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LABORATORY IDENTIFICATION NUMBER: 1510566

SECTION 1.

3440 South 700 West
Salt Lake City, UT 84119

CASE NARRATIVE
CHAIN-OF-CUSTODIES

SECTION 2.

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ANALYTICAL REPORTS

SECTION 3.

web: www.awal-labs.com

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Kyle F. Gross
Laboratory Director

INSTRUMENT QC SUMMARIES

Jose Rocha
QA Officer

SECTION 5.

LOGBOOKS, RUNLOGS AND RAW DATA PER
ANALYSIS

Assembled by:

Reviewed by:

Melissa Connolly	Digitally signed by Melissa Connolly DN: cn=Melissa Connolly, o=American West Analytical Laboratories, ou, email=melissa@awa-labs.com, c=US Date: 2015.11.30 17:19:44 -07'00'
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Kyle F. Gross	Digitally signed by Kyle F. Gross Date: 2015.11.30 17:46:37 -07'00'
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SECTION 1.

- ❑ CASE NARRATIVE
- ❑ AWAL CHAIN-OF-CUSTODY
- ❑ CLIENT CHAIN-OF-CUSTODY

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Jose Rocha
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Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

Jim Harris
Utah Division of Water Quality
PO Box 144870
SLC, UT 84114
TEL: (801) 538-6329

RE: Gold King Mine Spill / 01255.1.016.03

Dear Jim Harris:

Lab Set ID: 1510566

American West Analytical Laboratories received sample(s) on 10/27/2015 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,

Kyle F. Gross
Digitally signed
by Kyle F. Gross
Date:
2015.11.30
17:46:58 -07'00'

Approved by:

Laboratory Director or designee

American West Analytical Laboratories

REVISED: 10/28/2015

D

Samples 12 and 13 taken off hold per Brad. -EH

WORK ORDER SUMMARY

Work Order: **1510566** Page 1 of 2
 Due Date: 11/11/2015

Client: Utah Division of Water Quality
 UTD200

Contact: Jim Harris

Project: Gold King Mine Spill / 01255.1-016.03

WO Type: Standard

Comments: Email to lenoras@utah.gov. / CC Brad Martin QC 3+ / 10-28-15 proceed with analysis for Samples #12 & #13, per Brad. Footnote report, pH, TSS, & TDS received outside of hold. Include EDD;

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage
1510566-001A	GK01-ST-01	10/9/2015 1200h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-002A	GK01-ST-02	10/10/2015 0000h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-003A	GK01-ST-03	10/10/2015 1200h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-004A	GK01-ST-04	10/11/2015 0000h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-005A	GK01-ST-05	10/11/2015 1200h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-006A	GK01-ST-06	10/12/2015 0000h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-007A	GK01-ST-07	10/12/2015 1200h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-008A	GK01-ST-08	10/13/2015 0000h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-009A	GK01-ST-09	10/13/2015 1200h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-010A	GK01-ST-10	10/14/2015 0000h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-011A	GK01-ST-11	10/14/2015 1200h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-012A	GK01-ST-12	10/15/2015 0000h	10/27/2015 1525h	300.0-W 2_SEL Analytes: CL SO4	Aqueous	<input checked="" type="checkbox"/>	DF-WC
	3005A-ICPMS-PR					<input type="checkbox"/>	DF-WC
	ALK-W-2320B					<input checked="" type="checkbox"/>	DF-WC
	3_SEL Analytes: ALK ALKB ALKC						
	COND-W-2510B					<input type="checkbox"/>	DF-WC
	HARD-2340B					<input type="checkbox"/>	DF-WC
	NO2/NO3-W-353.2					<input type="checkbox"/>	DF-WC
	PH-4500H+B					<input type="checkbox"/>	DF-WC
	PO4-W-4500PF					<input type="checkbox"/>	DF-WC
	PO4-W-PR					<input type="checkbox"/>	DF-WC
	TDS-W-2540C					<input type="checkbox"/>	DF-WC
	TSS-W-2540D					<input type="checkbox"/>	DF-WC
1510566-013A	GK01-ST-13	10/15/2015 1200h	10/27/2015 1525h	200.7-W 6_SEL Analytes: AL CA FE MG K NA	Aqueous	<input checked="" type="checkbox"/>	DF-Metals
	200.7-W-PR					<input type="checkbox"/>	DF-Metals

WORK ORDER SUMMARY

Client: Utah Division of Water Quality

Work Order: **1510566**

Page 2 of 2

Due Date: 11/11/2015

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage
1510566-013A	GK01-ST-13	10/15/2015 1200h	10/27/2015 1525h	200.8-W	Aqueous	<input checked="" type="checkbox"/>	DF-Metals
<i>17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN</i>							
200.8-W-PR <input type="checkbox"/> DF-Metals							
HG-DW-245.1 <input type="checkbox"/> DF-Metals							
HG-DW-PR <input type="checkbox"/> DF-Metals							
1510566-014A	GK01-ST-14	10/16/2015 0000h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-015A	GK01-ST-15	10/16/2015 1200h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-016A	GK01-ST-16	10/17/2015 0000h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold
1510566-017A	GK01-ST-17	10/17/2015 1200h	10/27/2015 1525h		Aqueous	<input type="checkbox"/>	DF-Hold

Elona Hayward

From: Rebekah Winkler
Sent: Wednesday, October 28, 2015 6:40 AM
To: Elona Hayward
Subject: FW: TechLaw - Gold King Mine samples - samples received 10/27/15
Attachments: Utah COCs 10-23-15.pdf

Take off hold/add analysis for TechLaw's samples received yesterday.

