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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

Lenora Sullivan Utah Division of Water Quality PO Box 144870 SLC, UT 84114

TEL: (801) 538-6329

RE: Gold King Mine - San Juan River Sampling

Dear Lenora Sullivan: Lab Set ID: 1508303

American West Analytical Laboratories received sample(s) on 8/15/2015 for the analyses presented in the following report.

American West Analytical Laboratories (AWAL) is accredited by The National Environmental Laboratory Accreditation Program (NELAP) in Utah and Texas; and is state accredited in Colorado, Idaho, New Mexico, Wyoming, and Missouri.

All analyses were performed in accordance to the NELAP protocols unless noted otherwise. Accreditation scope documents are available upon request. If you have any questions or concerns regarding this report please feel free to call.

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit. Analytical results are reported to three significant figures for quality control and calculation purposes.

Thank You,	
Approved by:	
	Laboratory Director or designee



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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

INORGANIC ANALYTICAL REPORT

Client: Utah Division of Water Quality Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

Lab Sample ID: 1508303-001

Client Sample ID: San Juan R at Sand Island (4953250)

Collection Date: 8/15/2015 1131h **Received Date:** 8/15/2015 2120h

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/kg-dry	8/19/2015 1231h	8/25/2015 1043h	SW6010C	22.2	129	10,600	²B
Antimony	7440-36-0	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.375	4.13	< 4.13	U
Arsenic	7440-38-2	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.0836	2.58	2.78	
Barium	7440-39-3	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	2.79	4.65	297	2
Beryllium	7440-41-7	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.00614	2.07	0.451	J
Cadmium	7440-43-9	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.0174	0.878	0.170	J
Calcium	7440-70-2	mg/kg-dry	8/19/2015 1231h	8/25/2015 1043h	SW6010C	30.6	1,290	10,500	$^{2}\mathrm{B}$
Chromium	7440-47-3	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	2.51	10.3	9.53	J
Cobalt	7440-48-4	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.157	1.39	3.19	
Copper	7440-50-8	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	1.59	16.0	6.35	J
Iron	7439-89-6	mg/kg-dry	8/19/2015 1231h	8/25/2015 1043h	SW6010C	14.7	64.6	9,630	$^{2}\mathrm{B}$
Lead	7439-92-1	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	3.09	6.71	6.20	J
Magnesium	7439-95-4	mg/kg-dry	8/19/2015 1231h	8/25/2015 1110h	SW6010C	13.6	129	3,120	$^{3}\mathrm{B}$
Manganese	7439-96-5	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.692	4.13	223	3
Mercury	7439-97-6	mg/kg-dry	8/22/2015 1530h	8/24/2015 1126h	SW7471B	0.00160	0.0473	0.00284	J
Molybdenum	7439-98-7	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.368	20.7	< 20.7	U
Nickel	7440-02-0	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	2.26	20.7	4.96	J
Potassium	7440-09-7	mg/kg-dry	8/19/2015 1231h	8/25/2015 1110h	SW6010C	26.2	129	2,540	3
Selenium	7782-49-2	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.563	8.78	< 8.78	U
Silver	7440-22-4	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.0231	1.55	0.0243	J
Sodium	7440-23-5	mg/kg-dry	8/19/2015 1231h	8/25/2015 1110h	SW6010C	9.96	129	277	В
Thallium	7440-28-0	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.00521	4.13	0.131	J
Vanadium	7440-62-2	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	0.532	10.3	22.9	
Zinc	7440-66-6	mg/kg-dry	8/19/2015 1231h	8/20/2015 2131h	SW6020A	5.21	51.6	26.7	J

² - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.

³ - Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

J - Estimated value between the MDL and the reporting limit (PQL).

U - This flag indicates the compound was analyzed for but not detected above the MDL.



