

Mead Custodial Trust

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SEP 22 2016

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danieljsilver@msn.com

Ecology W2R-Ind

September 19, 2016

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

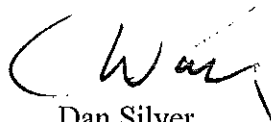
SUBJECT: 3rd Quarter Groundwater and Surface Water Reports

Dear Guy:

Enclosed are the 3rd quarter 2016 Groundwater and Surface Water Reports for Kaiser Mead. You will note that there is not much change in the surface water data, but the groundwater data is indicating some downward trends in the plume (KM-6) and some fluoride stability in the compliance wells

Please let me know if you have any questions about these reports.

Sincerely,



Dan Silver
Trustee

Enclosures

CDC Mead

Facility:	
Year:	<i>16</i> Left Right
Air	Corr
Water	<u>Reports</u>
NPDES	Permit
WET-TOX	Enf
DWIRCRA	Eng
<u>Cleanup</u>	Sub
SW	
HWP2	
<i>Quarterly GWSW Report</i>	



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

September 14, 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 3rd 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 3rd 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 mild and dry (temperatures in the sixties and seventies).

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. For this quarter KM-5 was sampled with an electric pump as collection coincided with a bulk sample for an ongoing ex situ wetland pilot test. 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.

One well reported a total cyanide result outside of its historic range. The total cyanide results for KM-6 was reported as a new low. 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.

A handwritten signature in black ink, appearing to read 'A. Chavez', with a long horizontal flourish extending to the right.

Antonio Chavez, P.E.
Senior Engineer

Encl.

Kaiser Mead NPL Groundwater Monitoring

Descriptive Name Well ID	Sample Formation	Date Sampled	Depth to Water (feet, btec)	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	7/8/2015	144.80	1930.02	1785.22	10.2	9,410	18.2	88.3	3,470	1,860	86.8
		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	145.91	1930.02	1784.21	10.0	7,500	11.3	45.0	0.956	0.332	73.9
		6/15/2016	143.25	1930.02	1784.77	9.8	7,250	13.9	42.8	0.770	0.499	65.4
		8/31/2016	145.42	1930.02	1784.6	9.8	7,280	15.5	37.3	1.360	1.040	67.3
KM-2	A	7/7/2015	143.09	1929.23	1786.14	10.1	4,360	15.90	67	7.54	4.35	35.7
		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	38.6
		8/31/2016	143.72	1929.23	1785.51	9.9	4,280	14.70	47.4	2.12	1.42	26.9
KM-3	A	7/7/2015	154.70	1944.34	1789.64	7.90	702	17.00	< 0.0100	< 0.0100	< 0.0100	< 0.208
		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
		8/31/2016	155.64	1944.34	1788.7	7.90	687	14.20	< 0.0100	< 0.0100	< 0.0100	< 0.100
KM-4	A	7/8/2015	146.81	1925.19	1778.38	8.3	724	13.70	0.0100	< 0.0100	< 0.0100	< 0.100
		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
		6/15/2016	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
KM-5	A	7/8/2015	144.75	1927.53	1782.88	10.40	4,280	14.9	64.2	5.270	2,350	35.7
		10/7/2015	145.20	1927.53	1782.43	10.10	5,680	12.4	89.3	0.402	0.392	50.1
		2/29/2016	145.51	1927.53	1782.12	10.20	6,320	10.6	83.7	1.020	0.490	59.7
		6/15/2016	145.12	1927.53	1782.51	9.80	5,820	13	59.1	1.620	1.350	55.3
		8/25/2016	145.18	1927.53	1782.45	10.10	5,440	14	61.5	2.280	1.920	46.5
KM-6	A	7/7/2015	138.91	1922.99	1784.08	10.1	5,480	13.6	89.7	5.970	2,550	83.7
		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	139.68	1922.99	1783.11	10.0	5,050	10.7	97.8	1.980	0.965	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	9.5	4,840	14.0	73.6	3.500	1.490	51.6
KM-7	B	7/7/2015	150.68	1921.96	1771.28	-	-	-	-	-	-	-
		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	-	-	-	-	-	-	-
KMCP-1A	A	7/7/2015	156.42	1934.43	1778.01	-	-	-	-	-	-	-
		10/6/2015	156.87	1934.43	1777.56	-	-	-	-	-	-	-
		2/29/2016	157.02	1934.43	1777.41	-	-	-	-	-	-	-
		6/15/2016	156.80	1934.43	1777.83	-	-	-	-	-	-	-
		8/31/2016	156.80	1934.43	1777.63	-	-	-	-	-	-	-
KMCP-1B	B	7/7/2015	163.50	1934.43	1770.93	8.20	502	13.80	0.176	0.0770	0.0590	0.623
		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
KMCP-2A	A	7/7/2015	130.26	1926.70	1796.44	-	-	-	-	-	-	-
		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	-	-	-	-	-	-	-

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	7/7/2015	156.32	1926.25	1769.43	8.2	397	15.7	0.0160	0.0110	< 0.0100	0.219
		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	589	11.3	< 0.0100	< 0.0100	< 0.0100	0.214
		8/31/2016	157.88	1926.25	1768.57	8.2	426	12.6	0.0520	< 0.0100	< 0.0100	0.292
KMCP-3A	A	7/7/2015	106.37	1918.61	1812.24	--	--	--	--	--	--	--
		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	106.28	1918.61	1812.32	--	--	--	--	--	--	--
KMCP-3B	B	7/7/2015	150.47	1919.07	1768.60	10.2	3,490	16.1	64.5	8.42	4.84	27.9
		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
KMCP-4A	A	7/7/2015	99.27	1912.51	1813.24	--	--	--	--	--	--	--
		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	--	--	--	--	--	--	--
KMCP-4B	B	7/7/2015	145.42	1912.52	1767.10	9.30	1,865	15.6	25.0	4.53	3.06	15.2
		10/7/2015	146.82	1912.52	1765.70	9.20	1,779	11.8	33.2	0.966	0.489	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	145.85	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
KMCP-5A	A	7/7/2015	94.91	1908.89	1813.98	--	--	--	--	--	--	--
		10/6/2015	94.91	1908.89	1813.88	--	--	--	--	--	--	--
		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	--	--	--	--	--	--	--
KMCP-5B	B	7/7/2015	142.09	1908.80	1766.71	8.2	456	16.1	0.0550	0.0290	0.0230	0.146
		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	0.0170	0.1320	0.0120	0.194
		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

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

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: 8/31/16
 Sample Time: 12:22 (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 70 °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (Dia.^2)$ 25 Comments
 TD (ft): 162.94
 SWL (ft): 145.42
 Casing Diameter (I.D.): 4
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.) _____
 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
1230			9.8	8410	1.0	15.7	yellow
1240			9.9	8110	1.0	15.8	light yellow
1245			9.8	7420	0.5	15.6	" "
1250			9.8	7260	0.5	15.6	" "