From: Martin, Bradley [mailto:BMartin@TechLawInc.com]
Sent: Wednesday, October 28, 2015 6:29 AM
To: Rebekah Winkler
Subject: TechLaw - Gold King Mine samples - samples received 10/27/15

Hi Rebekah – For the samples received yesterday I would like the following analyzed for total metals:

- GK01-ST-13 10/15/15 1200 ✓
- GK02-ST-13 10/15/15 1200
- GK02-ST-20 10/19/15 0000
- GK02-ST-21 10/19/15 1200
- GK02-ST-22 10/20/15 0000
- GK02-ST-23 10/20/15 1200
- GK02-ST-24 10/21/15 0000
- GK03-ST-13 10/15/15 1200
- GK03-ST-20 10/19/15 0000
- GK03-ST-21 10/19/15 1200
- GK03-ST-22 10/20/15 0000
- GK03-ST-23 10/20/15 1200
- GK03-ST-24 10/21/15 0000
- GK04-ST-13 10/15/15 1200
- GK04-ST-19 10/18/15 1200
- GK04-ST-20 10/19/15 0000
- GK04-ST-21 10/19/15 1200
- GK04-ST-22 10/20/15 0000
- GK04-ST-23 10/20/15 1200
- GK04-ST-24 10/21/15 0000

Also, can we sample the following samples for the nutrient list below (I realize several of the holding time may have expired – it's the nature of this particular sampling method)

- GK01-ST-12 10/15/15 0000 ✓
- GK02-ST-12 10/15/15 0000
- GK03-ST-12 10/15/15 0000
- GK04-ST-12 10/15/15 0000
- GK05-ST-03 10/11/15 1200

Hardness	2340B
Conductivity	SM2510B
Alkalinity	SM2320B
Anions (Carbonate, Bicarbonate, Sulfate and Chloride)	300.0

Nitrate/Nitrite	353.2
Phosphorus, total	4500-PF

TDS	SM2540C	
TSS	SM2540D	
pH		9040C

Thanks, Brad

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Inorganic Case Narrative

Client: Utah Division of Water Quality
Contact: Jim Harris
Project: Gold King Mine Spill / 01255.016.03
Lab Set ID: 1510566

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Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

Sample Receipt Information:

Date of Receipt: 10/27/2015
Date of Collection: 10/9-10/17/2015
Date of Analyses Request: 10/28/2015
Sample Condition: Intact
C-O-C Discrepancies: None

Holding Time and Preservation Requirements: The analysis and preparation of all samples were performed within the method holding times, with the following exceptions: the analyses for test codes PH-4500H+B, TDS-W-2540C, and TSS-W-2540D were received outside of the holding time. All samples were properly preserved.

Preparation and Analysis Requirements: The samples were analyzed following the methods stated on the analytical reports. The requested method of 9040C is equivalent to the reported method of SM4500-H+B for pH analysis. The laboratory reported method SM4500-H+B as it is a method applicable to the CWA (Clean Water Act).

Analytical QC Requirements: All instrument calibration and calibration check requirements were met. All internal standard recoveries met method criterion.

Batch QC Requirements: MB, LCS, MS, MSD, RPD, DUP, PDS, SD:

Method Blanks (MBs): No target analytes were detected above the reporting limits, indicating that the procedure was free from contamination. Vanadium on sample MB-40002 was observed between the MDL and reporting limit.

Laboratory Control Sample (LCSs): All LCS recoveries were within control limits, indicating that the preparation and analysis were in control.

Matrix Spike / Matrix Spike Duplicate (MS/MSD): All percent recoveries and RPDs (Relative Percent Differences) were inside established limits, with the following exceptions:

Sample ID	Analyte	QC	Explanation
1510566-013A	Aluminum	MS/MSD	High analyte concentration
1510566-013A	Antimony	MS/MSD/RPD	Sample matrix interference or sample non-homogeneity
1510566-013A	Barium	MS/MSD/RPD	High analyte concentration
1510566-013A	Calcium	MS/MSD	High analyte concentration
1510566-013A	Iron	MS/MSD/RPD	High analyte concentration



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Jose Rocha
QA Officer

1510566-013A	Magnesium	MS/MSD	Sample matrix interference
1510566-013A	Manganese	MS/MSD/RPD	High analyte concentration
1510566-013A	Molybdenum	MS	Sample matrix interference
1510566-013A	Potassium	MSD	Sample matrix interference
1510566-013A	Sodium	MSD	Sample matrix interference
1510561-018A	Phosphate	MS	Sample matrix interference
1510563-021A	Phosphate	MS/MSD/RPD	High analyte concentration
1510566-012A	Phosphate	MS/MSD/RPD	Sample matrix interference or sample non-homogeneity
1510567-013A	Aluminum	MS/MSD	High analyte concentration
1510567-013A	Antimony	MS/MSD	Sample matrix interference
1510567-013A	Barium	MS	Sample matrix interference
1510567-013A	Calcium	MSD	High analyte concentration
1510567-013A	Iron	MS	High analyte concentration
1510567-013A	Manganese	MSD	Sample matrix interference
1510567-013A	Silver	MSD	High analyte concentration

Duplicate (DUP): The parameters that require a duplicate analysis had RPDs within the control limits, with the following exceptions: the RPDs were outside of the control limits on samples 1510561-018A and 1510566-012A and Total Dissolved Solids and Total Suspended Solids due to suspected sample non-homogeneity or matrix interference.

Post Digestion Spike (PDS): The PDS percent recoveries were within the control limits, with the following exceptions: the PDS percent recoveries for Aluminum on samples 1510566-013APDS and 1510567-013APDS were outside of the control limits due to sample matrix interference.

Serial Dilution (SD): The serial dilution RPDs were within the control limits, with the following exceptions: The analyte concentrations for Antimony, Selenium, and Silver on sample 1510566-013A and for Antimony, Molybdenum, Selenium, Silver, Thallium, and Vanadium on sample 1510567-013A were too low for serial dilution evaluation.

Corrective Action: None required.



SECTION 2.

□ ANALYTICAL REPORTS

- The contract required detection limits (CRDL's) were met.
- There is an analytical report for each sample on the chain-of-custody.
- The results and dates on the analytical reports match the raw data.
- The information on the header of the analytical reports including the field ID's, the sample dates, and the received date match the chain-of-custody.

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Laboratory Director

Jose Rocha
QA Officer



SECTION 3.

❑ BATCH QC REPORTS

❑ METHOD BLANK (MB) REPORTS

- ❑ Raw data matches method blank reports.
- ❑ Any results greater than the contract required detection limit are flagged.

❑ LABORATORY CONTROL SAMPLE (LCS) REPORTS

- ❑ Raw data matches LCS reports.
- ❑ Any results outside the control limits are flagged.