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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

INORGANIC ANALYTICAL REPORT

Client: Utah Division of Water Quality Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

Lab Sample ID: 1508303-002

Client Sample ID: San Juan River at Town of Montezuma

Collection Date: 8/15/2015 1030h **Received Date:** 8/15/2015 2120h

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/kg-dry	8/19/2015 1231h	8/25/2015 1054h	SW6010C	23.0	134	14,600	В
Antimony	7440-36-0	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.389	4.28	< 4.28	U
Arsenic	7440-38-2	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.0866	2.67	3.16	
Barium	7440-39-3	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	2.89	4.81	199	
Beryllium	7440-41-7	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.00636	2.14	0.566	J
Cadmium	7440-43-9	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.0180	0.909	0.239	J
Calcium	7440-70-2	mg/kg-dry	8/19/2015 1231h	8/25/2015 1054h	SW6010C	31.7	1,340	11,100	В
Chromium	7440-47-3	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	2.60	10.7	13.9	
Cobalt	7440-48-4	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.162	1.44	4.23	
Copper	7440-50-8	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	1.64	16.6	7.94	J
Iron	7439-89-6	mg/kg-dry	8/19/2015 1231h	8/25/2015 1054h	SW6010C	15.2	66.8	12,100	В
Lead	7439-92-1	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	3.20	6.95	7.46	
Magnesium	7439-95-4	mg/kg-dry	8/19/2015 1231h	8/25/2015 1117h	SW6010C	14.0	134	3,810	В
Manganese	7439-96-5	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.716	4.28	241	
Mercury	7439-97-6	mg/kg-dry	8/22/2015 1530h	8/24/2015 1131h	SW7471B	0.00160	0.0474	0.00569	J
Molybdenum	7439-98-7	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.381	21.4	< 21.4	U
Nickel	7440-02-0	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	2.34	21.4	6.67	J
Potassium	7440-09-7	mg/kg-dry	8/19/2015 1231h	8/25/2015 1117h	SW6010C	27.1	134	3,140	
Selenium	7782-49-2	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.583	9.09	< 9.09	U
Silver	7440-22-4	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.0239	1.60	0.0315	J
Sodium	7440-23-5	mg/kg-dry	8/19/2015 1231h	8/25/2015 1117h	SW6010C	10.3	134	393	В
Thallium	7440-28-0	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.00540	4.28	0.171	J
Vanadium	7440-62-2	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	0.550	10.7	26.7	
Zinc	7440-66-6	mg/kg-dry	8/19/2015 1231h	8/27/2015 1646h	SW6020A	5.40	53.4	33.1	J

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

J - Estimated value between the MDL and the reporting limit (PQL).

U - This flag indicates the compound was analyzed for but not detected above the MDL.



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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

INORGANIC ANALYTICAL REPORT

Client: Utah Division of Water Quality Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

Lab Sample ID: 1508303-003

Client Sample ID: San Juan R at US160 Xing in CO (4954000)

Collection Date: 8/15/2015 943h **Received Date:** 8/15/2015 2120h

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/kg-dry	8/19/2015 1231h	8/25/2015 1056h	SW6010C	23.3	135	12,900	В
Antimony	7440-36-0	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.393	4.33	< 4.33	U
Arsenic	7440-38-2	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.0877	2.71	3.20	
Barium	7440-39-3	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	2.93	4.87	217	
Beryllium	7440-41-7	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.00644	2.16	0.541	J
Cadmium	7440-43-9	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.0182	0.920	0.203	J
Calcium	7440-70-2	mg/kg-dry	8/19/2015 1231h	8/25/2015 1056h	SW6010C	32.1	1,350	9,140	В
Chromium	7440-47-3	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	2.63	10.8	12.1	
Cobalt	7440-48-4	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.164	1.46	4.14	
Copper	7440-50-8	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	1.66	16.8	8.26	J
Iron	7439-89-6	mg/kg-dry	8/19/2015 1231h	8/25/2015 1056h	SW6010C	15.4	67.6	11,900	В
Lead	7439-92-1	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	3.24	7.03	6.99	J
Magnesium	7439-95-4	mg/kg-dry	8/19/2015 1231h	8/25/2015 1119h	SW6010C	14.2	135	3,300	В
Manganese	7439-96-5	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.725	4.33	240	
Mercury	7439-97-6	mg/kg-dry	8/22/2015 1530h	8/24/2015 1133h	SW7471B	0.00157	0.0465	0.00535	J
Molybdenum	7439-98-7	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.385	21.6	< 21.6	U
Nickel	7440-02-0	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	2.36	21.6	6.40	J
Potassium	7440-09-7	mg/kg-dry	8/19/2015 1231h	8/25/2015 1119h	SW6010C	27.5	135	2,660	
Selenium	7782-49-2	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.590	9.20	< 9.20	U
Silver	7440-22-4	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.0242	1.62	0.0339	J
Sodium	7440-23-5	mg/kg-dry	8/19/2015 1231h	8/25/2015 1119h	SW6010C	10.4	135	344	В
Thallium	7440-28-0	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.00547	4.33	0.140	J
Vanadium	7440-62-2	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	0.557	10.8	25.3	
Zinc	7440-66-6	mg/kg-dry	8/19/2015 1231h	8/27/2015 1649h	SW6020A	5.47	54.1	32.0	J