Turbidity: clear moderate slight very

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

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	9.8	
SC (µmhos/cm)	7260	
Turbidity (ntu)		
H ₂ O Temp. (°C)	15.6	
Color	light yellow	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	Total/AVAD/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			

Comments: 1258

Sample Team Member Signature: _____

Page 1 of 1

Project Name: Kaiser Mead
Project Code: 9088.00, Phase 024
Sample Team Member(s): Chavez
Laboratory Used: SVL Analytical

Site Designation: _____
Sample Code Number: KM-2
Sample Date: 8/31/16
Sample Time: 1146 (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 preclp. rain snow
clear p. cloudy overcast
Air Temperature: _____ °C 70 °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (\text{Dia.}^2)$ 25 Comments
TD (ft): 157.13
SWL (ft): 143.72
Casing Diameter (I.D.): 2
Water Volume (V) (gal): _____
x 3=(gal.) _____
Actual Vol. Removed (gal.) _____
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
1151			9.7	3910	0.25	16.1	light yellow
1155			9.8	4260	0.25	15.2	" "
1200			9.9	4260	0.25	15.0	" "
1204			9.9	4280	0.25	14.7	" "

Turbidity: clear moderate slight very Sample Method: grab composite pump bailer other
(circle) (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	9.9	
SC (µmhos/cm)	4280	
Turbidity (ntu)		
H ₂ O Temp. (°C)	14.7	
Color	light yellow	
Other:		

Bottles Collected

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

Comments: ID 59

Sample Team Member Signature: 

Project Name: Kaiser Mead
 Project Code: 9088.00, Phase 024
 Sample Team Member(s): Chavez
 Laboratory Used: SVL Analytical

Site Designation: _____
 Sample Code Number: KM-3
 Sample Date: 8/31/16
 Sample Time: 8:30 (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 cloudy overcast
 Air Temperature: _____ °C 63 °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (\text{Dia.}^2)$ 25 Comments
 TD (ft): 171.06
 SWL (ft): 155.65
 Casing Diameter (I.D.): 2
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.) _____
 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
<u>8:40</u>			<u>8.0</u>	<u>711</u>	<u>0.25</u>	<u>16.5</u>	<u>Clear</u>
<u>8:44</u>			<u>8.0</u>	<u>691</u>	<u>0.25</u>	<u>14.6</u>	<u>"</u>
<u>8:47</u>			<u>7.9</u>	<u>690</u>	<u>0.25</u>	<u>14.2</u>	<u>"</u>
<u>8:50</u>			<u>7.9</u>	<u>687</u>	<u>0.25</u>	<u>14.2</u>	<u>"</u>

Turbidity: clear moderate slight very
 Sample Method: grab composite pump bailer other
 (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	<u>7.9</u>	
SC (µmhos/cm)	<u>687</u>	
Turbidity (ntu)		
H ₂ O Temp. (°C)	<u>14.2</u>	
Color	<u>Clear</u>	
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			

Comments: ID 82

Sample Team Member Signature: _____

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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: 8/29/16
 Sample Time: 8:26 (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 65 °F

For Groundwater Samples

well volume
 formula: $V = (TD-SWL) \times (\text{Dia.}^2)$ 25 Comments
 TD (ft): 153.29
 SWL (ft): 147.00
 Casing Diameter (I.D.): 2
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.): 1.8
 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
<u>8:39</u>			<u>8.1</u>	<u>733</u>	<u>0.5</u>	<u>12.7</u>		<u>clear</u>
<u>8:46</u>			<u>8.0</u>	<u>744</u>	<u>0.5</u>	<u>12.1</u>		<u>slight cloudy tan</u>
<u>8:51</u>			<u>8.0</u>	<u>733</u>	<u>0.5</u>	<u>12.1</u>		
<u>8:58</u>			<u>8.0</u>	<u>742</u>	<u>0.5</u>	<u>12.2</u>		

Turbidity: clear moderate (circle) slight very
 Sample Method: grab composite pump bailer other
 (describe) disposable bailer

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	<u>8.0</u>	
SC (µmhos/cm)	<u>742</u>	
Turbidity (ntu)		
H ₂ O Tmp. (°C)	<u>12.2</u>	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfill.	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: _____

Page 1 of 1

Project Name: Kaiser Mead
 Project Code: 9088.00, Phase 024
 Sample Team Member(s): A Chavez
 Laboratory Used: SVL Analytical

Site Designation: _____
 Sample Code Number: KM-5
 Sample Date: 8/25/2016
 Sample Time: 8:50 (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 _____ °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (Dia.)^2$ 25 Comments
 TD (ft): 153.29 BTOC
 SWL (ft): 175.18 115.12
 Casing Diameter (I.D.): _____
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.): 55
 Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Fume Weir Estimate
 Other Flow or Description: _____
 Flow: gpm cts 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
8:50			10.1	5440	NA	14.0		light yellow

Turbidity: (circle) clear moderate slight very

Sample Method: grab composite pump bailer other
 (describe) Electric Pump - 5 gpm

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	10.1	
SC (µmhos/cm)	5440	
Turbidity (ntu)		
H ₂ O Tmp. (°C)	14.0	
Color	light yellow	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfill.	Preservative	Parameter	Additional Notes
	250 ml	F or UF	NaOH	Total/WAD/Free CN	
	250 ml	F or UF	Raw	Fluoride	
	250 ml	F or UF	Raw	Fluoride	Dissolved
	250 ml	F or UF	Nitric	Iron	
	250 ml	F or UF	Nitric	Iron	Dissolved
	250 ml	F or UF	H2SO4	CCD	
	250 ml	F or UF	Raw	TSS	
	ml	F or UF			
	ml	F or UF			

Comments: Bulk sample for ex situ pilot test

Sample Team Member Signature: _____

Page 1 of 1

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: 8/31/16
 Sample Time: 1309 (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 78 °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (Dia.^2)$ 25 Comments
 TD (ft): 155.4
 SWL (ft): 139.45
 Casing Diameter (I.D.): 2
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.): _____
 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
1310			9.5	4900	0.25	16.8		yellow-green
1312			9.7	5200	0.25	15.0		" "
1315			9.8	5640	0.25	15.0		" "
1318			9.9	5040	0.25	14.2		" "
1321			9.9	4890	0.25	14.8		" "
1325			9.9	4840	0.25	14.0		" "

Turbidity: (circle) clear slight moderate very

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

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	<u>9.9</u>	
SC (µmhos/cm)	<u>4840</u>	
Turbidity (ntu)		
H ₂ O Tmp. (°C)	<u>14.0</u>	
Color	<u>Very light yellow</u>	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfil.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	NaOH	TotalWAD/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			

Comments: ED54

Sample Team Member Signature: _____

Page 1 of 1

KM-7 (Depth to water)

151.76

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: 8/31/16
 Sample Time: 1016 (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 preclp. rain snow
 clear p. cloudy overcast
 Air Temperature: _____ °C 67 °F