❑ MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD) REPORTS

- ❑ Raw data matches MS/MSD reports.
- ❑ Any results outside the control limits are flagged and qualified.

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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: 1510566
Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris
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-40001													
Date Analyzed:		11/04/2015 1107h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1404h											
Calcium	9.94	mg/L	E200.7	0.0401	1.00	10.00	0	99.4	85 - 115				
Iron	0.993	mg/L	E200.7	0.0767	0.100	1.000	0	99.3	85 - 115				
Magnesium	10.4	mg/L	E200.7	0.0294	1.00	10.00	0	104	85 - 115				
Potassium	10.1	mg/L	E200.7	0.247	1.00	10.00	0	101	85 - 115				
Sodium	10.0	mg/L	E200.7	0.0330	1.00	10.00	0	100	85 - 115				
Lab Sample ID: LCS-40001													
Date Analyzed:		11/04/2015 1630h											
Test Code:		200.7-W											
Date Prepared:		10/29/2015 1404h											
Aluminum	0.987	mg/L	E200.7	0.0237	0.100	1.000	0	98.7	85 - 115				
Lab Sample ID: LCS-40002													
Date Analyzed:		11/03/2015 1647h											
Test Code:		200.8-W											
Date Prepared:		10/29/2015 1404h											
Antimony	0.181	mg/L	E200.8	0.0000366	0.00200	0.2000	0	90.7	85 - 115				
Arsenic	0.203	mg/L	E200.8	0.0000920	0.00200	0.2000	0	101	85 - 115				
Barium	0.192	mg/L	E200.8	0.000538	0.00200	0.2000	0	96.0	85 - 115				
Beryllium	0.204	mg/L	E200.8	0.0000288	0.00200	0.2000	0	102	85 - 115				
Cadmium	0.196	mg/L	E200.8	0.000193	0.000500	0.2000	0	97.9	85 - 115				
Chromium	0.197	mg/L	E200.8	0.00154	0.00200	0.2000	0	98.5	85 - 115				
Cobalt	0.194	mg/L	E200.8	0.0000434	0.00400	0.2000	0	96.8	85 - 115				
Copper	0.196	mg/L	E200.8	0.000692	0.00200	0.2000	0	98.0	85 - 115				
Lead	0.190	mg/L	E200.8	0.000264	0.00200	0.2000	0	95.1	85 - 115				
Manganese	0.196	mg/L	E200.8	0.00153	0.00200	0.2000	0	97.8	85 - 115				
Molybdenum	0.198	mg/L	E200.8	0.000206	0.00200	0.2000	0	99.0	85 - 115				
Nickel	0.194	mg/L	E200.8	0.000754	0.00200	0.2000	0	96.9	85 - 115				
Selenium	0.195	mg/L	E200.8	0.0000634	0.00200	0.2000	0	97.5	85 - 115				
Silver	0.170	mg/L	E200.8	0.0000244	0.00200	0.2000	0	85.2	85 - 115				
Thallium	0.186	mg/L	E200.8	0.0000242	0.00200	0.2000	0	92.9	85 - 115				
Vanadium	0.201	mg/L	E200.8	0.000438	0.00440	0.2000	0	101	85 - 115				
Zinc	0.994	mg/L	E200.8	0.00476	0.00500	1.000	0	99.4	85 - 115				

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. Confidential Business Information: This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



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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: 1510566
Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris
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-40063	Date Analyzed:	11/04/2015	1149h										
Test Code: HG-DW-245.1	Date Prepared:	11/03/2015	1710h										
Mercury	0.00344	mg/L	E245.1	0.00000892	0.000150	0.003330	0	103	85 - 115				

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. Confidential Business Information: This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



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Laboratory Director

Jose Rocha
QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality
Lab Set ID: 1510566
Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris
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-40001													
Date Analyzed: 11/04/2015 1105h													
Test Code: 200.7-W													
Date Prepared: 10/29/2015 1404h													
Calcium	< 1.00	mg/L	E200.7	0.0401	1.00								U
Iron	< 0.100	mg/L	E200.7	0.0767	0.100								U
Magnesium	< 1.00	mg/L	E200.7	0.0294	1.00								U
Potassium	< 1.00	mg/L	E200.7	0.247	1.00								U
Sodium	< 1.00	mg/L	E200.7	0.0330	1.00								U
Lab Sample ID: MB-40001													
Date Analyzed: 11/04/2015 1628h													
Test Code: 200.7-W													
Date Prepared: 10/29/2015 1404h													
Aluminum	< 0.100	mg/L	E200.7	0.0237	0.100								U
Lab Sample ID: MB-40002													
Date Analyzed: 11/03/2015 1644h													
Test Code: 200.8-W													
Date Prepared: 10/29/2015 1404h													
Antimony	< 0.00200	mg/L	E200.8	0.0000366	0.00200								U
Arsenic	< 0.00200	mg/L	E200.8	0.0000920	0.00200								U
Barium	< 0.00200	mg/L	E200.8	0.000538	0.00200								U
Beryllium	< 0.00200	mg/L	E200.8	0.0000288	0.00200								U
Cadmium	< 0.000500	mg/L	E200.8	0.000193	0.000500								U
Chromium	< 0.00200	mg/L	E200.8	0.00154	0.00200								U
Cobalt	< 0.00400	mg/L	E200.8	0.0000434	0.00400								U
Copper	< 0.00200	mg/L	E200.8	0.000692	0.00200								U
Lead	< 0.00200	mg/L	E200.8	0.000264	0.00200								U
Manganese	< 0.00200	mg/L	E200.8	0.00153	0.00200								U
Molybdenum	< 0.00200	mg/L	E200.8	0.000206	0.00200								U
Nickel	< 0.00200	mg/L	E200.8	0.000754	0.00200								U
Selenium	< 0.00200	mg/L	E200.8	0.0000634	0.00200								U
Silver	< 0.00200	mg/L	E200.8	0.0000244	0.00200								U
Thallium	< 0.00200	mg/L	E200.8	0.0000242	0.00200								U
Vanadium	0.00251	mg/L	E200.8	0.000438	0.00440								JB
Zinc	< 0.00500	mg/L	E200.8	0.00476	0.00500								U

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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: 1510566
Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris
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-40063	Date Analyzed:	11/04/2015	1148h										
Test Code: HG-DW-245.1	Date Prepared:	11/03/2015	1710h										
Mercury	< 0.000150	mg/L	E245.1	0.00000892	0.000150								U

B - This analyte was also detected in the method blank below the PQL.