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

J - Estimated value between the MDL and the reporting limit (PQL).

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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

INORGANIC ANALYTICAL REPORT

Client: Utah Division of Water Quality Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

Lab Sample ID: 1508303-004

Client Sample ID: San Juan Riv @ Clay Hill

Collection Date: 8/15/2015 1430h **Received Date:** 8/15/2015 2120h

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/kg-dry	8/19/2015 1231h	8/25/2015 1106h	SW6010C	23.4	136	6,160	В
Antimony	7440-36-0	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.395	4.35	< 4.35	U
Arsenic	7440-38-2	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.0880	2.72	1.50	J
Barium	7440-39-3	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	2.94	4.89	251	
Beryllium	7440-41-7	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.00647	2.17	0.309	J
Cadmium	7440-43-9	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.0183	0.924	0.146	J
Calcium	7440-70-2	mg/kg-dry	8/19/2015 1231h	8/25/2015 1106h	SW6010C	32.2	1,360	16,900	В
Chromium	7440-47-3	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	2.64	10.9	6.31	J
Cobalt	7440-48-4	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.165	1.47	2.07	
Copper	7440-50-8	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	1.67	16.8	2.83	J
Iron	7439-89-6	mg/kg-dry	8/19/2015 1231h	8/25/2015 1106h	SW6010C	15.5	67.9	6,040	В
Lead	7439-92-1	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	3.26	7.07	3.96	J
Magnesium	7439-95-4	mg/kg-dry	8/19/2015 1231h	8/25/2015 1121h	SW6010C	14.3	136	3,550	В
Manganese	7439-96-5	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.728	4.35	176	
Mercury	7439-97-6	mg/kg-dry	8/22/2015 1530h	8/24/2015 1138h	SW7471B	0.00150	0.0445	0.00334	J
Molybdenum	7439-98-7	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.387	21.7	< 21.7	U
Nickel	7440-02-0	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	2.38	21.7	3.68	J
Potassium	7440-09-7	mg/kg-dry	8/19/2015 1231h	8/25/2015 1121h	SW6010C	27.6	136	1,790	
Selenium	7782-49-2	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.592	9.24	< 9.24	U
Silver	7440-22-4	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.0243	1.63	< 1.63	U
Sodium	7440-23-5	mg/kg-dry	8/19/2015 1231h	8/25/2015 1121h	SW6010C	10.5	136	218	В
Thallium	7440-28-0	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.00549	4.35	0.0650	J
Vanadium	7440-62-2	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	0.560	10.9	13.7	
Zinc	7440-66-6	mg/kg-dry	8/19/2015 1231h	8/20/2015 2147h	SW6020A	5.49	54.3	16.5	J

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

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Jose Rocha QA Officer

INORGANIC ANALYTICAL REPORT

Client: Utah Division of Water Quality Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

Lab Sample ID: 1508303-001

Client Sample ID: San Juan R at Sand Island (4953250)

Collection Date: 8/15/2015 1131h **Received Date:** 8/15/2015 2120h

Analytical Results

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Hardness (as CaCO3)		mg/L		8/26/2015 719h	SM2340B	10.0	10.0	39,000	



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Jose Rocha QA Officer

INORGANIC ANALYTICAL REPORT

Client: Utah Division of Water Quality Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

Lab Sample ID: 1508303-002

Client Sample ID: San Juan River at Town of Montezuma

Collection Date: 8/15/2015 1030h **Received Date:** 8/15/2015 2120h

Analytical Results

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Hardness (as CaCO3)		mg/L		8/26/2015 719h	SM2340B	10.0	10.0	43,500	

