collection. The Fluoride sample bottles were 250 ml and contained no preservative. Following sampling, the labels were attached and the bottles were placed into the SVL coolers.

Once all samples had been obtained, the Chain of Custody form was completed and the sample bottles were secured in the cooler with ice packs. The samples were delivered by hand to the laboratory.

Five wells reported new lows for their respective historic ranges. The total cyanide results for KM-1 and KM-6 were reported as new lows. KM-6 also reported a new low for fluoride. Four wells reported new lows for free cyanide (KM-5, KM-6, KMCP-3B and KMCP-4B), although this may simply be due to free cyanide not being monitored until the 3rd quarter of 2015. All other results reported for all wells were within their respective historic ranges.

All QC tests (for all parameters) were within acceptable guidelines.

The field measurements and the laboratory analyses are summarized in the following tables. Field sampling logs, the Chain of Custody forms, and the laboratory data package follow.

Sincerely,
HYDROMETRICS, INC.

Antonio Chàvez, P.E.
Senior Engineer

Encl.

Kaiser Mead NPL Groundwater Monitoring

Descriptive Name Well ID	Sample Formation	Date Sampled	Depth to Water (feet, btoc)	Top of PVC Casing Elev.	Groundwater Elev.	pH (Std Units)	Conductivity (umhos/cm)	Temperature (Deg. C)	Total CN (mg/L)	WAD CN (mg/L)	Free CN (mg/L)	F (mg/L)
KM-1	A	10/7/2015	145.45	1930.02	1784.57	10	8,340	12.8	51.2	0.175	0.168	78.2
		2/29/2016	145.81	1930.02	1784.21	10.0	7,500	11.3	45.0	0.956	0.332	73.6
		6/15/2016	145.25	1930.02	1784.77	9.8	7,250	13.9	42.6	0.770	0.499	65.4
		8/31/2016	145.42	1930.02	1784.6	9.8	7,260	15.6	37.3	1.360	1.040	67.3
		10/22/2016	145.77	1930.02	1784.25	9.4	6,480	12.3	33.1	0.880	0.405	61.2
KM-2	A	10/7/2015	143.80	1929.23	1785.43	10	4,540	13.20	75.1	0.87	0.87	29.1
		2/29/2016	144.13	1929.23	1785.10	10.1	5,170	11.80	97.1	4.19	1.73	15.5
		6/15/2016	143.51	1929.23	1785.72	9.9	3,950	14.10	44.2	1.89	1.35	33.6
		8/31/2016	143.72	1929.23	1785.51	9.9	4,280	14.70	47.4	2.12	1.42	26.9
		10/22/2016	144.09	1929.23	1785.14	9.4	4,650	11.90	61.7	1.51	0.88	29.8
KM-3	A	10/2/2015	155.83	1944.34	1788.51	8.10	629	15.60	< 0.0100	< 0.0100	< 0.0100	< 0.100
		2/29/2016	155.91	1944.34	1788.43	7.90	702	11.40	< 0.0100	< 0.0100	< 0.0100	< 0.100
		6/15/2016	154.88	1944.34	1789.46	7.90	759	12.90	< 0.0100	< 0.0100	< 0.0100	0.233