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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Jose Rocha

QA Officer

QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

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: 1510566-013AMS													
Date Analyzed:	11/04/2015 1116h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Calcium	196	mg/L	E200.7	0.401	10.0	10.00	261	-650	70 - 130				2
Iron	34.5	mg/L	E200.7	0.767	1.00	1.000	46.3	-1,190	70 - 130				2
Magnesium	47.8	mg/L	E200.7	0.294	10.0	10.00	51.1	-32.8	70 - 130				1
Potassium	20.1	mg/L	E200.7	2.47	10.0	10.00	12.8	73.2	70 - 130				
Sodium	59.4	mg/L	E200.7	0.330	10.0	10.00	49.7	97.6	70 - 130				
Lab Sample ID: 1510567-013AMS													
Date Analyzed:	11/04/2015 1134h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Calcium	122	mg/L	E200.7	0.401	10.0	10.00	112	100	70 - 130				
Iron	16.3	mg/L	E200.7	0.767	1.00	1.000	15	137	70 - 130				2
Magnesium	35.5	mg/L	E200.7	0.294	10.0	10.00	24.8	107	70 - 130				
Sodium	58.2	mg/L	E200.7	0.330	10.0	10.00	46.9	113	70 - 130				
Lab Sample ID: 1510567-013AMS													
Date Analyzed:	11/04/2015 1149h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Potassium	17.4	mg/L	E200.7	0.247	1.00	10.00	6.51	109	70 - 130				
Lab Sample ID: 1510566-013AMS													
Date Analyzed:	11/04/2015 1635h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Aluminum	36.8	mg/L	E200.7	0.237	1.00	1.000	40.8	-399	70 - 130				2
Lab Sample ID: 1510567-013AMS													
Date Analyzed:	11/04/2015 1643h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Aluminum	22.2	mg/L	E200.7	0.237	1.00	1.000	16.4	586	70 - 130				2
Lab Sample ID: 1510566-013AMS													
Date Analyzed:	11/03/2015 1700h												
Test Code:	200.8-W												
Date Prepared:	10/29/2015 1404h												
Antimony	0.0352	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000857	17.2	75 - 125				1
Arsenic	0.193	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0123	90.6	75 - 125				
Barium	0.922	mg/L	E200.8	0.000538	0.00200	0.2000	1.15	-115	75 - 125				2

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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: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

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: 1510566-013AMS		Date Analyzed:	11/03/2015 1700h										
Test Code: 200.8-W		Date Prepared:	10/29/2015 1404h										
Beryllium	0.189	mg/L	E200.8	0.0000288	0.00200	0.2000	0.00305	93.0	75 - 125				
Cadmium	0.193	mg/L	E200.8	0.000193	0.000500	0.2000	0.00117	96.1	75 - 125				
Chromium	0.211	mg/L	E200.8	0.00154	0.00200	0.2000	0.0287	91.0	75 - 125				
Cobalt	0.203	mg/L	E200.8	0.0000434	0.00400	0.2000	0.0274	87.7	75 - 125				
Copper	0.221	mg/L	E200.8	0.000692	0.00200	0.2000	0.0563	82.3	75 - 125				
Lead	0.216	mg/L	E200.8	0.000264	0.00200	0.2000	0.0461	84.9	75 - 125				
Manganese	1.16	mg/L	E200.8	0.00153	0.00200	0.2000	1.72	-283	75 - 125				2
Molybdenum	0.142	mg/L	E200.8	0.000206	0.00200	0.2000	0.00113	70.4	75 - 125				1
Nickel	0.215	mg/L	E200.8	0.000754	0.00200	0.2000	0.0446	85.3	75 - 125				
Selenium	0.170	mg/L	E200.8	0.0000634	0.00200	0.2000	0.000931	84.6	75 - 125				
Silver	0.187	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000287	93.3	75 - 125				
Thallium	0.179	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000797	89.0	75 - 125				
Vanadium	0.234	mg/L	E200.8	0.000438	0.00440	0.2000	0.0586	87.7	75 - 125				
Zinc	1.06	mg/L	E200.8	0.00476	0.00500	1.000	0.191	86.7	75 - 125				
Lab Sample ID: 1510567-013AMS		Date Analyzed:	11/03/2015 1719h										
Test Code: 200.8-W		Date Prepared:	10/29/2015 1404h										
Antimony	0.0800	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000611	39.7	75 - 125				1
Arsenic	0.198	mg/L	E200.8	0.0000920	0.00200	0.2000	0.00546	96.4	75 - 125				
Barium	0.475	mg/L	E200.8	0.000538	0.00200	0.2000	0.327	73.8	75 - 125				1
Beryllium	0.190	mg/L	E200.8	0.0000288	0.00200	0.2000	0.000991	94.6	75 - 125				
Cadmium	0.191	mg/L	E200.8	0.000193	0.000500	0.2000	0.000313	95.2	75 - 125				
Chromium	0.199	mg/L	E200.8	0.00154	0.00200	0.2000	0.00918	94.9	75 - 125				
Cobalt	0.194	mg/L	E200.8	0.0000434	0.00400	0.2000	0.00708	93.5	75 - 125				
Copper	0.204	mg/L	E200.8	0.000692	0.00200	0.2000	0.0193	92.4	75 - 125				
Lead	0.196	mg/L	E200.8	0.000264	0.00200	0.2000	0.0134	91.2	75 - 125				
Manganese	0.573	mg/L	E200.8	0.00153	0.00200	0.2000	0.416	78.4	75 - 125				
Molybdenum	0.171	mg/L	E200.8	0.000206	0.00200	0.2000	0.00121	84.7	75 - 125				
Nickel	0.197	mg/L	E200.8	0.000754	0.00200	0.2000	0.0112	92.9	75 - 125				

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QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