Report Date: 8/31/2015 Page 7 of 17



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Jose Rocha QA Officer

INORGANIC ANALYTICAL REPORT

Client: Utah Division of Water Quality Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

Lab Sample ID: 1508303-003

Client Sample ID: San Juan R at US160 Xing in CO (4954000)

Collection Date: 8/15/2015 943h **Received Date:** 8/15/2015 2120h

Analytical Results

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Hardness (as CaCO3)		mg/L		8/26/2015 719h	SM2340B	10.0	10.0	36,400	

Report Date: 8/31/2015 Page 8 of 17



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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

INORGANIC ANALYTICAL REPORT

Client: Utah Division of Water Quality Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

Lab Sample ID: 1508303-004

Client Sample ID: San Juan Riv @ Clay Hill **Collection Date:** 8/15/2015 1430h

Received Date: 8/15/2015 2120h

Analytical Results

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Hardness (as CaCO3)		mg/L		8/26/2015 719h	SM2340B	10.0	10.0	56,800	

Report Date: 8/31/2015 Page 9 of 17

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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1508303

Project: Gold King Mine - San Juan River Sampling

Contact: Lenora Sullivan

Dept: ME **QC Type:** LCS

Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:	LCS-38694	Date Analyzed:	08/25/20	15 1038h										
Test Code:	6010C-S	Date Prepared:	08/19/20	15 1231h										
Aluminum		93.7	mg/kg	SW6010C	1.72	10.0	100.0	0	93.7	80 - 120				
Calcium		997	mg/kg	SW6010C	2.37	100	1,000	0	99.7	80 - 120				
Iron		98.1	mg/kg	SW6010C	1.14	5.00	100.0	0	98.1	80 - 120				
Magnesium		925	mg/kg	SW6010C	10.5	100	1,000	0	92.5	80 - 120				
Potassium		910	mg/kg	SW6010C	20.3	100	1,000	0	91.0	80 - 120				
Sodium		947	mg/kg	SW6010C	7.71	100	1,000	0	94.7	80 - 120				
Lab Sample ID:	LCS-38694	Date Analyzed:	08/20/20	15 2051h										
Test Code:	6020-S	Date Prepared:	08/19/20	15 1231h										
Antimony		20.8	mg/kg	SW6020A	0.291	3.20	20.00	0	104	85 - 115				
Arsenic		20.8	mg/kg	SW6020A	0.0648	2.00	20.00	0	104	85 - 115				
Barium		20.5	mg/kg	SW6020A	2.16	3.60	20.00	0	102	85 - 115				
Beryllium		21.4	mg/kg	SW6020A	0.00476	1.60	20.00	0	107	85 - 115				
Cadmium		20.2	mg/kg	SW6020A	0.0135	0.680	20.00	0	101	85 - 115				
Chromium		20.7	mg/kg	SW6020A	1.94	8.00	20.00	0	104	85 - 115				
Cobalt		20.2	mg/kg	SW6020A	0.122	1.08	20.00	0	101	85 - 115				
Copper		21.1	mg/kg	SW6020A	1.23	12.4	20.00	0	106	85 - 115				
Lead		20.8	mg/kg	SW6020A	2.40	5.20	20.00	0	104	85 - 115				
Manganese		20.4	mg/kg	SW6020A	0.536	3.20	20.00	0	102	85 - 115				
Molybdenum		21.0	mg/kg	SW6020A	0.285	16.0	20.00	0	105	85 - 115				
Nickel		20.0	mg/kg	SW6020A	1.75	16.0	20.00	0	100	85 - 115				
Selenium		20.1	mg/kg	SW6020A	0.436	6.80	20.00	0	100	85 - 115				
Silver		20.1	mg/kg	SW6020A	0.0179	1.20	20.00	0	101	85 - 115				
Thallium		20.4	mg/kg	SW6020A	0.00404	3.20	20.00	0	102	85 - 115				
Vanadium		20.7	mg/kg	SW6020A	0.412	8.00	20.00	0	103	85 - 115				
Zinc		104	mg/kg	SW6020A	4.04	40.0	100.0	0	104	85 - 115				



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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1508303