For Groundwater Samples

well volume
 formula: $V = (TD-SWL) \times (Dia.^2)$ 25 Comments
 TD (ft): 181.55
 SWL (ft): 164.03
 Casing Diameter (I.D.): 2
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.) _____
 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
1019			<u>8.1</u>	<u>510</u>	<u>0.25</u>	<u>13.9</u>	<u>clean</u>
1022			<u>8.1</u>	<u>513</u>	<u>0.25</u>	<u>12.8</u>	<u>"</u>
1025			<u>8.1</u>	<u>523</u>	<u>0.25</u>	<u>12.9</u>	<u>"</u>
1027			<u>8.2</u>	<u>534</u>	<u>0.25</u>	<u>12.5</u>	<u>"</u>

Turbidity: (circle) clear slight moderate very

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

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	<u>8.2</u>	
SC (µmhos/cm)	<u>534</u>	
Turbidity (ntu)		
H ₂ O Temp. (°C)	<u>12.5</u>	
Color	<u>RCOME</u>	
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: _____

Page 1 of 1

KMCP-1A (DTW)

156.80

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: 8/31/16
Sample Time: 948 (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 64 °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (Dia.^2)$	25	Comments
TD (ft):	<u>171.29</u>	
SWL (ft):	<u>157.68</u>	
Casing Diameter (I.D.)	<u>2</u>	
Water Volume (V) (gal):	_____	
x 3=(gal.)	_____	
Actual Vol. Removed (gal.)	_____	
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
<u>954</u>			<u>8.2</u>	<u>389</u>	<u>0.25</u>	<u>14.9</u>	<u>clear</u>
<u>957</u>			<u>8.2</u>	<u>401</u>	<u>0.25</u>	<u>12.9</u>	<u>"</u>
<u>1001</u>			<u>8.2</u>	<u>419</u>	<u>0.25</u>	<u>12.8</u>	<u>"</u>
<u>1005</u>			<u>8.2</u>	<u>426</u>	<u>0.25</u>	<u>12.6</u>	<u>"</u>

Turbidity: clear (circle) slight moderate very Sample Method: grab composite pump bailer other (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	<u>8.2</u>	
SC (µmhos/cm)	<u>426</u>	
Turbidity (ntu)		
H ₂ O Temp. (°C)	<u>12.6</u>	
Color	<u>0.15</u>	
Other:		

Bottles Collected

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

Comments: ID 57

Sample Team Member Signature: _____

Page 1 of 1

KMCP-2A (DTW)

130.24

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: 8/31/16
 Sample Time: 11:00 (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 88 °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (Dia.^2)$ 25 Comments
 TD (ft): 161.53
 SWL (ft): 151.30
 Casing Diameter (I.D.): 2
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.) _____
 Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBimney 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
1115			9.9	3490	0.25	14.3	yellow
1119			10.0	3580	0.25	13.1	light yellow
1123			9.8	3600	0.25	12.8
1127			10.0	3570	0.25	13.2

Turbidity: clear moderate (circle) slight very Sample Method: grab composite pump bailer other (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	10.0	
SC (µmhos/cm)	3570	
Turbidity (ntu)		
H ₂ O Tmp. (°C)	13.2	
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			

Comments: ID 54

Sample Team Member Signature: _____

Page 1 of 1

KMCP-3A (DTW)

106-29

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: 8/31/16
 Sample Time: 1045 (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 _____ °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (Dia.^2)$ 25 Comments
 TD (ft): 180.59
 SWL (ft): 146.19
 Casing Diameter (I.D.): 2
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.) _____
 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
1047			8.5	1945	0.25	13.9	light yellow
1050			9.0	1824	0.25	12.9	" "
1052			9.1	1776	0.25	12.4	" "
1055			9.1	1727	0.25	12.7	" "

Turbidity: clear moderate slight very Sample Method: grab composite pump bailer other
 (circle) (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	9.1	
SC (µmhos/cm)	1727	
Turbidity (ntu)		
H ₂ O Temp. (°C)	12.7	
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			

Comments: ID 54

Sample Team Member Signature: _____

Page 1 of 1

KMCP-4A (DTW)

99.18

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: 8/31/16
 Sample Time: 9:19 (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 cloudy overcast
 Air Temperature: _____ °C 64 °F

For Groundwater Samples

well volume formula: $V = (TD-SWL) \times (Dia.^2)$ 25 Comments
 TD (ft): 152.39
 SWL (ft): 142.81
 Casing Diameter (I.D.): 2
 Water Volume (V) (gal): _____
 x 3=(gal.) _____
 Actual Vol. Removed (gal.) _____
 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
<u>919</u>			<u>8.4</u>	<u>416</u>	<u>0.25</u>	<u>13.6</u>	<u>Clear</u>
<u>925</u>			<u>8.4</u>	<u>452</u>	<u>0.25</u>	<u>12.7</u>	<u>"</u>
<u>929</u>			<u>8.1</u>	<u>439</u>	<u>0.25</u>	<u>12.8</u>	<u>"</u>
<u>934</u>			<u>8.2</u>	<u>439</u>	<u>0.25</u>	<u>12.3</u>	<u>"</u>

Turbidity: clear moderate slight very
 Sample Method: grab composite pump bailer other
 (describe) Low flow sampling - dedicated bladder pump

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	<u>8.2</u>	
SC (µmhos/cm)	<u>439</u>	
Turbidity (ntu)		
H ₂ O Tmp. (°C)	<u>12.3</u>	
Color	<u>NONE</u>	
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: ± 0.58

Sample Team Member Signature: _____

Page _____ of _____

KMCP-5A (DTW)

94.88

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0881



Report to Company: Hydrometrics
 Contact: Leah Chavez
 Address: _____
 Phone Number: 228 660 8548
 FAX Number: _____
 E-mail: leah@hydrometrics.com

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

TEMP on Receipt: 5°C

Table 1. -- Matrix Type

- 1 = Surface Water, 2 = Ground Water
- 3 = Soil/Sediment, 4 = Runoff, 5 = Oil
- 6 = Waste, 7 = Other

Project Name: Keisee Mead
 Sampler's Signature: [Signature]

Analyses Required

Indicate State of sample origination: WA

Comments

Fluoride
 Total, VAD, Free Cl

Sample ID	Collection	Misc.	Preservative(s)	Other (Specify)
KM-1	8-31-16 1250	KE	22	1
KM-2	8-31-16 1204			
KM-3	8-31-16 850			
KM-4	8-24-16 858			
KM-6	8-31-16 1325			
KMCP-1B	1027			
KMCP-2B	1025			
KMCP-3B	1127			
KMCP-4B	1055			
KMCP-5B	934			

Rush Instructions (Days)

Date: 09/01/16 Time: 08:10
 Date: 09/01/16 Time: 08:10
 Date: 09/01/16 Time: 10:15

Received by: [Signature] Date: 9-1-16 Time: 9:10
 Received by: _____ Date: _____ Time: _____

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9105

* Sample Reject: Return Dispose Store (30 Days)