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: 1510567-013AMS	Date Analyzed: 11/03/2015 1719h													
Test Code:	200.8-W	Date Prepared: 10/29/2015 1404h												
Selenium	0.180	mg/L	E200.8	0.0000634	0.00200	0.2000	0.000975	89.7	75 - 125					
Silver	0.167	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000141	83.3	75 - 125					
Thallium	0.179	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000246	89.4	75 - 125					
Zinc	1.01	mg/L	E200.8	0.00476	0.00500	1.000	0.0539	95.3	75 - 125					
Lab Sample ID: 1510567-013AMS	Date Analyzed: 11/04/2015 1503h													
Test Code:	200.8-W	Date Prepared: 10/29/2015 1404h												
Vanadium	0.214	mg/L	E200.8	0.000438	0.00440	0.2000	0.0249	94.7	75 - 125					
Lab Sample ID: 1510563-007AMS	Date Analyzed: 11/04/2015 1157h													
Test Code:	HG-DW-245.1	Date Prepared: 11/03/2015 1710h												
Mercury	0.00376	mg/L	E245.1	0.00000892	0.000150	0.003330	0.000147	109	80 - 120					
Lab Sample ID: 1510566-013AMS	Date Analyzed: 11/04/2015 1216h													
Test Code:	HG-DW-245.1	Date Prepared: 11/03/2015 1710h												
Mercury	0.00357	mg/L	E245.1	0.00000892	0.000150	0.003330	0.000165	102	80 - 120					
Lab Sample ID: 1510567-013AMS	Date Analyzed: 11/04/2015 1221h													
Test Code:	HG-DW-245.1	Date Prepared: 11/03/2015 1710h												
Mercury	0.00345	mg/L	E245.1	0.00000892	0.000150	0.003330	0.0000133	103	80 - 120					
Lab Sample ID: 1510580-003AMS	Date Analyzed: 11/04/2015 1230h													
Test Code:	HG-DW-245.1	Date Prepared: 11/03/2015 1710h												
Mercury	0.00347	mg/L	E245.1	0.00000892	0.000150	0.003330	0.0000717	102	80 - 120					

¹ - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

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



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QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

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: 1510566-013AMSD													
Date Analyzed:	11/04/2015 1125h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Calcium	162	mg/L	E200.7	0.401	10.0	10.00	261	-987	70 - 130	196	18.8	20	²
Iron	26.1	mg/L	E200.7	0.767	1.00	1.000	46.3	-2,020	70 - 130	34.5	27.5	20	²
Magnesium	41.0	mg/L	E200.7	0.294	10.0	10.00	51.1	-101	70 - 130	47.8	15.3	20	¹
Potassium	19.0	mg/L	E200.7	2.47	10.0	10.00	12.8	61.8	70 - 130	20.1	5.84	20	¹
Sodium	56.6	mg/L	E200.7	0.330	10.0	10.00	49.7	69.8	70 - 130	59.4	4.79	20	¹
Lab Sample ID: 1510567-013AMSD													
Date Analyzed:	11/04/2015 1136h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Calcium	116	mg/L	E200.7	0.401	10.0	10.00	112	41.1	70 - 130	122	4.96	20	²
Iron	16.2	mg/L	E200.7	0.767	1.00	1.000	15	127	70 - 130	16.3	0.614	20	
Magnesium	34.3	mg/L	E200.7	0.294	10.0	10.00	24.8	94.6	70 - 130	35.5	3.62	20	
Sodium	55.4	mg/L	E200.7	0.330	10.0	10.00	46.9	85.3	70 - 130	58.2	4.81	20	
Lab Sample ID: 1510567-013AMSD													
Date Analyzed:	11/04/2015 1151h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Potassium	16.9	mg/L	E200.7	0.247	1.00	10.00	6.51	104	70 - 130	17.4	2.90	20	
Lab Sample ID: 1510566-013AMSD													
Date Analyzed:	11/04/2015 1638h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Aluminum	31.3	mg/L	E200.7	0.237	1.00	1.000	40.8	-952	70 - 130	36.8	16.2	20	²
Lab Sample ID: 1510567-013AMSD													
Date Analyzed:	11/04/2015 1645h												
Test Code:	200.7-W												
Date Prepared:	10/29/2015 1404h												
Aluminum	22.4	mg/L	E200.7	0.237	1.00	1.000	16.4	600	70 - 130	22.2	0.622	20	²
Lab Sample ID: 1510566-013AMSD													
Date Analyzed:	11/03/2015 1712h												
Test Code:	200.8-W												
Date Prepared:	10/29/2015 1404h												
Antimony	0.0485	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000857	23.8	75 - 125	0.0352	31.8	20	¹ @
Arsenic	0.196	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0123	91.9	75 - 125	0.193	1.37	20	
Barium	0.718	mg/L	E200.8	0.000538	0.00200	0.2000	1.15	-217	75 - 125	0.922	24.9	20	²

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QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