Project: Gold King Mine - San Juan River Sampling

Contact: Lenora Sullivan

Dept: ME **QC Type:** LCS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: LCS-38775	Date Analyzed:	08/24/201	5 1121h										
Test Code: HG-S-7471	B Date Prepared:	08/22/201	5 1530h										
Mercury	0.428	mg/kg	SW7471B	0.00135	0.0400	0.4000	0	107	80 - 120				

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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1508303

Project: Gold King Mine - San Juan River Sampling

Contact: Lenora Sullivan

Dept: ME **QC Type:** MBLK

Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:	MB-38694	Date Analyzed:	08/25/20	15 1037h										
Test Code:	6010C-S	Date Prepared:	08/19/20	15 1231h										
Aluminum		2.09	mg/kg	SW6010C	1.72	10.0								JB
Calcium		74.7	mg/kg	SW6010C	2.37	100								JB
Iron		8.09	mg/kg	SW6010C	1.14	5.00								В
Magnesium		14.0	mg/kg	SW6010C	10.5	100								JB
Potassium		< 100	mg/kg	SW6010C	20.3	100								U
Sodium		11.1	mg/kg	SW6010C	7.71	100								JB
Lab Sample ID:	MB-38694	Date Analyzed:	08/20/20	15 2048h										
Test Code:	6020-S	Date Prepared:	08/19/20	15 1231h										
Antimony		< 3.20	mg/kg	SW6020A	0.291	3.20								U
Arsenic		< 2.00	mg/kg	SW6020A	0.0648	2.00								U
Barium		< 3.60	mg/kg	SW6020A	2.16	3.60								U
Beryllium		< 1.60	mg/kg	SW6020A	0.00476	1.60								U
Cadmium		< 0.680	mg/kg	SW6020A	0.0135	0.680								U
Chromium		< 8.00	mg/kg	SW6020A	1.94	8.00								U
Cobalt		< 1.08	mg/kg	SW6020A	0.122	1.08								U
Copper		< 12.4	mg/kg	SW6020A	1.23	12.4								U
Lead		< 5.20	mg/kg	SW6020A	2.40	5.20								U
Manganese		< 3.20	mg/kg	SW6020A	0.536	3.20								U
Molybdenum		< 16.0	mg/kg	SW6020A	0.285	16.0								U
Nickel		< 16.0	mg/kg	SW6020A	1.75	16.0								U
Selenium		< 6.80	mg/kg	SW6020A	0.436	6.80								U
Silver		< 1.20	mg/kg	SW6020A	0.0179	1.20								U
Thallium		< 3.20	mg/kg	SW6020A	0.00404	3.20								U
Vanadium		< 8.00	mg/kg	SW6020A	0.412	8.00								U
Zinc		< 40.0	mg/kg	SW6020A	4.04	40.0								U



Lab Set ID: 1508303

Project:

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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Contact: Lenora Sullivan

Dept: ME **QC Type:** MBLK

Gold King Mine - San Juan River Sampling

Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: MB-3	-38775 D	Date Analyzed:	08/24/2015 1	119h										
Test Code: HG-S	S-7471B D	Date Prepared:	08/22/2015 1	530h										
Mercury	<	< 0.0400	mg/kg	SW7471B	0.00135	0.0400								U

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

Report Date: 8/31/2015 Page 13 of 17

J - Estimated value between the MDL and the reporting limit (PQL).

U - This flag indicates the compound was analyzed for but not detected above the MDL.

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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1508303