Work Order: WSH0606
Hydrometrics Inc. - CDA



Page 1 of 1

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

Report to Company: Hydrometrics
 Contact: Tom Chavez
 Address: 2786 White Pine Drive
Coeur d'Alene, ID 83814
 Phone Number: 208 660-8548
 FAX Number: _____
 E-mail: Tom.Chavez@hydrometrics.com

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

W6 H0606
 FOR SVL USE ONLY
 SVL JOB # _____
 TEMP on Receipt: 6°C

Table 1. - Matrix Type
 1 = Surface Water, 2 = Ground Water
 3 = Soil/Sediment, 4 = Runoff, 5 = Oil
 6 = Waste, 7 = Other

Project Name: Raiser Access
 Sampler's Signature: [Signature]

Indicate State of sample origination: WA

Sample ID	Collection	Misc.	Preservative(s)	Other (Specify) / Raw Filtered	Analyses Required	Comments
1 KAA - 5	Date: <u>8/25/16</u> Time: <u>9:50</u> Collected by: (Init.) <u>AEZ</u>	No. of Containers: <u>2</u>	Unpreserved HNO ₃ Filtered HNO ₃ Unfiltered HCl H ₂ SO ₄ NaOH	Fluoride Total & Distillate Total Hardness CN COD TSS		
2						
3						
4						
5						
6						
7						
8						
9						
10						

Relinquished by: [Signature] Date: 8/26/16 Time: 1:30
 Relinquished by: [Signature] Date: 8-26-16 Time: 10:16

* Sample Reject: Return Dispose Store (30 Days) White: LAB COPY Yellow: CUSTOMER COPY SVL-COC 9/05



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

Project Name: Kaiser
Work Order: W610002
Reported: 14-Sep-16 11:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
KM-1	W610002-01	Ground Water	31-Aug-16 12:50	AC	01-Sep-2016	
KM-2	W610002-02	Ground Water	31-Aug-16 12:04	AC	01-Sep-2016	
KM-3	W610002-03	Ground Water	31-Aug-16 08:50	AC	01-Sep-2016	
KM-4	W610002-04	Ground Water	29-Aug-16 08:58	AC	01-Sep-2016	
KM-6	W610002-05	Ground Water	31-Aug-16 13:25	AC	01-Sep-2016	
KMCP-1B	W610002-06	Ground Water	31-Aug-16 10:27	AC	01-Sep-2016	
KMCP-2B	W610002-07	Ground Water	31-Aug-16 10:05	AC	01-Sep-2016	
KMCP-3B	W610002-08	Ground Water	31-Aug-16 11:27	AC	01-Sep-2016	
KMCP-4B	W610002-09	Ground Water	31-Aug-16 10:55	AC	01-Sep-2016	
KMCP-5B	W610002-10	Ground Water	31-Aug-16 09:34	AC	01-Sep-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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Hydrometrics Inc. - CDA
2736 White Pines Drive
Coeur d Alene, ID 83815

Project Name: Kaiser
Work Order: W6I0002
Reported: 14-Sep-16 11:58

Client Sample ID: **KM-1**

SVL Sample ID: **W6I0002-01 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 31-Aug-16 12:50
Received: 01-Sep-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	1.04	mg/L	0.0250	0.0080	5	W636170	APH	09/01/16 11:27	D2
EPA 335.4	Cyanide (total)	37.3	mg/L	5.00	0.950	500	W636211	APH	09/02/16 09:38	D2
SM 4500-CN-I	Cyanide (WAD)	1.36	mg/L	0.100	0.0260	10	W636212	APH	09/02/16 10:42	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	67.3	mg/L	2.50	0.450	25	W638046	DT	09/12/16 15:54	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



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

Project Name: Kaiser
Work Order: W610002
Reported: 14-Sep-16 11:58

Client Sample ID: **KM-2**

SVL Sample ID: **W610002-02 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 31-Aug-16 12:04
Received: 01-Sep-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	1.42	mg/L	0.0500	0.0160	10	W636170	APH	09/01/16 11:01	D2
EPA 335.4	Cyanide (total)	47.4	mg/L	5.00	0.950	500	W636211	APH	09/02/16 09:46	D2
SM 4500-CN-I	Cyanide (WAD)	2.12	mg/L	0.250	0.0650	25	W636212	APH	09/02/16 11:44	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	26.9	mg/L	2.50	0.450	25	W638046	DT	09/12/16 16:11	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

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

Project Name: Kaiser
Work Order: W6I0002
Reported: 14-Sep-16 11:58

Client Sample ID: **KM-3**

SVL Sample ID: **W6I0002-03 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 31-Aug-16 08:50
Received: 01-Sep-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		W636170	APH	09/01/16 11:11	
EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0019		W636211	APH	09/02/16 09:48	
SM 4500-CN-I	Cyanide (WAD)	< 0.0100	mg/L	0.0100	0.0026		W636212	APH	09/02/16 10:46	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	< 0.100	mg/L	0.100	0.018		W638046	DT	09/12/16 17:01	

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John Kern
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Hydrometrics Inc. - CDA
2736 White Pines Drive
Coeur d Alene, ID 83815

Project Name: Kaiser
Work Order: W6I0002
Reported: 14-Sep-16 11:58

Client Sample ID: **KM-4**

SVL Sample ID: **W6I0002-04 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 29-Aug-16 08:58
Received: 01-Sep-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		W636170	APH	09/01/16 11:13	
EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0019		W636211	APH	09/02/16 09:50	
SM 4500-CN-I	Cyanide (WAD)	< 0.0100	mg/L	0.0100	0.0026		W636212	APH	09/02/16 10:48	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	< 0.100	mg/L	0.100	0.018		W638046	DT	09/12/16 17:35	

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John Kern
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Hydrometrics Inc. - CDA
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Coeur d Alene, ID 83815

Project Name: Kaiser
Work Order: W610002
Reported: 14-Sep-16 11:58

Client Sample ID: **KM-6**

SVL Sample ID: **W610002-05 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 31-Aug-16 13:25
Received: 01-Sep-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	1.49	mg/L	0.0250	0.0080	5	W636170	APH	09/01/16 11:29	D2
EPA 335.4	Cyanide (total)	73.6	mg/L	5.00	0.950	500	W636211	APH	09/02/16 09:52	D2
SM 4500-CN-I	Cyanide (WAD)	3.50	mg/L	0.250	0.0650	25	W636212	APH	09/02/16 11:46	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	51.6	mg/L	2.50	0.450	25	W638046	DT	09/12/16 17:51	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
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Hydrometrics Inc. - CDA
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Coeur d Alene, ID 83815

Project Name: Kaiser
Work Order: W610002
Reported: 14-Sep-16 11:58

Client Sample ID: **KMCP-1B**

SVL Sample ID: **W610002-06 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 31-Aug-16 10:27
Received: 01-Sep-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		W636170	APH	09/01/16 11:17	
EPA 335.4	Cyanide (total)	0.124	mg/L	0.0100	0.0019		W636211	APH	09/02/16 09:54	
SM 4500-CN-I	Cyanide (WAD)	0.0160	mg/L	0.0100	0.0026		W636212	APH	09/02/16 10:52	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.625	mg/L	0.100	0.018		W638046	DT	09/12/16 18:08	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