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: 1510566-013AMSD		Date Analyzed:	11/03/2015 1712h										
Test Code: 200.8-W		Date Prepared:	10/29/2015 1404h										
Beryllium	0.191	mg/L	E200.8	0.0000288	0.00200	0.2000	0.00305	94.1	75 - 125	0.189	1.17	20	
Cadmium	0.193	mg/L	E200.8	0.000193	0.000500	0.2000	0.00117	96.0	75 - 125	0.193	0.0550	20	
Chromium	0.208	mg/L	E200.8	0.00154	0.00200	0.2000	0.0287	89.7	75 - 125	0.211	1.25	20	
Cobalt	0.200	mg/L	E200.8	0.0000434	0.00400	0.2000	0.0274	86.2	75 - 125	0.203	1.46	20	
Copper	0.215	mg/L	E200.8	0.000692	0.00200	0.2000	0.0563	79.1	75 - 125	0.221	2.95	20	
Lead	0.208	mg/L	E200.8	0.000264	0.00200	0.2000	0.0461	80.7	75 - 125	0.216	3.98	20	
Manganese	0.844	mg/L	E200.8	0.00153	0.00200	0.2000	1.72	-439	75 - 125	1.16	31.1	20	2
Molybdenum	0.153	mg/L	E200.8	0.000206	0.00200	0.2000	0.00113	76.1	75 - 125	0.142	7.81	20	
Nickel	0.207	mg/L	E200.8	0.000754	0.00200	0.2000	0.0446	81.1	75 - 125	0.215	4.02	20	
Selenium	0.177	mg/L	E200.8	0.0000634	0.00200	0.2000	0.000931	88.0	75 - 125	0.17	3.91	20	
Silver	0.163	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000287	81.3	75 - 125	0.187	13.7	20	
Thallium	0.180	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000797	89.8	75 - 125	0.179	0.886	20	
Zinc	1.04	mg/L	E200.8	0.00476	0.00500	1.000	0.191	85.1	75 - 125	1.06	1.51	20	
Lab Sample ID: 1510567-013AMSD		Date Analyzed:	11/03/2015 1722h										
Test Code: 200.8-W		Date Prepared:	10/29/2015 1404h										
Antimony	0.0853	mg/L	E200.8	0.0000366	0.00200	0.2000	0.000611	42.4	75 - 125	0.08	6.47	20	1
Arsenic	0.201	mg/L	E200.8	0.0000920	0.00200	0.2000	0.00546	97.7	75 - 125	0.198	1.28	20	
Barium	0.478	mg/L	E200.8	0.000538	0.00200	0.2000	0.327	75.1	75 - 125	0.475	0.561	20	
Beryllium	0.189	mg/L	E200.8	0.0000288	0.00200	0.2000	0.000991	94.1	75 - 125	0.19	0.466	20	
Cadmium	0.191	mg/L	E200.8	0.000193	0.000500	0.2000	0.000313	95.4	75 - 125	0.191	0.120	20	
Chromium	0.199	mg/L	E200.8	0.00154	0.00200	0.2000	0.00918	94.7	75 - 125	0.199	0.244	20	
Cobalt	0.193	mg/L	E200.8	0.0000434	0.00400	0.2000	0.00708	92.9	75 - 125	0.194	0.579	20	
Copper	0.204	mg/L	E200.8	0.000692	0.00200	0.2000	0.0193	92.4	75 - 125	0.204	0.0726	20	
Lead	0.197	mg/L	E200.8	0.000264	0.00200	0.2000	0.0134	92.0	75 - 125	0.196	0.821	20	
Manganese	0.557	mg/L	E200.8	0.00153	0.00200	0.2000	0.416	70.2	75 - 125	0.573	2.88	20	1
Molybdenum	0.171	mg/L	E200.8	0.000206	0.00200	0.2000	0.00121	85.0	75 - 125	0.171	0.369	20	
Nickel	0.197	mg/L	E200.8	0.000754	0.00200	0.2000	0.0112	92.9	75 - 125	0.197	0.0106	20	
Selenium	0.182	mg/L	E200.8	0.0000634	0.00200	0.2000	0.000975	90.4	75 - 125	0.18	0.693	20	

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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: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

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: 1510567-013AMSD	Date Analyzed: 11/03/2015 1722h													
Test Code:	200.8-W	Date Prepared: 10/29/2015 1404h												
Silver	0.149	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000141	74.5	75 - 125	0.167	11.2	20	²	
Thallium	0.180	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000246	89.8	75 - 125	0.179	0.433	20		
Zinc	1.01	mg/L	E200.8	0.00476	0.00500	1.000	0.0539	95.2	75 - 125	1.01	0.0722	20		
Lab Sample ID: 1510567-013AMSD	Date Analyzed: 11/04/2015 1507h													
Test Code:	200.8-W	Date Prepared: 10/29/2015 1404h												
Vanadium	0.213	mg/L	E200.8	0.000438	0.00440	0.2000	0.0249	94.0	75 - 125	0.219	2.82	20		
Lab Sample ID: 1510566-013AMSD	Date Analyzed: 11/04/2015 1519h													
Test Code:	200.8-W	Date Prepared: 10/29/2015 1404h												
Vanadium	0.263	mg/L	E200.8	0.000438	0.00440	0.2000	0.0586	102	75 - 125	0.234	11.8	20		
Lab Sample ID: 1510563-007AMSD	Date Analyzed: 11/04/2015 1158h													
Test Code:	HG-DW-245.1	Date Prepared: 11/03/2015 1710h												
Mercury	0.00378	mg/L	E245.1	0.00000892	0.000150	0.003330	0.000147	109	80 - 120	0.00376	0.574	20		
Lab Sample ID: 1510566-013AMSD	Date Analyzed: 11/04/2015 1218h													
Test Code:	HG-DW-245.1	Date Prepared: 11/03/2015 1710h												
Mercury	0.00351	mg/L	E245.1	0.00000892	0.000150	0.003330	0.000165	101	80 - 120	0.00357	1.69	20		
Lab Sample ID: 1510567-013AMSD	Date Analyzed: 11/04/2015 1223h													
Test Code:	HG-DW-245.1	Date Prepared: 11/03/2015 1710h												
Mercury	0.00338	mg/L	E245.1	0.00000892	0.000150	0.003330	0.0000133	101	80 - 120	0.00345	1.90	20		
Lab Sample ID: 1510580-003AMSD	Date Analyzed: 11/04/2015 1232h													
Test Code:	HG-DW-245.1	Date Prepared: 11/03/2015 1710h												
Mercury	0.00366	mg/L	E245.1	0.00000892	0.000150	0.003330	0.0000717	108	80 - 120	0.00347	5.24	20		

@ - High RPD due to suspected sample non-homogeneity or matrix interference.