Project: Gold King Mine - San Juan River Sampling

Contact: Lenora Sullivan

Dept: ME **QC Type:** MS

Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
•		Date Analyzed												
Test Code:	6010C-S	Date Prepared	1: 08/19/201	5 1231h										
Aluminum		9,630	mg/kg-dry	SW6010C	25.2	146	146.5	10600	-660	75 - 125				2
Calcium		10,900	mg/kg-dry	SW6010C	34.7	1,460	1,465	10500	26.2	75 - 125				2
Iron		8,630	mg/kg-dry	SW6010C	16.7	73.2	146.5	9630	-684	75 - 125				2
Lab Sample ID:	1508303-001AMS	Date Analyzed	d: 08/25/201	5 1112h										
Test Code:	6010C-S	Date Prepared	1: 08/19/201	5 1231h										
Magnesium		4,190	mg/kg-dry	SW6010C	15.4	146	1,465	3120	72.8	75 - 125				3
Potassium		3,520	mg/kg-dry	SW6010C	29.7	146	1,465	2540	67.1	75 - 125				3
Sodium		1,610	mg/kg-dry	SW6010C	11.3	146	1,465	277	91.1	75 - 125				
Lab Sample ID:	1508303-001AMS	Date Analyzed	d: 08/20/201	5 2134h										
Test Code:	6020-S	Date Prepared	1: 08/19/201	5 1231h										
Antimony		29.9	mg/kg-dry	SW6020A	0.426	4.69	29.29	0	102	75 - 125				
Arsenic		33.0	mg/kg-dry	SW6020A	0.0949	2.93	29.29	2.78	103	75 - 125				
Barium		293	mg/kg-dry	SW6020A	3.17	5.27	29.29	297	-15.1	75 - 125				2
Beryllium		31.8	mg/kg-dry	SW6020A	0.00697	2.34	29.29	0.451	107	75 - 125				
Cadmium		29.7	mg/kg-dry	SW6020A	0.0197	0.996	29.29	0.17	101	75 - 125				
Chromium		38.2	mg/kg-dry	SW6020A	2.85	11.7	29.29	9.53	97.9	75 - 125				
Cobalt		32.0	mg/kg-dry	SW6020A	0.178	1.58	29.29	3.19	98.3	75 - 125				
Copper		35.3	mg/kg-dry	SW6020A	1.80	18.2	29.29	6.35	98.7	75 - 125				
Lead		36.5	mg/kg-dry	SW6020A	3.51	7.62	29.29	6.2	103	75 - 125				
Manganese		227	mg/kg-dry	SW6020A	0.785	4.69	29.29	223	12.9	75 - 125				3
Molybdenum		30.8	mg/kg-dry	SW6020A	0.417	23.4	29.29	0	105	75 - 125				
Nickel		33.8	mg/kg-dry	SW6020A	2.56	23.4	29.29	4.96	98.6	75 - 125				
Selenium		28.6	mg/kg-dry	SW6020A	0.639	9.96	29.29	0	97.5	75 - 125				
Silver		29.6	mg/kg-dry	SW6020A	0.0262	1.76	29.29	0.0243	101	75 - 125				
Thallium		29.9	mg/kg-dry	SW6020A	0.00592	4.69	29.29	0.131	102	75 - 125				
Vanadium		50.1	mg/kg-dry	SW6020A	0.603	11.7	29.29	22.9	93.0	75 - 125				
Zinc		177	mg/kg-dry	SW6020A	5.92	58.6	146.5	26.7	103	75 - 125				

Report Date: 8/31/2015 Page 14 of 17



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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1508303

Project: Gold King Mine - San Juan River Sampling

Contact: Lenora Sullivan

Dept: ME **QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: 1508303-001AMS	Date Analyze	ed: 08/24/201	5 1128h										
Test Code: HG-S-7471B	Date Prepare	d: 08/22/201	5 1530h										
Mercury	0.601	mg/kg-dry	SW7471B	0.00185	0.0549	0.5485	0.00284	109	80 - 120				

² - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.

³ - Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

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Jose Rocha QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1508303