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

Project Name: Kaiser
Work Order: W6I0002
Reported: 14-Sep-16 11:58

Client Sample ID: **KMCP-2B**

SVL Sample ID: **W6I0002-07 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 31-Aug-16 10:05
Received: 01-Sep-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		W636170	APH	09/01/16 11:19	
EPA 335.4	Cyanide (total)	0.0520	mg/L	0.0100	0.0019		W636211	APH	09/02/16 09:56	
SM 4500-CN-I	Cyanide (WAD)	< 0.0100	mg/L	0.0100	0.0026		W636212	APH	09/02/16 10:54	
Anions by Ion Chromatography										
EPA-300.0	Fluoride	0.292	mg/L	0.100	0.018		W638046	DT	09/12/16 18:25	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



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Hydrometrics Inc. - CDA 2736 White Pines Drive Coeur d Alene, ID 83815	Project Name: Kaiser Work Order: W610002 Reported: 14-Sep-16 11:58
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Client Sample ID: **KMCP-5B**

SVL Sample ID: **W610002-10 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 31-Aug-16 09:34
Received: 01-Sep-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		W636170	APH	09/01/16 11:25	
EPA 335.4	Cyanide (total)	0.0510	mg/L	0.0100	0.0019		W636211	APH	09/02/16 10:02	
SM 4500-CN-1	Cyanide (WAD)	< 0.0100	mg/L	0.0100	0.0026		W636212	APH	09/02/16 11:06	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	< 0.100	mg/L	0.100	0.018		W638046	DT	09/12/16 19:15	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



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

Project Name: Kaiser
 Work Order: W610002
 Reported: 14-Sep-16 11:58

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	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	<0.0100	0.0019	0.0100	W636211	02-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	<0.0100	0.0026	0.0100	W636212	02-Sep-16	
Anions by Ion Chromatography								
EPA 300.0	Fluoride	mg/L	<0.100	0.018	0.100	W638046	12-Sep-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	0.149	0.150	99.3	90 - 110	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.146	0.150	97.3	90 - 110	W636211	02-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.147	0.150	98.0	90 - 110	W636212	02-Sep-16	
Anions by Ion Chromatography									
EPA 300.0	Fluoride	mg/L	1.95	2.00	97.3	90 - 110	W638046	12-Sep-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	0.104	<0.0100	0.100	104	79 - 121	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.112	0.0130	0.100	99.0	90 - 110	W636211	02-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.153	0.0520	0.100	101	90 - 110	W636211	02-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.102	<0.0100	0.100	99.0	75 - 125	W636212	02-Sep-16	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	mg/L	2.13	0.107	2.00	101	90 - 110	W638046	12-Sep-16	
EPA 300.0	Fluoride	mg/L	2.04	<0.100	2.00	98.5	90 - 110	W638046	12-Sep-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	0.101	0.104	0.100	101	2.9	11	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.112	0.112	0.100	99.0	0.0	20	W636211	02-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.101	0.102	0.100	98.0	1.0	20	W636212	02-Sep-16	
Anions by Ion Chromatography											
EPA 300.0	Fluoride	mg/L	2.13	2.13	2.00	101	0.1	20	W638046	12-Sep-16	



Hydrometrics Inc. - CDA 2736 White Pines Drive Coeur d Alene, ID 83815	Project Name: Kaiser Work Order: W6H0606 Reported: 09-Sep-16 16:08
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Client Sample ID: KM - 5

SVL Sample ID: W6H0606-01 (Water)

Sample Report Page 1 of 1

Sampled: 25-Aug-16 08:50
Received: 25-Aug-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total Recoverable--reportable as Total per 40 CFR 136)										
EPA 200.7	Iron	25.7	mg/L	0.100	0.020		W636015	AS	09/08/16 12:29	
Metals (Dissolved)										
EPA 200.7	Iron	24.2	mg/L	0.100	0.039		W636018	AS	09/07/16 12:52	
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	1.92	mg/L	0.0250	0.0080	5	W636170	APH	09/01/16 10:51	D2
EPA 335.4	Cyanide (total)	61.5	mg/L	5.00	0.950	500	W636089	APH	08/30/16 12:10	D2
EPA 410.4	Chemical Oxygen Demand	53.8	mg/L	20.0	9.2	4	W637146	SM	09/09/16 15:41	D1
SM 2540 D	Total Susp. Solids	< 5.0	mg/L	5.0			W635230	JDM	08/29/16 14:05	
SM 4500-CN-I	Cyanide (WAD)	2.28	mg/L	0.250	0.0650	25	W635225	APH	08/30/16 12:14	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	46.5	mg/L	1.00	0.180	10	W636258	DJS	09/09/16 08:12	D2
Filtered Anions by Ion Chromatography										
EPA 300.0	Fluoride	45.2	mg/L	2.50	0.450	25	W636225	DT	09/02/16 19:08	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray
Technical Director



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

Project Name: Kaiser
 Work Order: W6H0606
 Reported: 09-Sep-16 16:08

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total Recoverable--reportable as Total per 40 CFR 136)								
EPA 200.7	Iron	mg/L	<0.100	0.020	0.100	W636015	08-Sep-16	
Metals (Dissolved)								
EPA 200.7	Iron	mg/L	<0.100	0.039	0.100	W636018	07-Sep-16	
Classical Chemistry Parameters								
ASTM D7237	Cyanide (free) @ pH 6	mg/L	<0.0100	0.0016	0.0100	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	<0.0100	0.0019	0.0100	W636089	30-Aug-16	
EPA 410.4	Chemical Oxygen Demand	mg/L	<5.0	2.3	5.0	W637146	09-Sep-16	
SM 2540 D	Total Susp. Solids	mg/L	<5.0		5.0	W635230	29-Aug-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	<0.0100	0.0026	0.0100	W635225	30-Aug-16	
Anions by Ion Chromatography								
EPA 300.0	Fluoride	mg/L	<0.100	0.018	0.100	W636258	09-Sep-16	
Filtered Anions by Ion Chromatography								
EPA 300.0	Fluoride	mg/L	<0.100	0.018	0.100	W636225	02-Sep-16	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total Recoverable--reportable as Total per 40 CFR 136)									
EPA 200.7	Iron	mg/L	9.22	10.0	92.2	85 - 115	W636015	08-Sep-16	
Metals (Dissolved)									
EPA 200.7	Iron	mg/L	9.91	10.0	99.1	85 - 115	W636018	07-Sep-16	
Classical Chemistry Parameters									
ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.149	0.150	99.3	90 - 110	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.145	0.150	96.7	90 - 110	W636089	30-Aug-16	
EPA 410.4	Chemical Oxygen Demand	mg/L	107	112	95.3	90 - 110	W637146	09-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.147	0.150	98.0	90 - 110	W635225	30-Aug-16	
Anions by Ion Chromatography									
EPA 300.0	Fluoride	mg/L	1.88	2.00	94.0	90 - 110	W636258	09-Sep-16	
Filtered Anions by Ion Chromatography									
EPA 300.0	Fluoride	mg/L	1.98	2.00	98.9	90 - 110	W636225	02-Sep-16	