¹ - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

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

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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: 1510566
Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris
Dept: WC
QC Type: DUP

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: 1510561-018ADUP Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	899	µmhos/cm	SM2510B	0.436	2.00					898	0.111	5	
Lab Sample ID: 1510563-006ADUP Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	925	µmhos/cm	SM2510B	0.436	2.00					927	0.216	5	
Lab Sample ID: 1510566-012ADUP Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	909	µmhos/cm	SM2510B	0.436	2.00					907	0.220	5	
Lab Sample ID: 1510567-012ADUP Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	890	µmhos/cm	SM2510B	0.436	2.00					891	0.112	5	
Lab Sample ID: 1510561-018ADUP Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	6.99	pH Units	SM4500-H+B	1.00	1.00					7.04	0.713	5	H
Lab Sample ID: 1510563-006ADUP Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	7.47	pH Units	SM4500-H+B	1.00	1.00					7.5	0.401	5	H
Lab Sample ID: 1510563-021ADUP Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	7.53	pH Units	SM4500-H+B	1.00	1.00					7.52	0.133	5	H
Lab Sample ID: 1510566-012ADUP Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	7.40	pH Units	SM4500-H+B	1.00	1.00					7.39	0.135	5	H

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Jose Rocha
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QC SUMMARY REPORT

Client: Utah Division of Water Quality
Lab Set ID: 1510566
Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris
Dept: WC
QC Type: DUP

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: 1510567-012ADUP Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	7.49	pH Units	SM4500-H+B	1.00	1.00					7.45	0.535	5	H
Lab Sample ID: 1510561-018ADUP Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	600	mg/L	SM2540C	61.3	100					700	15.4	5	H@
Lab Sample ID: 1510563-021ADUP Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	980	mg/L	SM2540C	61.3	100					1000	2.02	5	H
Lab Sample ID: 1510566-012ADUP Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	680	mg/L	SM2540C	61.3	100					900	27.8	5	H@
Lab Sample ID: 1510567-012ADUP Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	780	mg/L	SM2540C	61.3	100					760	2.60	5	H
Lab Sample ID: 1510561-018ADUP Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	918	mg/L	SM2540D	14.2	15.0					1020	10.1	5	H@
Lab Sample ID: 1510563-021ADUP Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	58,100	mg/L	SM2540D	142	150					59300	2.04	5	H
Lab Sample ID: 1510566-012ADUP Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	16,100	mg/L	SM2540D	47.2	50.0					14500	10.6	5	H@

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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: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

Dept: WC

QC Type: DUP

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID: 1510567-012ADUP													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	1,840	mg/L	SM2540D	35.4	37.5					1930	4.79	5	H
Lab Sample ID: 1510580-001CDUP													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	2,960	mg/L	SM2540D	70.8	75.0					2820	4.84	5	

@ - High RPD due to suspected sample non-homogeneity or matrix interference.

H - Sample was received outside of the holding time.



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QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

Dept: WC

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-R84575													
Date Analyzed: 10/29/2015 1319h													
Test Code: 300.0-W													
Chloride	4.87	mg/L	E300.0	0.00751	0.100	5.000	0	97.4	90 - 110				
Sulfate	4.94	mg/L	E300.0	0.0211	0.750	5.000	0	98.8	90 - 110				
Lab Sample ID: LCS-R84502													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	49,900	mg/L	SM2320B	1.86	10.0	50,000	0	99.7	90 - 110				
Lab Sample ID: LCS-R84497													
Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	995	µmhos/cm	SM2510B	0.436	2.00	1,000	0	99.5	98 - 102				
Lab Sample ID: LCS-R84886													
Date Analyzed: 11/06/2015 2036h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	1.02	mg/L	E353.2	0.00833	0.0100	1.000	0	102	90 - 110				
Lab Sample ID: LCS-R84485													
Date Analyzed: 10/28/2015 1814h													
Test Code: PH-4500H+B													
pH @ 25° C	8.91	pH Units	SM4500-H+B	1.00	1.00	9.000	0	99.0	98 - 102				
Lab Sample ID: LCS-40037													
Date Analyzed: 11/02/2015 1646h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	0.991	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0	99.1	90 - 110				
Lab Sample ID: LCS-R84570													
Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	186	mg/L	SM2540C	6.13	10.0	205.0	0	90.7	80 - 120				
Lab Sample ID: LCS-R84566													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	95.0	mg/L	SM2540D	2.83	3.00	100.0	0	95.0	80 - 120				

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QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

Dept: WC

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-R84575													
Date Analyzed: 10/29/2015 1303h													
Test Code: 300.0-W													
Chloride	< 0.100	mg/L	E300.0	0.00751	0.100								U
Sulfate	< 0.750	mg/L	E300.0	0.0211	0.750								U
Lab Sample ID: MB-R84502													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	< 10.0	mg/L	SM2320B	1.86	10.0								U
Bicarbonate (as CaCO3)	< 10.0	mg/L	SM2320B	1.86	10.0								U
Carbonate (as CaCO3)	< 10.0	mg/L	SM2320B	1.86	10.0								U
Lab Sample ID: MB-R84497													
Date Analyzed: 10/29/2015 750h													
Test Code: COND-W-2510B													
Conductivity	< 2.00	µmhos/cm	SM2510B	0.436	2.00								U
Lab Sample ID: MB-R84886													
Date Analyzed: 11/06/2015 2035h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	< 0.0100	mg/L	E353.2	0.00833	0.0100								U
Lab Sample ID: MB-40037													
Date Analyzed: 11/02/2015 1645h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	< 0.0500	mg/L	SM4500-P-F	0.0212	0.0500								U
Lab Sample ID: MB-R84570													
Date Analyzed: 10/29/2015 1110h													
Test Code: TDS-W-2540C													
Total Dissolved Solids	< 10.0	mg/L	SM2540C	6.13	10.0								U
Lab Sample ID: MB-R84566													
Date Analyzed: 10/29/2015 1430h													
Test Code: TSS-W-2540D													
Total Suspended Solids	< 3.00	mg/L	SM2540D	2.83	3.00								U

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

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QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

Dept: WC

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: 1510561-018AMS													
Date Analyzed: 10/29/2015 2111h													
Test Code: 300.0-W													
Chloride	499	mg/L	E300.0	0.751	10.0	500.0	15.8	96.7	90 - 110				
Sulfate	697	mg/L	E300.0	2.11	75.0	500.0	207	98.1	90 - 110				
Lab Sample ID: 1510563-006AMS													
Date Analyzed: 10/29/2015 2202h													
Test Code: 300.0-W													
Chloride	496	mg/L	E300.0	0.751	10.0	500.0	14.7	96.4	90 - 110				
Sulfate	630	mg/L	E300.0	2.11	75.0	500.0	141	97.9	90 - 110				
Lab Sample ID: 1510566-012AMS													
Date Analyzed: 10/30/2015 033h													
Test Code: 300.0-W													
Chloride	498	mg/L	E300.0	0.751	10.0	500.0	15.7	96.4	90 - 110				
Sulfate	689	mg/L	E300.0	2.11	75.0	500.0	202	97.5	90 - 110				
Lab Sample ID: 1510567-012AMS													
Date Analyzed: 10/30/2015 124h													
Test Code: 300.0-W													
Chloride	502	mg/L	E300.0	0.751	10.0	500.0	17.6	96.9	90 - 110				
Sulfate	696	mg/L	E300.0	2.11	75.0	500.0	205	98.3	90 - 110				
Lab Sample ID: 1510561-018AMS													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	193	mg/L	SM2320B	1.86	10.0	100.0	94.6	98.1	80 - 120				
Lab Sample ID: 1510563-006AMS													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	208	mg/L	SM2320B	1.86	10.0	100.0	110	98.0	80 - 120				
Lab Sample ID: 1510566-012AMS													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	260	mg/L	SM2320B	1.86	10.0	100.0	156	105	80 - 120				