Project: Gold King Mine - San Juan River Sampling

Contact: Lenora Sullivan

Dept: ME **QC Type:** MSD

Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:	1508303-001AMSD	Date Analyze												
Test Code:	6010C-S	Date Prepare	d: 08/19/201	5 1231h										
Aluminum		10,900	mg/kg-dry	SW6010C	25.6	149	149.0	10600	185	75 - 125	9630	12.1	20	2
Calcium		11,900	mg/kg-dry	SW6010C	35.3	1,490	1,490	10500	97.5	75 - 125	10900	9.37	20	
Iron		9,760	mg/kg-dry	SW6010C	17.0	74.5	149.0	9630	86.3	75 - 125	8630	12.3	20	
Lab Sample ID:	1508303-001AMSD	Date Analyze	ed: 08/25/201	5 1114h										
Test Code:	6010C-S	Date Prepare	d: 08/19/201	5 1231h										
Magnesium		4,590	mg/kg-dry	SW6010C	15.6	149	1,490	3120	98.9	75 - 125	4190	9.24	20	
Potassium		3,900	mg/kg-dry	SW6010C	30.2	149	1,490	2540	91.4	75 - 125	3520	10.2	20	
Sodium		1,710	mg/kg-dry	SW6010C	11.5	149	1,490	277	96.0	75 - 125	1610	5.76	20	
Lab Sample ID:	1508303-001AMSD	Date Analyze	ed: 08/20/201	5 2138h										
Test Code:	6020-S	Date Prepare	d: 08/19/201	5 1231h										
Antimony		30.9	mg/kg-dry	SW6020A	0.433	4.77	29.79	0	104	75 - 125	29.9	3.34	20	
Arsenic		33.6	mg/kg-dry	SW6020A	0.0965	2.98	29.79	2.78	103	75 - 125	33	1.69	20	
Barium		302	mg/kg-dry	SW6020A	3.22	5.36	29.79	297	17.7	75 - 125	293	3.26	20	2
Beryllium		32.2	mg/kg-dry	SW6020A	0.00709	2.38	29.79	0.451	106	75 - 125	31.8	1.24	20	
Cadmium		30.4	mg/kg-dry	SW6020A	0.0201	1.01	29.79	0.17	101	75 - 125	29.7	2.11	20	
Chromium		40.0	mg/kg-dry	SW6020A	2.90	11.9	29.79	9.53	102	75 - 125	38.2	4.59	20	
Cobalt		33.2	mg/kg-dry	SW6020A	0.181	1.61	29.79	3.19	101	75 - 125	32	3.83	20	
Copper		36.5	mg/kg-dry	SW6020A	1.83	18.5	29.79	6.35	101	75 - 125	35.3	3.48	20	
Lead		37.8	mg/kg-dry	SW6020A	3.57	7.75	29.79	6.2	106	75 - 125	36.5	3.53	20	
Manganese		265	mg/kg-dry	SW6020A	0.798	4.77	29.79	223	141	75 - 125	227	15.6	20	2
Molybdenum		31.7	mg/kg-dry	SW6020A	0.424	23.8	29.79	0	106	75 - 125	30.8	2.84	20	
Nickel		35.7	mg/kg-dry	SW6020A	2.60	23.8	29.79	4.96	103	75 - 125	33.8	5.35	20	
Selenium		29.7	mg/kg-dry	SW6020A	0.649	10.1	29.79	0	99.8	75 - 125	28.6	4.00	20	
Silver		30.5	mg/kg-dry	SW6020A	0.0267	1.79	29.79	0.0243	102	75 - 125	29.6	2.95	20	
Thallium		30.7	mg/kg-dry	SW6020A	0.00602	4.77	29.79	0.131	103	75 - 125	29.9	2.59	20	
Vanadium		54.0	mg/kg-dry	SW6020A	0.614	11.9	29.79	22.9	104	75 - 125	50.1	7.43	20	
Zinc		185	mg/kg-dry	SW6020A	6.02	59.6	149.0	26.7	107	75 - 125	177	4.52	20	

Report Date: 8/31/2015 Page 16 of 17



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Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Contact:

Lenora Sullivan

Lab Set ID: 1508303

Dept: ME **QC Type:** MSD

Project: Gold King Mine - San Juan River Sampling

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: 1508303-001AMSD	Date Analyze	ed: 08/24/201	5 1129h										
Test Code: HG-S-7471B	Date Prepare	d: 08/22/201	5 1530h										
Mercury	0.516	mg/kg-dry	SW7471B	0.00160	0.0473	0.4729	0.00284	109	80 - 120	0.601	15.2	20	

² - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.