Hydrometrics Inc. - CDA 2736 White Pines Drive Coeur d Alene, ID 83815	Project Name: Kaiser Work Order: W6H0606 Reported: 09-Sep-16 16:08
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Quality Control - DUPLICATE Data									
Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes

Classical Chemistry Parameters

SM 2540 D	Total Susp. Solids	mg/L	<5.0	<5.0	UDL	10	W635230	29-Aug-16	
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Quality Control - MATRIX SPIKE Data										
Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes

Metals (Total Recoverable--reportable as Total per 40 CFR 136)

EPA 200.7	Iron	mg/L	34.4	25.7	10.0	86.5	70 - 130	W636015	08-Sep-16	
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Metals (Dissolved)

EPA 200.7	Iron	mg/L	10.0	<0.100	10.0	100	70 - 130	W636018	07-Sep-16	
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Classical Chemistry Parameters

ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.104	<0.0100	0.100	104	79 - 121	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.0960	<0.0100	0.100	93.0	90 - 110	W636089	30-Aug-16	
EPA 410.4	Chemical Oxygen Demand	mg/L	46.9	<5.0	50.0	93.8	90 - 110	W637146	09-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.0980	<0.0100	0.100	95.0	75 - 125	W635225	30-Aug-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.17	0.199	2.00	98.6	90 - 110	W636258	09-Sep-16	
EPA 300.0	Fluoride	mg/L	3.00	1.10	2.00	94.9	90 - 110	W636258	09-Sep-16	

Filtered Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.40	0.352	2.00	102	90 - 110	W636225	02-Sep-16	
EPA 300.0	Fluoride	mg/L	2.48	0.455	2.00	101	90 - 110	W636225	02-Sep-16	

Quality Control - MATRIX SPIKE DUPLICATE Data											
Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes

Metals (Total Recoverable--reportable as Total per 40 CFR 136)

EPA 200.7	Iron	mg/L	34.1	34.4	10.0	84.1	0.7	20	W636015	08-Sep-16	
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Metals (Dissolved)

EPA 200.7	Iron	mg/L	9.80	10.0	10.0	98.0	2.5	20	W636018	07-Sep-16	
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Classical Chemistry Parameters

ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.101	0.104	0.100	101	2.9	11	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.0970	0.0960	0.100	94.0	1.0	20	W636089	30-Aug-16	
EPA 410.4	Chemical Oxygen Demand	mg/L	47.8	46.9	50.0	95.6	1.8	20	W637146	09-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.0920	0.0980	0.100	89.0	6.3	20	W635225	30-Aug-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.27	2.17	2.00	104	4.5	20	W636258	09-Sep-16	
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Filtered Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.42	2.40	2.00	103	0.6	20	W636225	02-Sep-16	
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SVL holds the following certifications:

AZ:0538, CA:2080, ID:ID00019 & ID00965 (Microbiology), NV:ID000192007A, UT(TNI):ID000192015-1, WA:CS573



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

Project Name: Kaiser
Work Order: W6H0606
Reported: 09-Sep-16 16:08

Notes and Definitions

- D1 Sample required dilution due to matrix.
 - 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
-



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

August 14, 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 3rd Quarter 2016 Surface Water Monitoring Activity

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 surface water monitoring activity is identified in the Remedial Action Plan (Exhibit A to the Scope of Work) as Task 3 Little Spokane River Monitoring Program. The following paragraphs describe the monitoring activities conducted by Hydrometrics, Inc. on August 30, 2016.

The weather during sampling was clear and warm. The weather in the last 48 hours had been dry and mild (temperatures in the upper 60's F).

Prior to each sampling event, the field equipment was calibrated using standard buffers and conductivity solutions. The equipment used for pH was the Oakton multi-parameter meter for pH, conductivity and temperature.

The river sample was taken by dropping a stainless steel bucket into the river approximately 5 feet from the bank downstream of the Dartford Road concrete bridge abutment. The bucket was allowed to sink at least 1 foot below the surface before pulling it out of the water.

Spring samples were obtained directly by dipping the sample bottles into the discharge from the springs. At the Rubright spring the sample was taken from the channel in the middle of the yard. At the Dan Lake spring the sample was taken from the pipe discharge from the spring collection pool in the back yard.

Pre cleaned sample bottles were obtained from the analytical laboratory, SVL Analytical. The Total and weak acid dissociable (WAD) Cyanide bottles were 250 milliliter (ml) polyethylene with the appropriate amount of sodium hydroxide (NaOH) provided for addition 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 cooler.

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

All results from the three sample locations were within historical ranges. All QC tests (for all parameters) were within acceptable guidelines.

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

Sincerely,
HYDROMETRICS, INC.

A handwritten signature in black ink, appearing to read 'A. Chavez', with a long horizontal flourish extending to the right.

Antonio Chavez, P.E.
Senior Engineer

Enclosure

Kaiser Mead NPL Surface Water Monitoring

Descriptive Name	Sample Location	Date Sampled	pH Std Units	Conductivity umhos/cm	Temp. Deg. C	Total CN mg/L	WAD CN mg/L	Free CN mg/L	F mg/L
Little Spokane River Samples									
At Darford Rd Bridge	W-24	8/30/2016	7.90	307	16.7	<0.0100	<0.0100	<0.0100	0.107
Springs									
Bill Rubright	W-2326	8/30/2016	8.20	454	12.8	0.350	0.0260	0.0140	0.147
Dan Lake	W-195	8/30/2016	8.00	940	12.7	1.63	0.0630	0.0420	1.34

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

nr - no reading recorded

Project Name: Kaiser Mead
 Project Code: 9088.00, Phase 004
 Sample Team Member(s): Chavez
 Laboratory Used: SVL Analytical

Site Designation: _____
 Sample Code Number: W-24
 Sample Date: 8/30/16
 Sample Time: 1320 (military)

Site Description

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 82 °F

Sampling Location (ID, Description):
N. Dartford Road Bridge across Little Spokane River-downstream
 Water Body (Describe Type):
Little Spokane River