		10/22/2016	156.14	1944.34	1788.2	7.50	677	11.90	< 0.0100	< 0.0100	< 0.0100	< 0.100
KM-4	A	10/6/2015	147.03	1925.19	1778.16	8.2	712	12.20	< 0.0100	< 0.0100	< 0.0100	< 0.100
		3/2/2016	147.21	1925.19	1777.98	8.2	701	11.10	< 0.0100	< 0.0100	< 0.0100	< 0.100
		6/16/2016	147.09	1925.19	1778.10	8.1	756	11.80	< 0.0100	< 0.0100	< 0.0100	0.268
		8/29/2016	147.00	1925.19	1778.19	8.0	742	12.20	< 0.0100	< 0.0100	< 0.0100	< 0.100
		10/21/2016	147.04	1925.19	1778.15	7.6	732	10.90	< 0.0100	< 0.0100	< 0.0100	< 0.100
KM-5	A	10/7/2015	145.20	1927.63	1782.43	10.10	5,680	12.4	89.3	0.402	0.392	50.1
		2/29/2016	145.51	1927.63	1782.12	10.20	6,320	10.6	83.7	1.020	0.490	59.7
		6/15/2016	145.12	1927.63	1782.51	9.80	5,820	13	59.1	1.620	1.350	55.3
		8/25/2016	145.18	1927.63	1782.45	10.10	5,440	14	61.5	2.280	1.920	46.5
		10/22/2013	145.39	1927.63	1782.24	9.50	6,350	11.1	83.3	0.492	0.205	57.1
KM-6	A	10/7/2015	139.42	1922.99	1783.57	10.1	5,110	12.3	87.3	0.826	0.381	61.3
		2/29/2016	139.88	1922.99	1783.11	10.0	5,050	10.7	97.8	1.580	0.565	52.8
		6/15/2016	139.42	1922.99	1783.57	9.8	5,170	11.9	74.7	1.820	0.866	53.8
		8/31/2016	139.45	1922.99	1783.54	9.9	4,840	14.0	73.6	3.500	1.490	51.6
		10/22/2016	139.68	1922.99	1783.31	9.5	4,670	11.4	66.4	1.280	0.318	48.7
KM-7	B	10/7/2015	150.43	1921.96	1771.53	--	--	--	--	--		--
		2/29/2016	151.54	1921.96	1770.42	--	--	--	--	--		--
		6/16/2016	151.46	1921.96	1770.50	--	--	--	--	--		--
		8/31/2016	151.76	1921.96	1770.20	--	--	--	--	--		--
		10/22/2016	152.09	1921.96	1769.87	--	--	--	--	--		--
KMCP-1A	A	10/6/2015	156.87	1934.43	1777.56	--	--	--	--	--		--
		2/29/2016	157.02	1934.43	1777.41	--	--	--	--	--		--
		6/15/2016	156.60	1934.43	1777.83	--	--	--	--	--		--
		8/31/2016	156.80	1934.43	1777.63	--	--	--	--	--		--
		10/22/2016	156.98	1934.43	1777.45	--	--	--	--	--		--
KMCP-1B	B	10/6/2015	164.64	1934.43	1769.79	8.40	526	13.00	0.237	0.0370	0.0290	0.623
		2/29/2016	164.00	1934.43	1770.43	8.10	508	10.70	0.197	0.0210	0.0170	0.670
		6/15/2016	162.91	1934.43	1771.52	8.20	517	11.80	0.124	0.0200	0.0160	0.739
		8/31/2016	164.03	1934.43	1770.4	8.20	534	12.50	0.124	0.0160	< 0.0100	0.625
		10/22/2016	164.51	1934.43	1769.92	7.80	538	10.70	0.149	0.0130	< 0.0100	0.545
KMCP-2A	A	10/6/2015	130.31	1926.70	1796.39	--	--	--	--	--		--
		2/29/2016	130.38	1926.70	1796.32	--	--	--	--	--		--
		6/15/2016	130.29	1926.70	1796.41	--	--	--	--	--		--
		8/31/2016	130.24	1926.70	1796.46	--	--	--	--	--		--
		10/22/2016	130.21	1926.70	1796.49	--	--	--	--	--		--