Report Date: 8/31/2015 Page 17 of 17

American West Analytical Laboratories

REVISED: 8/21/2015

Corrections made to collection times for sample #'s 1-3 -RW

WORK O	RDER Summary				Wo	ork Order: 15	508303	Page 1 of 2
Client:	Utah Division of Water Quality				I	Due Date: 8/3	1/2015	
Client ID:	UTD200		Contact:	Lenora Sullivan				
Project:	Gold King Mine - San Juan River Samp	ling	QC Level	l: II+ MDL	V	VO Type: Sta	ndard	
Comments:	QC2+. Evaluated down to the MDL. Inch	ude EDD. CC: J	im Harris and Tris	ha Johnson;		31		
Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1508303-001A	San Juan R at Sand Island (4953250)	8/15/2015 1131h	8/15/2015 2120h	3051A-ICPMS-PR	Solid		DF - MET/Hg	
				6010C-S		V	DF - MET/Hg	
		11 4 4 Aug Aug Aug	-	6 SEL Analytes: AL C.	A FE MG K NA			
				6020-S		✓	DF - MET/Hg	
				17 SEL Analytes: SB A AG TL V ZN	AS BA BE CD CR CO CU P	B MN MO NI SE		
				HARD-2340B			DF - MET/Hg	
				HG-S-7471B	*****		DF - MET/Hg	
				HG-S-PR-B			DF - MET/Hg	
				PMOIST			DF - MET/Hg	
1508303-002A	San Juan River at Town of Montezuma	8/15/2015 1030h	8/15/2015 2120h	.3051A-ICPMS-PR	Solid		DF - MET/Hg	
				6010C-S		✓	DF - MET/Hg	
				6 SEL Analytes: AL C	A FE MG K NA			
				6020-S		✓	DF - MET/Hg	_
				17 SEL Analytes: SB A AG TL V ZN	AS BA BE CD CR CO CU P.	B MN MO NI SE		
				HARD-2340B			DF - MET/Hg	
				HG-S-7471B			DF - MET/Hg	
				HG-S-PR-B			DF - MET/Hg	
		100000000000000000000000000000000000000		PMOIST			DF - MET/Hg	
1508303-003A	San Juan River at US160 Xing in CO (4954000)	8/15/2015 0930h	8/15/2015 2120h	3051A-ICPMS-PR	Solid		DF - MET/Hg	
				6010C-S		✓	DF - MET/Hg	
				6 SEL Analytes: AL C	'A FE MG K NA			
				6020-S		✓	DF - MET/Hg	
				17 SEL Analytes: SB A AG TL V ZN	AS BA BE CD CR CO CU P	B MN MO NI SE		
				HARD-2340B	2017/		DF - MET/Hg	
			***	HG-S-7471B			DF - MET/Hg	
		****		HG-S-PR-B	SI.		DF - MET/Hg	-
				PMOIST			DF - MET/Hg	
Printed: 8/21/2015	FOR LABORATORY USE ONLY [fill out on page 1];	%M RT	CN [T] TAT [T]	OC THOK	HOK	HOK	COC Emailed	

WORK ORDER Summary Work Order: **1508303** Page 2 of 2 **Client:** Utah Division of Water Quality Due Date: 8/31/2015 Sample ID **Client Sample ID Collected Date Received Date** Test Code Sel Storage Matrix 1508303-004A San Juan Riv @ Clay Hill 8/15/2015 1430h 8/15/2015 2120h 3051A-ICPMS-PR Solid DF - MET/Hg 6010C-S DF - MET/Hg 6 SEL Analytes: AL CA FE MG K NA **V** DF - MET/Hg 17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN HARD-2340B DF - MET/Hg HG-S-7471B DF - MET/Hg HG-S-PR-B DF - MET/Hg **PMOIST** DF - MET/Hg

QC 🗀

Per Trish & Johnson
918/15/5
Lab Sample Set # 1508303 American West Analytical Laboratories Chain of Custody Client: Utah Division of Water Quality Contact: Lenora Sullivan Phone: 801-536-4367 Address: PO Box 144870 801-536-4301 QC Level: 2+ Salt Lake City, UT 84114-4870 Fax: lenoras@utah.gov Project Name: Gold King Mine - San Juan River Sampling Email: jamesharris@utah.gov (please copy on results) PO#: Sample ID: Date Sampled Time Comments PBR 8/15/15 SAN JUAN R AT MEXICAN HAT US163 XING (4953000) SAN JUAN R AT SAND ISLAND (4953250) 10 30 field filtered. San Juan River at Town of Montezuma Samples collected rom river monitoring SAN JUAN R AT US160 XING IN CO (4954000) Present on Outer Package following a mine SAN JUAN RU @ CLASS HILL waste dump release. Please flag any Sample collection times concentrations updated 8/19/2015 per email letected loss than RL and at or greater from Trisha Johnson -RW than the MDL with a J qualifier. Please include EDD. Labels and COC Record? Special Instructions: Kyle F. Gross 21:20 8/15/15

~ 21:20 8/15