For Surface Water Samples

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

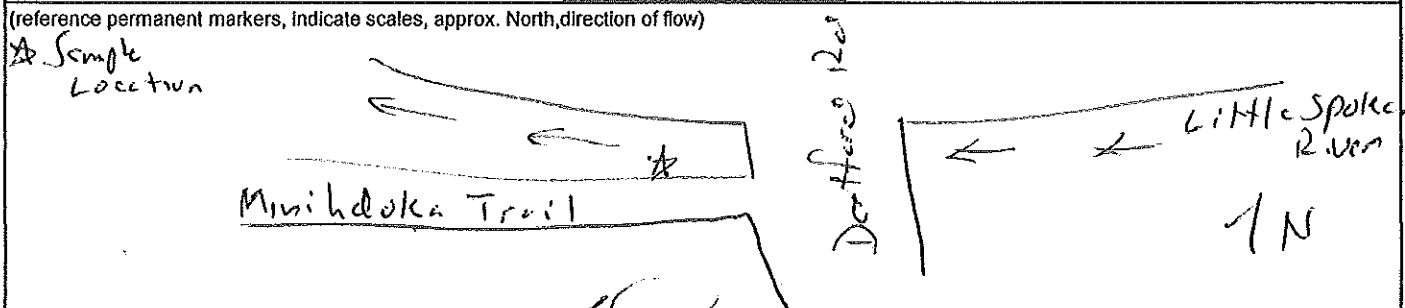
Field Parameters

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
<u>1320</u>			<u>7.9</u>	<u>307</u>		<u>16.7</u>	

Sampling Inventory

Bottles Collected				Filtered	Preservative	Analysis	Remarks
Date/Time	Sample ID	Container (glass/plastic)	Quantity/ Vol.				
	<u>W-24</u>	<u>plastic</u>	<u>250 ml</u>	<u>no</u>	<u>NaOH</u>	<u>Total, WAD CN</u>	
	<u>W-24</u>	<u>plastic</u>	<u>250 ml</u>	<u>no</u>	<u>None</u>	<u>Fluoride</u>	

Sampling Location Map



Sample Team Member Signature: _____

Page 1 of 1

Project Name: Kaiser Mead
 Project Code: 9088.00, Phase 004
 Sample Team Member(s): Chavez
 Laboratory Used: SVL Analytical

Site Designation: _____
 Sample Code Number: W-2326
 Sample Date: 8/30/16
 Sample Time: 1335 (military)

Site Description

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 _____ °F

Sampling Location (ID, Description):
Backyard at 307 W. Koda Ct.

 Water Body (Describe Type):
Flowing spring

For Surface Water Samples

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

 Flow: gpm _____ cfs _____ Staff Gage: _____

Field Parameters

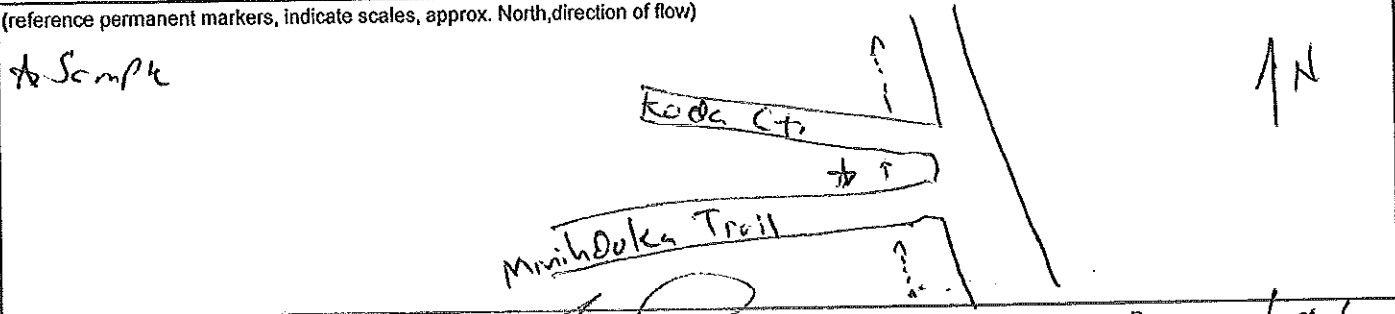
Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
<u>1335</u>			<u>8.2</u>	<u>654</u>		<u>12.8</u>	

Sampling Inventory

Bottles Collected				Filtered	Preservative	Analysis	Remarks
Date/Time	Sample ID	Container (glass/plastic)	Quantity/ Vol.				
	<u>W-2326</u>	<u>plastic</u>	<u>250 ml</u>	<u>no</u>	<u>NaOH</u>	<u>Total, WAD CN</u>	
	<u>W-2326</u>	<u>plastic</u>	<u>250 ml</u>	<u>no</u>	<u>None</u>	<u>Fluoride</u>	

Sampling Location Map

(reference permanent markers, indicate scales, approx. North, direction of flow)



Sample Team Member Signature: [Signature]

Project Name: Kaiser Mead
 Project Code: 9088.00, Phase 004
 Sample Team Member(s): Chavez
 Laboratory Used: SVL Analytical

Site Designation: _____
 Sample Code Number: W-195
 Sample Date: 8/30/16
 Sample Time: 1355 (military)

Site Description

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 83.7 °F

Sampling Location (ID, Description):
 Backyard at 13607 N. Minihdoka Trail

 Water Body (Describe Type):
 Flowing spring into small pond

For Surface Water Samples

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

 Flow: _____ gpm _____ cfs Staff Gage: _____

Field Parameters

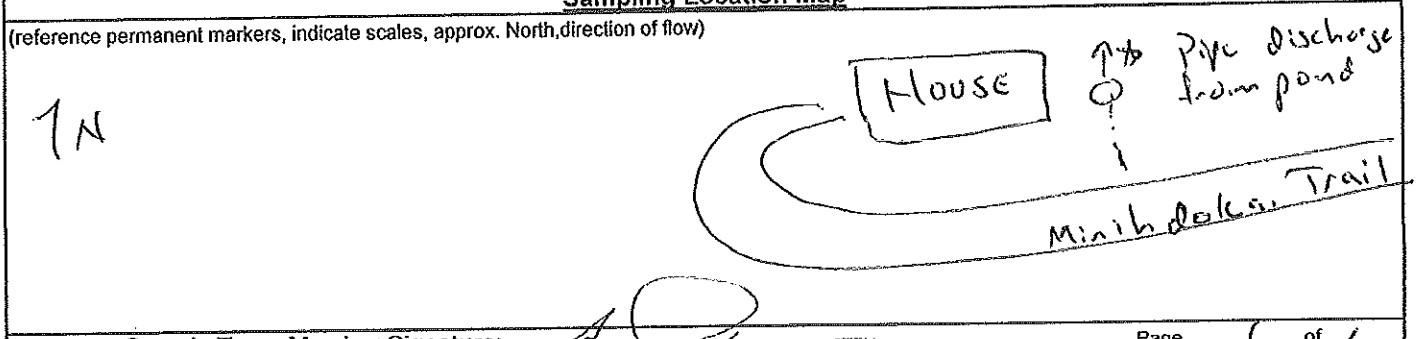
Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1355			8.0	990		12.4	

Sampling Inventory

Bottles Collected				Filtered	Preservative	Analysis	Remarks
Date/Time	Sample ID	Container (glass/plastic)	Quantity/ Vol.				
	W-195	plastic	250 ml	no	NaOH	Total, WAD CN	
	W-195	plastic	250 ml	no	None	Fluoride	

Sampling Location Map

(reference permanent markers, indicate scales, approx. North, direction of flow)



Sample Team Member Signature: 