Kaiser Mead NPL Groundwater Monitoring

Descriptive Name Well ID	Sample Formation	Date Sampled	Depth to Water (feet, btoc)	Top of PVC Casing Elev.	Groundwater Elev.	pH (Std Units)	Conductivity (umhos/cm)	Temperature (Deg. C)	Total CN (mg/L)	WAD CN (mg/L)	Free CN (mg/L)	F (mg/L)
KMCP-2B	B	10/6/2015	158.28	1926.25	1767.97	8.5	472	13.3	0.1690	0.0410	0.0330	0.417
		2/29/2016	157.92	1926.25	1768.33	8.3	412	9.9	0.0680	0.0120	< 0.0100	0.452
		6/15/2016	156.86	1926.25	1769.39	8.3	399	11.3	< 0.0100	< 0.0100	< 0.0100	0.214
		8/31/2016	157.68	1926.25	1768.57	8.2	426	12.6	0.0520	< 0.0100	< 0.0100	0.292
		10/22/2016	158.22	1926.25	1768.03	7.7	478	10.6	0.1310	0.0110	< 0.0100	0.245
KMCP-3A	A	10/6/2015	106.28	1918.61	1812.33	--	--	--	--	--		--
		2/29/2016	106.48	1918.61	1812.13	--	--	--	--	--		--
		6/15/2016	106.40	1918.61	1812.21	--	--	--	--	--		--
		8/31/2016	106.29	1918.61	1812.32	--	--	--	--	--		--
		10/22/2016	106.33	1918.61	1812.28	--	--	--	--	--		--
KMCP-3B	B	10/6/2015	151.87	1919.07	1767.20	10.1	3,590	13.6	67.9	1.60	1.76	28.2
		2/29/2016	151.61	1919.07	1767.46	10.0	3,590	11.5	60.7	2.05	1.59	30.0
		6/15/2016	150.54	1919.07	1768.53	10.0	3,500	14.5	44.1	3.16	3.01	27.3
		8/31/2016	151.30	1919.07	1767.77	10.0	3,570	13.2	48.9	1.02	0.69	26.8
		10/22/2016	151.85	1919.07	1767.22	9.3	3,450	11.4	49.1	0.875	0.626	26.5
KMCP-4A	A	10/7/2015	99.19	1912.51	1813.32	--	--	--	--	--		--
		2/29/2016	99.31	1912.51	1813.20	--	--	--	--	--		--
		6/9/2016	99.24	1912.51	1813.27	--	--	--	--	--		--
		8/31/2016	99.18	1912.51	1813.33	--	--	--	--	--		--
		10/22/2016	99.12	1912.51	1813.39	--	--	--	--	--		--
KMCP-4B	B	10/7/2015	146.82	1912.52	1765.70	9.20	1,779	11.8	33.2	0.566	0.499	14.8
		2/29/2016	146.59	1912.52	1765.93	9.20	1,916	11.3	29.3	1.280	1.150	15.5
		6/9/2016	145.65	1912.52	1766.87	9.10	1,868	17.1	18.3	0.952	0.926	15.6
		8/31/2016	146.19	1912.52	1766.33	9.10	1,727	12.7	22.0	0.687	0.488	14.2
		10/22/2016	146.73	1912.52	1765.79	8.60	1,695	10.9	22.9	0.491	0.277	14.3
KMCP-5A	A	10/6/2015	94.91	1908.89	1813.98	--	--	--	--	--		--
		2/29/2016	94.97	1908.89	1813.92	--	--	--	--	--		--
		6/15/2016	94.90	1908.89	1813.99	--	--	--	--	--		--
		8/31/2016	94.88	1908.89	1814.01	--	--	--	--	--		--
		10/22/2016	94.84	1908.89	1814.05	--	--	--	--	--		--
KMCP-5B	B	10/6/2015	143.33	1908.80	1765.47	8.6	407	11.3	0.0840	0.0230	0.0150	0.173
		2/29/2016	143.23	1908.80	1765.57	8.3	446	8.5	0.1320	0.0170	0.0120	0.134
		6/15/2016	142.26	1908.80	1766.54	8.3	413	12.6	0.0960	0.0200	0.0130	0.114
		8/31/2016	142.81	1908.80	1765.99	8.2	439	12.3	0.0510	< 0.0100	< 0.0100	< 0.100
		10/22/2016	143.32	1908.80	1765.48	7.8	406	9.9	0.0830	0.0100	< 0.0100	< 0.100

Notes:
< = chemical was not detected at or above the method reporting limit
CN = cyanide
WAD = weak acid dissociable
F = fluoride
mg/L = milligrams per liter
All elevations are above mean sea level
btoc = below top of casing
* - Sample was re-analyzed outside of holding time.
J - Analyte concentration detected at a value between the minimum detection limit and the practical quantitation limit.
-- = sample or data not collected

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): CHAVEZ
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KM-1
Sample Date: 10/22/16
Sample Time: 1300 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring – other:
Weather Conditions: calm (breeze) windy
no precip. rain snow
clear (p. cloudy) overcast
Air Temperature: °C 53 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25 Comments
TD (ft): 162.94
SWL (ft): 145.77
Casing Diameter (I.D.") 4
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 3.25
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
1309			9.5	8020	1.0	12.4	yellow
1316			9.4	7940	1.0	12.2	"
1320			9.4	7190	0.5	12.2	"
1325			9.4	6850	0.5	12.0	"
1330			9.4	6570	0.25	12.3	very yellow
1334			9.4	6310	0.25	12.6	" "
1338			9.4	6480	0.25	12.3	" "

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) grab composite pump bailer other
Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	9.4	
SC (µmhos/cm)	6480	
Turbidity (ntu)		
H_2O Tmp. (°C)	12.3	
Color	Very light yellow	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: ID 5857
Purge 3 gallons

Sample Team Member Signature:

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KM-2
Sample Date: 10/22/16
Sample Time: 1245 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring– other:
Weather Conditions: calm (breeze) windy
no precip. rain snow
clear p. cloudy (overcast)
Air Temperature: °C (5-2° F)

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25 Comments
TD (ft): 157.13
SWL (ft): 149.09
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 1.0
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters Notes
1149			9.5	4220	0.25	12.4	Yellow
1153			9.3	4590	0.25	11.6	"
1158			9.6	4650	0.25	11.6	light yellow
1202			9.4	4650	0.25	11.9	" "