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QC SUMMARY REPORT

Client: Utah Division of Water Quality

Lab Set ID: 1510566

Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris

Dept: WC

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: 1510567-012AMS													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	189	mg/L	SM2320B	1.86	10.0	100.0	87.9	101	80 - 120				
Lab Sample ID: 1510580-001CMS													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO3)	238	mg/L	SM2320B	1.86	10.0	100.0	137	101	80 - 120				
Lab Sample ID: 1510563-021AMS													
Date Analyzed: 11/06/2015 2057h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	122	mg/L	E353.2	0.833	1.00	100.0	18.6	103	90 - 110				
Lab Sample ID: 1510561-018AMS													
Date Analyzed: 11/02/2015 1705h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	1.54	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0.67	86.7	90 - 110				1
Lab Sample ID: 1510566-012AMS													
Date Analyzed: 11/02/2015 1718h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	4.32	mg/L	SM4500-P-F	0.0212	0.0500	1.000	3.8	52.3	90 - 110				1
Lab Sample ID: 1510567-012AMS													
Date Analyzed: 11/02/2015 1724h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	1.46	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0.545	92.0	90 - 110				
Lab Sample ID: 1510563-021AMS													
Date Analyzed: 11/02/2015 1746h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	12.9	mg/L	SM4500-P-F	0.212	0.500	1.000	11.5	138	90 - 110				2

¹ - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

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



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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: 1510566
Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris
Dept: WC
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: 1510561-018AMSD Date Analyzed: 10/29/2015 2128h													
Test Code: 300.0-W													
Chloride	495	mg/L	E300.0	0.751	10.0	500.0	15.8	95.9	90 - 110	499	0.765	20	
Sulfate	696	mg/L	E300.0	2.11	75.0	500.0	207	97.7	90 - 110	697	0.280	20	
Lab Sample ID: 1510563-006AMSD Date Analyzed: 10/29/2015 2219h													
Test Code: 300.0-W													
Chloride	496	mg/L	E300.0	0.751	10.0	500.0	14.7	96.4	90 - 110	496	0.00316	20	
Sulfate	629	mg/L	E300.0	2.11	75.0	500.0	141	97.6	90 - 110	630	0.265	20	
Lab Sample ID: 1510566-012AMSD Date Analyzed: 10/30/2015 050h													
Test Code: 300.0-W													
Chloride	497	mg/L	E300.0	0.751	10.0	500.0	15.7	96.3	90 - 110	498	0.164	20	
Sulfate	689	mg/L	E300.0	2.11	75.0	500.0	202	97.4	90 - 110	689	0.0439	20	
Lab Sample ID: 1510567-012AMSD Date Analyzed: 10/30/2015 141h													
Test Code: 300.0-W													
Chloride	497	mg/L	E300.0	0.751	10.0	500.0	17.6	95.8	90 - 110	502	1.08	20	
Sulfate	692	mg/L	E300.0	2.11	75.0	500.0	205	97.5	90 - 110	696	0.590	20	
Lab Sample ID: 1510561-018AMSD Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO ₃)	196	mg/L	SM2320B	1.86	10.0	100.0	94.6	101	80 - 120	193	1.70	10	
Lab Sample ID: 1510563-006AMSD Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO ₃)	213	mg/L	SM2320B	1.86	10.0	100.0	110	103	80 - 120	208	2.38	10	
Lab Sample ID: 1510566-012AMSD Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO ₃)	257	mg/L	SM2320B	1.86	10.0	100.0	156	101	80 - 120	260	1.31	10	

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. Confidential Business Information: This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



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QC SUMMARY REPORT

Client: Utah Division of Water Quality
Lab Set ID: 1510566
Project: Gold King Mine Spill / 01255.1.016.03

Contact: Jim Harris
Dept: WC
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: 1510567-012AMSD													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO ₃)	186	mg/L	SM2320B	1.86	10.0	100.0	87.9	98.0	80 - 120	189	1.81	10	
Lab Sample ID: 1510580-001CMSD													
Date Analyzed: 10/29/2015 824h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO ₃)	237	mg/L	SM2320B	1.86	10.0	100.0	137	99.7	80 - 120	238	0.716	10	
Lab Sample ID: 1510563-021AMSD													
Date Analyzed: 11/06/2015 2058h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	121	mg/L	E353.2	0.833	1.00	100.0	18.6	103	90 - 110	122	0.493	10	
Lab Sample ID: 1510561-018AMSD													
Date Analyzed: 11/02/2015 1706h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	1.60	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0.67	92.8	90 - 110	1.54	3.89	10	
Lab Sample ID: 1510566-012AMSD													
Date Analyzed: 11/02/2015 1719h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	3.20	mg/L	SM4500-P-F	0.0212	0.0500	1.000	3.8	-60.1	90 - 110	4.33	29.9	10	¹ @
Lab Sample ID: 1510567-012AMSD													
Date Analyzed: 11/02/2015 1724h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	1.52	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0.545	97.3	90 - 110	1.47	3.55	10	
Lab Sample ID: 1510563-021AMSD													
Date Analyzed: 11/02/2015 1746h													
Test Code: PO4-W-4500PF													
Date Prepared: 11/02/2015 1400h													
Phosphate, Total (as P)	11.6	mg/L	SM4500-P-F	0.212	0.500	1.000	11.5	14.0	90 - 110	12.9	10.1	10	²

@ - High RPD due to suspected sample non-homogeneity or matrix interference.

¹ - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

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