Page 1 of 1

Work Order: W6H0686
Hydrometrics Inc. - CDA



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



Page 1 of 1

W6H0686
FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 10°C

Report to Company: Hydrometrics
Contact: Terry Chavez
Address: 2736 White Pine Dr.
Coeur d'Alene, ID 83815
Phone Number: 208 660 8548
FAX Number: _____
E-mail: tchavez@hydrometrics.com

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

Table 1 - Matrix Type
1 - Surface Water, 2 - Ground Water
3 - Soil/Sediment, 4 - Rinseate, 5 - Oil
6 - Waste, 7 - Other

Project Name: Kayaker Mead
Sampler's Signature: [Signature]

Indicate State of sample origination: WA

Sample ID	Collection		Misc.	Preservative(s)	Other (Specify)	Analyses Required	Rush Instructions (Days)	Comments
	Date	Time						
1 Please take care to distinguish between: 1 and I 2 and Z 5 and S Ø and O	8/30/16	1320	Ad 1 2 1		NaOH H ₂ SO ₄ HCl HNO ₃ , Unfiltered HNO ₃ , Filtered Unpreserved	Fluoride Total, WAD, Free CN		
2 Thanks!	8/30/16	1335	7 7 7					
3 W1-24		1355						
4 W1-2326								
5 W-195								
6								
7								
8								
9								
10								

Date: 8/30/16 Time: 10:30
Date: 8/31/16 Time: 9:40

Received by: [Signature]
Received by: [Signature]

Date: 8/30/16 Time: 3:30
Date: 8/31/16 Time: 8:10

Received by: [Signature]
Received by: [Signature]

* Sample Reject: Return Dispose Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05



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

Project Name: Kaiser
Work Order: W6H0686
Reported: 14-Sep-16 11:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
W - 24	W6H0686-01	Surface Water	30-Aug-16 13:20	AC	30-Aug-2016	Q6
W - 2326	W6H0686-02	Surface Water	30-Aug-16 13:35	AC	30-Aug-2016	Q6
W - 195	W6H0686-03	Surface Water	30-Aug-16 13:55	AC	30-Aug-2016	Q6

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.

(Q6) SVL received the following containers outside of published EPA guidelines for preservation temperatures (0-6°C).

The guidelines do not pertain to nitric-preserved metals.

Default Cooler (Received Temperature: 10.0°C)

Labnumber	Container	Client ID	Labnumber	Container	Client ID
W6H0686-01 A	Raw HDPE	W - 24	W6H0686-01 B	NaOH HDPE	W - 24
W6H0686-02 A	Raw HDPE	W - 2326	W6H0686-02 B	NaOH HDPE	W - 2326
W6H0686-03 A	Raw HDPE	W - 195	W6H0686-03 B	NaOH HDPE	W - 195



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: W6H0686 Reported: 14-Sep-16 11:55
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Client Sample ID: **W - 24**

SVL Sample ID: **W6H0686-01 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 30-Aug-16 13:20
Received: 30-Aug-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		W636170	APH	09/01/16 10:53	
EPA 335.4	Cyanide (total)	0.0130	mg/L	0.0100	0.0019		W636211	APH	09/02/16 09:30	
SM 4500-CN-1	Cyanide (WAD)	< 0.0100	mg/L	0.0100	0.0026		W636212	APH	09/02/16 10:24	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.107	mg/L	0.100	0.018		W638046	DT	09/12/16 14:09	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



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: W6H0686
Reported: 14-Sep-16 11:55

Client Sample ID: **W - 2326**

SVL Sample ID: **W6H0686-02 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 30-Aug-16 13:35
Received: 30-Aug-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	0.0140	mg/L	0.0100	0.0016		W636170	APH	09/01/16 10:55	
EPA 335.4	Cyanide (total)	0.350	mg/L	0.0200	0.0038	2	W636211	APH	09/02/16 09:32	D2
SM 4500-CN-I	Cyanide (WAD)	0.0260	mg/L	0.0100	0.0026		W636212	APH	09/02/16 10:26	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.147	mg/L	0.100	0.018		W638046	DT	09/12/16 15:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



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

Project Name: Kaiser
Work Order: **W6H0686**
Reported: 14-Sep-16 11:55

Client Sample ID: **W - 195**

SVL Sample ID: **W6H0686-03 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 30-Aug-16 13:55
Received: 30-Aug-16
Sampled By: AC

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
ASTM D7237	Cyanide (free) @ pH 6	0.0420	mg/L	0.0100	0.0016		W636170	APH	09/01/16 10:57	
EPA 335.4	Cyanide (total)	1.63	mg/L	0.100	0.0190	10	W636211	APH	09/02/16 09:34	D2
SM 4500-CN-I	Cyanide (WAD)	0.0630	mg/L	0.0100	0.0026		W636212	APH	09/02/16 10:28	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	1.34	mg/L	0.100	0.018		W638046	DT	09/12/16 15:37	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director



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

Project Name: Kaiser
Work Order: W6H0686
Reported: 14-Sep-16 11:55

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Classical Chemistry Parameters

ASTM D7237	Cyanide (free) @ pH 6	mg/L	<0.0100	0.0016	0.0100	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	<0.0100	0.0019	0.0100	W636211	02-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	<0.0100	0.0026	0.0100	W636212	02-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	<0.100	0.018	0.100	W638046	12-Sep-16	
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Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Classical Chemistry Parameters

ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.149	0.150	99.3	90 - 110	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.146	0.150	97.3	90 - 110	W636211	02-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.147	0.150	98.0	90 - 110	W636212	02-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	1.95	2.00	97.3	90 - 110	W638046	12-Sep-16	
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Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Classical Chemistry Parameters

ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.104	<0.0100	0.100	104	79 - 121	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.112	0.0130	0.100	99.0	90 - 110	W636211	02-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.153	0.0520	0.100	101	90 - 110	W636211	02-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.102	<0.0100	0.100	99.0	75 - 125	W636212	02-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.13	0.107	2.00	101	90 - 110	W638046	12-Sep-16	
EPA 300.0	Fluoride	mg/L	2.04	<0.100	2.00	98.5	90 - 110	W638046	12-Sep-16	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Classical Chemistry Parameters

ASTM D7237	Cyanide (free) @ pH 6	mg/L	0.101	0.104	0.100	101	2.9	11	W636170	01-Sep-16	
EPA 335.4	Cyanide (total)	mg/L	0.112	0.112	0.100	99.0	0.0	20	W636211	02-Sep-16	
SM 4500-CN-I	Cyanide (WAD)	mg/L	0.101	0.102	0.100	98.0	1.0	20	W636212	02-Sep-16	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	2.13	2.13	2.00	101	0.1	20	W638046	12-Sep-16	
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Hydrometrics Inc. - CDA
2736 White Pine Drive
Coeur d Alene, ID 83815

Project Name: Kaiser
Work Order: **W6H0686**
Reported: 14-Sep-16 11:55

Notes and Definitions

- D2 Sample required dilution due to high concentration of target analyte.
 - Q6 Sample was received above recommended temperature.
 - 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
-