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) grab composite pump bailer other
Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	9.4	
SC (µmhos/cm)	4650	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.9	
Color	light yellow	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: ID 54

Sample Team Member Signature:

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KM-3
Sample Date: 10/22/16
Sample Time: 809 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No)
Site Type: (DRY) surface water process water monitoring well domestic well adit seep spring– other:

Photo taken: Yes (No)

Weather Conditions: calm (breeze) windy (no precip.) (rain) snow clear (p. cloudy) overcast

Air Temperature: °C 61 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25

Comments

TD (ft): 171.06
SWL (ft): 156.14
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 1.0
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:

Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
812			8.1	657	0.25	13.3	Clear
815			7.6	677	0.5	12.8	"
818			7.50	679	0.75	12.0	"
821			7.5	677	0.25	11.9	"

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) grab composite pump bailer other
Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	7.5	
SC (µmhos/cm)	677	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.9	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: ID 82

Sample Team Member Signature:

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KM-4
Sample Date: 10/21/16
Sample Time: 940 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring-- other:
Weather Conditions: (calm) breeze windy no precip. rain snow clear p. cloudy (overcast)
Air Temperature: °C 50 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25 — Comments

TD (ft): 153.29
SWL (ft): 147.04
Casing Diameter (I.D."): 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.): 1.5
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (μmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
956			8.0	754	0.33	11.2	[illegible]
1001			7.7	732	0.5	11.0	" "
1006			7.6	730	0.33	11.0	" "
1011			7.6	732	0.33	10.9	" "

Turbidity: (circle) clear slight (moderate) very

Sample Method: grab composite pump bailer other
(describe) disposable bailer

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	7.6	
SC (μmhos/cm)	732	
Turbidity (ntu)		
H_2O Tmp. (°C)	10.9	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature]

Page 1 of 1

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KM-5
Sample Date: 10/22/16
Sample Time: 1220 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring - other:
Weather Conditions: calm (breeze) windy; no precip. rain snow; clear (p. cloudy) overcast
Air Temperature: °C 52 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25 Comments

TD (ft): 153.29
SWL (ft): 145.39
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 60
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
1228			8.0	7380	0.25	11.4	dark yellow
1232			7.8	6590	0.25	11.3	yellow
1237			7.8	6380	0.25	11.1	"
1242			7.8	6350	0.25	11.1	

Turbidity: (clear) slight moderate very (circle)

Sample Method: grab composite pump bailer other (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	7.5	
SC (µmhos/cm)	6350	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.1	
Color	yellow	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: ID 60 54

Sample Team Member Signature: A. Chavez

Water Sampling Form — HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KM-6
Sample Date: 10/22/16
Sample Time: 1353 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: (DRY) surface water process water
(monitoring well) domestic well adit seep
spring – other:
Weather Conditions: (calm) breeze windy
(no precip.) rain snow
(clear) p. cloudy overcast
Air Temperature: (°C) 55 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25 Comments
TD (ft): 155.4
SWL (ft): 139.68
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 1.25
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
1358			9.4	5080	1.0	12.1	Yellow
1401			9.6	4980	0.25	11.3	V
1403			9.7	4900	0.25	11.2	V
1406			9.6	4670	0.25	11.4	V

Turbidity: (clear) slight moderate very
(circle)

Sample Method: grab composite pump bailer other
(describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	9.5	
SC (µmhos/cm)	4670	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.4	
Color	Light yellow	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfil.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: ID 54

Adjust 1.5 gallon

Sample Team Member Signature:

Page of

KM-7 (Depth to water) 152.09

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KMCP-1B
Sample Date: 10/22/16
Sample Time: 1055 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring– other:

Weather Conditions: (calm) breeze windy
no precip. rain snow
clear p. cloudy (overcast)

Air Temperature: °C 52 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25 Comments

TD (ft): 181.55
SWL (ft): 164.51
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 1.0
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:

Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
1002			7.89	529	0.25	11.4	Clear
1005			7.66	529	0.25	10.8	"
1008			7.63	538	0.25	10.8	"
1011			7.63	538	0.25	10.7	"

Turbidity: (clear) slight moderate very (circle)

Sample Method: grab composite pump bailer other (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	7.63	
SC (µmhos/cm)	538	
Turbidity (ntu)		
H_2O Tmp. (°C)	10.7	
Color	C	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: ID 55

Sample Team Member Signature:

KMCP-1A (DTW) 156.90

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KMCP-2B
Sample Date: 10/22/16
Sample Time: 9 2 1 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring – other:
Weather Conditions: calm (breeze) windy
no precip. rain snow
clear p. cloudy (overcast)
Air Temperature: °C 52 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25 Comments

TD (ft): 171.29
SWL (ft): 158.22
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 1.0
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
934			8.0	417	0.25	11.0	clear
936			7.7	436	0.25	10.8	"
938			7.8	476	0.25	10.8	"
941			7.7	478	0.25	10.6	"

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) grab composite pump bailer other
Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	7.7	
SC (µmhos/cm)	478	
Turbidity (ntu)		
H_2O Tmp. (°C)	10.6	
Color	clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: ID 57

Sample Team Member Signature:

KMCP-2A (DTW) 130.21

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KMCP-3B
Sample Date: 10/22/16
Sample Time: 1254 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring – other:

Weather Conditions: calm (breeze) windy
no precip. rain snow
clear p. cloudy (overcast)
Air Temperature: °C 52 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) 25 Comments

TD (ft): 161.53
SWL (ft): 151.85
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 1.2
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
1101			9.7	3480	0.25	11.4	yellow
1106			9.3	3520	0.25	11.8	light yellow
1111			9.6	3490	0.25	11.2	" "
1116			9.3	3450	0.25	11.4	" "

Turbidity: (circle) clear slight moderate very

Sample Method: (describe) grab composite pump bailer other
Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	9.3	
SC (µmhos/cm)	3450	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.4	
Color	light yellow	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: IR 84.55

Sample Team Member Signature:

KMCP-3A (DTW) 106.33

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KMCP-4B
Sample Date: 10/22/16
Sample Time: 1026 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring– other:
Weather Conditions: calm (breeze) windy
no precip. rain snow
clear p. cloudy (overcast)
Air Temperature: °C 50 °F

For Groundwater Samples

well volume formu'a: V = (TD-SWL)x(Dia.²) 25 Comments
TD (ft): 160.59
SWL (ft): 146.73
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 1.0
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
1031			8.6	1685	0.25	11.0	light yellow
1034			8.5	1718	0.25	10.9	" "
1036			8.7	1717	0.25	10.9	" "
1039			8.6	1695	0.25	10.9	" "

Turbidity: (clear) slight moderate very (circle)

Sample Method: grab composite pump bailer other (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	8.6	
SC (µmhos/cm)	1695	
Turbidity (ntu)		
H_2O Tmp. (°C)	10.9	
Color	light yellow	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/WAD/Free CN	
1	250 ml	F or UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: 1054

Sample Team Member Signature:

KMCP-4A (DTW) 99.12

Water Sampling Form ~~ HF-430r1

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 002
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation:
Sample Code Number: KMCP-5B
Sample Date: 10/22/16
Sample Time: 8:47 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring- other:
Weather Conditions: calm (breeze) windy
no precip. rain snow
clear p. cloudy (overcast)
Air Temperature: °C 47 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) 25 Comments
TD (ft): 152.39
SWL (ft): 143.32
Casing Diameter (I.D.") 2
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.) 1.0
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Purge Vol. (gal)	Temperature (°C)	Additional Parameters or Notes
8:51			8.1	435	0.25	9.5	clear
8:56			7.8	413	0.25	9.8	"
9:00			7.9	410	0.25	9.9	"
9:04			7.8	406	0.25	9.9	"

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) grab composite pump bailer other
Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	7.8	
SC (µmhos/cm)	406	
Turbidity (ntu)		
H_2O Tmp. (°C)	9.9	
Color	clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	UF	NaOH	Total/WAD/Free CN	
1	250 ml	UF	Raw	Fluoride	
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: LD 50#

Sample Team Member Signature:

KMCP-5A (DTW) 94.84

Work Order: **W6J0460**
Hydrometrics Inc. - CDA

W6J0460

FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 5°C

Page 1 of 2

SVL ANALYTICAL

CH

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

Report to Company: Hydrometrics	Invoice Sent To: SAME
Contact: Tony Chavez	Contact:
Address:	Address:
Phone Number: 208 660 8548	Phone Number:
FAX Number:	FAX Number:
E-mail: achavez@hydrometrics.com	PO#:

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil, 4 = Sediment, 5 = Rock, 6 = Rinsate, 7 = Oil
8 = Waste, 9 = Other:

Project Name: Kaiser Mead

Sampler's Signature:

Indicate State of sample origination: WA

	Sample ID	Collection			Misc.		Preservative(s)							Analyses Required												Rush Instructions (Days)	Comments
	Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, ø and O. Thanks!	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Fluoride	Total, WAD, Free CN												
1	KM-1	10/22/16	1338	AC	2	2	1					1		✓	✓											-01
2	KM-2		1202																							-02
3	KM-3		821																							-03
4	KM-4	10/21/16	1011 1041																							-04
5	KM-5	10/22/16	1242																							-05
6	KM-6		1406																							-06
7	KMCP-1B		1011																							-07
8	KMCP-2B		941																							-08
9	KMCP-3B		1116																							-09
10	KMCP-4B		1039																							-10

Relinquished by:	Date: 10-24-16	Time: 1205	Received by:
Relinquished by:	Date: 10/25/16	Time: 0810	Received by:

Date: 10/24/16	Time: 1205	
Date: 10/25/16	Time: 820	10/25/16 9:45

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 01/14

Page 2 of 2

W6J04460

FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 5°C

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil, 4 = Sediment, 5 = Rock, 6 = Rinsate, 7 = Oil
8 = Waste, 9 = Other: _____

Report to Company: Hydrometrics
Contact: Tony Chavez
Address: _____
Phone Number: 208 660 8548
FAX Number: _____
E-mail: achavez@hydrometrics.com

Invoice Sent To: SAME
Contact: _____
Address: _____
Phone Number: _____
FAX Number: _____
PO#: _____

Project Name: Kaiser Mead
Sampler's Signature: [signature]

Indicate State of sample origination: WA

	Sample ID	Collection			Misc.		Preservative(s)							Analyses Required												Rush Instructions (Days)	Comments
	Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, ø and O. Thanks!	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3, Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Filtered	Total, WAD, Free CN												
1	KMCP-5B	10/22/16	904	AC	2	2	1					1		X	X												-11
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Relinquished by: [signature] Date: 10/24/16 Time: 1205 Received by: P Johnson Date: 10/24/16 Time: 1205
Relinquished by: [signature] Date: 10/25/16 Time: 810 Received by: [signature] Date: 10/25/16 Time: 826

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

10/25/16 9:45

SVL-COC 01/14

www.svl.net One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Hydrometrics Inc. - CDA
2736 White PIne Drive
Coeur d Alene, ID 83815

Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
KM-1	W6J0460-01	Ground Water	22-Oct-16 13:38	AC	24-Oct-2016	
KM-2	W6J0460-02	Ground Water	22-Oct-16 12:02	AC	24-Oct-2016	
KM-3	W6J0460-03	Ground Water	22-Oct-16 08:21	AC	24-Oct-2016	
KM-4	W6J0460-04	Ground Water	21-Oct-16 10:11	AC	24-Oct-2016	
KM-5	W6J0460-05	Ground Water	22-Oct-16 12:42	AC	24-Oct-2016	
KM-6	W6J0460-06	Ground Water	22-Oct-16 14:06	AC	24-Oct-2016	
KMCP-1B	W6J0460-07	Ground Water	22-Oct-16 10:11	AC	24-Oct-2016	
KMCP-2B	W6J0460-08	Ground Water	22-Oct-16 09:41	AC	24-Oct-2016	
KMCP-3B	W6J0460-09	Ground Water	22-Oct-16 11:16	AC	24-Oct-2016	
KMCP-4B	W6J0460-10	Ground Water	22-Oct-16 10:39	AC	24-Oct-2016	
KMCP-5B	W6J0460-11	Ground Water	22-Oct-16 09:04	AC	24-Oct-2016	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested. Non-Detects are reported at the MDL.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

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2736 White PIne Drive
Coeur d Alene, ID 83815

Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KM-1**
SVL Sample ID: **W6J0460-01 (Ground Water)**

Sampled: 22-Oct-16 13:38
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	**Cyanide (free) @ pH 6**	0.405	mg/L	0.0100	0.0016		W644112	APH	10/26/16 13:12	
EPA 335.4	**Cyanide (total)**	33.1	mg/L	5.00	0.950	500	W644224	APH	10/28/16 11:51	D2
SM 4500-CN-I	**Cyanide (WAD)**	0.880	mg/L	0.0500	0.0130	5	W644225	APH	10/28/16 13:01	D2
Anions by Ion Chromatography										
EPA 300.0	**Fluoride**	61.2	mg/L	5.00	0.900	50	W644239	DT	11/07/16 18:37	D2

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KM-2**
SVL Sample ID: **W6J0460-02 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 22-Oct-16 12:02
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	**Cyanide (free) @ pH 6**	0.883	mg/L	0.0500	0.0160	10	W644112	APH	10/26/16 12:46	D2
EPA 335.4	**Cyanide (total)**	61.7	mg/L	5.00	0.950	500	W644224	APH	10/28/16 11:53	D2
SM 4500-CN-I	**Cyanide (WAD)**	1.51	mg/L	0.100	0.0260	10	W644225	APH	10/28/16 13:03	D2
Anions by Ion Chromatography										
EPA 300.0	**Fluoride**	29.8	mg/L	5.00	0.900	50	W644239	DT	11/07/16 18:54	D2

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KM-3**
SVL Sample ID: **W6J0460-03 (Ground Water)**

Sampled: 22-Oct-16 08:21
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	< 0.0100	mg/L	0.0100	0.0016		W644112	APH	10/26/16 12:48	
EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0019		W644224	APH	10/28/16 11:55	
SM 4500-CN-I	Cyanide (WAD)	< 0.0100	mg/L	0.0100	0.0026		W644225	APH	10/28/16 13:05	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	< 0.100	mg/L	0.100	0.018		W644239	DT	11/07/16 19:10	

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KM-4**
SVL Sample ID: **W6J0460-04 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 21-Oct-16 10:11
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	< 0.0100	mg/L	0.0100	0.0016		W644112	APH	10/26/16 12:50	
EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0019		W644224	APH	10/28/16 11:57	
SM 4500-CN-I	Cyanide (WAD)	< 0.0100	mg/L	0.0100	0.0026		W644225	APH	10/28/16 13:07	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	< 0.100	mg/L	0.100	0.018		W644239	DT	11/07/16 19:59	

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KM-5**
SVL Sample ID: **W6J0460-05 (Ground Water)**

Sampled: 22-Oct-16 12:42
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	**Cyanide (free) @ pH 6**	0.205	mg/L	0.0100	0.0016		W644112	APH	10/26/16 13:14	
EPA 335.4	**Cyanide (total)**	83.3	mg/L	5.00	0.950	500	W644224	APH	10/28/16 11:59	D2
SM 4500-CN-I	**Cyanide (WAD)**	0.492	mg/L	0.0500	0.0130	5	W644225	APH	10/28/16 13:09	D2
Anions by Ion Chromatography										
EPA 300.0	**Fluoride**	57.1	mg/L	5.00	0.900	50	W644239	DT	11/07/16 20:32	D2

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KM-6**
SVL Sample ID: **W6J0460-06 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 22-Oct-16 14:06
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	**Cyanide (free) @ pH 6**	0.318	mg/L	0.0100	0.0016		W644112	APH	10/26/16 13:16	
EPA 335.4	**Cyanide (total)**	66.4	mg/L	5.00	0.950	500	W644224	APH	10/28/16 12:07	D2
SM 4500-CN-I	**Cyanide (WAD)**	1.28	mg/L	0.100	0.0260	10	W644225	APH	10/28/16 15:20	D2
Anions by Ion Chromatography										
EPA 300.0	**Fluoride**	48.7	mg/L	5.00	0.900	50	W644239	DT	11/07/16 21:21	D2

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KMCP-1B**
SVL Sample ID: **W6J0460-07 (Ground Water)**

Sampled: 22-Oct-16 10:11
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	< 0.0100	mg/L	0.0100	0.0016		W644112	APH	10/26/16 13:02	
EPA 335.4	**Cyanide (total)**	0.149	mg/L	0.0100	0.0019		W644224	APH	10/28/16 12:09	
SM 4500-CN-I	**Cyanide (WAD)**	0.0130	mg/L	0.0100	0.0026		W644225	APH	10/28/16 13:13	
Anions by Ion Chromatography										
EPA 300.0	**Fluoride**	0.545	mg/L	0.100	0.018		W644239	DT	11/07/16 21:37	

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KMCP-2B**
SVL Sample ID: **W6J0460-08 (Ground Water)**

Sampled: 22-Oct-16 09:41
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	< 0.0100	mg/L	0.0100	0.0016		W644112	APH	10/26/16 13:04	
EPA 335.4	**Cyanide (total)**	0.131	mg/L	0.0100	0.0019		W644224	APH	10/28/16 12:11	
SM 4500-CN-I	**Cyanide (WAD)**	0.0110	mg/L	0.0100	0.0026		W644225	APH	10/28/16 13:15	
Anions by Ion Chromatography										
EPA 300.0	**Fluoride**	0.245	mg/L	0.100	0.018		W644239	DT	11/07/16 21:53	

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KMCP-3B**
SVL Sample ID: **W6J0460-09 (Ground Water)**

Sampled: 22-Oct-16 11:16
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	**Cyanide (free) @ pH 6**	0.626	mg/L	0.0500	0.0160	10	W644112	APH	10/26/16 13:06	D2
EPA 335.4	**Cyanide (total)**	49.1	mg/L	5.00	0.950	500	W644224	APH	10/28/16 12:13	D2
SM 4500-CN-I	**Cyanide (WAD)**	0.875	mg/L	0.100	0.0260	10	W644225	APH	10/28/16 13:17	D2
Anions by Ion Chromatography										
EPA 300.0	**Fluoride**	26.5	mg/L	2.50	0.450	25	W644239	DT	11/07/16 22:10	D2

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KMCP-4B**
SVL Sample ID: **W6J0460-10 (Ground Water)**

Sampled: 22-Oct-16 10:39
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	**Cyanide (free) @ pH 6**	0.277	mg/L	0.0100	0.0016		W644112	APH	10/26/16 13:18	
EPA 335.4	**Cyanide (total)**	22.9	mg/L	2.00	0.380	200	W644224	APH	10/28/16 12:15	D2
SM 4500-CN-I	**Cyanide (WAD)**	0.491	mg/L	0.0500	0.0130	5	W644225	APH	10/28/16 13:25	D2
Anions by Ion Chromatography										
EPA 300.0	**Fluoride**	14.3	mg/L	1.00	0.180	10	W644239	DT	11/07/16 22:26	D2

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Client Sample ID: **KMCP-5B**
SVL Sample ID: **W6J0460-11 (Ground Water)**

Sampled: 22-Oct-16 09:04
Received: 24-Oct-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	< 0.0100	mg/L	0.0100	0.0016		W644112	APH	10/26/16 13:10	
EPA 335.4	Cyanide (total)	0.0830	mg/L	0.0100	0.0019		W644224	APH	10/28/16 12:17	
SM 4500-CN-I	Cyanide (WAD)	0.0100	mg/L	0.0100	0.0026		W644225	APH	10/28/16 13:27	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	< 0.100	mg/L	0.100	0.018		W644239	DT	11/07/16 22:43	

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Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Classical Chemistry Parameters								
ASTM D7237	Cyanide (free) @ pH 6	mg/L	<0.0100	0.0016	0.0100	W644112	26-Oct-16	
EPA 335.4	Cyanide (total)	mg/L	<0.0100	0.0019	0.0100	W644224	28-Oct-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	<0.0100	0.0026	0.0100	W644225	28-Oct-16	
Anions by Ion Chromatography								
EPA 300.0	Fluoride	mg/L	<0.100	0.018	0.100	W644239	07-Nov-16	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.144	0.150	96.0	90 - 110	W644112	26-Oct-16	
EPA 335.4	Cyanide (total)	mg/L	0.142	0.150	94.7	90 - 110	W644224	28-Oct-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.144	0.150	96.0	90 - 110	W644225	28-Oct-16	
Anions by Ion Chromatography									
EPA 300.0	Fluoride	mg/L	1.91	2.00	95.5	90 - 110	W644239	07-Nov-16	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.100	<0.0100	0.100	100	79 - 121	W644112	26-Oct-16	
EPA 335.4	Cyanide (total)	mg/L	0.0940	<0.0100	0.100	94.0	90 - 110	W644224	28-Oct-16	
EPA 335.4	Cyanide (total)	mg/L	0.111	<0.0100	0.100	102	90 - 110	W644224	28-Oct-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.0980	<0.0100	0.100	98.0	75 - 125	W644225	28-Oct-16	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	mg/L	1.93	<0.100	2.00	96.3	90 - 110	W644239	07-Nov-16	
EPA 300.0	Fluoride	mg/L	1.92	<0.100	2.00	96.2	90 - 110	W644239	07-Nov-16	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters											
ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.102	0.100	0.100	102	2.0	11	W644112	26-Oct-16	
EPA 335.4	Cyanide (total)	mg/L	0.0950	0.0940	0.100	95.0	1.1	20	W644224	28-Oct-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.0990	0.0980	0.100	99.0	1.0	20	W644225	28-Oct-16	
Anions by Ion Chromatography											
EPA 300.0	Fluoride	mg/L	1.94	1.93	2.00	97.2	1.0	20	W644239	07-Nov-16	

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Coeur d Alene, ID 83815

Project Name: Kaiser
Work Order: **W6J0460**
Reported: 08-Nov-16 13:29

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable