ANALYTICAL REPORT

November 03, 2017

Weston Solutions - CO

Sample Delivery Group:	L946864
Samples Received:	10/27/2017
Project Number:	
Description:	Jumbo Mine
Report To:	Joe Rudi 1435 Garrison St., Ste 100 Denver, CO 80215

Entire Report Reviewed By:

Shane Gambill
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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JM-TREATED-10252017 L946864-01 GW

Collected by	Collected date/time	Received date/time
	10/25/17 13:52	10/27/17 08:22

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG1037865	1	11/01/17 22:10	11/02/17 11:51	ABL
Mercury by Method 7470A	WG1037867	1	11/01/17 22:12	11/03/17 03:33	EL
Metals (ICP) by Method 6010B	WG1037237	1	11/01/17 11:34	11/01/17 18:24	ST
Metals (ICP) by Method 6010B	WG1037241	1	10/31/17 15:07	11/01/17 01:56	TRB
Metals (ICPMS) by Method 6020	WG1037281	1	10/31/17 15:44	11/01/17 13:00	LAT
Metals (ICPMS) by Method 6020	WG1037292	1	11/01/17 22:23	11/02/17 16:43	LAT

JM-ADIT-10252017 L946864-02 GW

Collected by	Collected date/time	Received date/time
	10/25/17 14:28	10/27/17 08:22

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7470A	WG1037865	1	11/01/17 22:10	11/02/17 11:53	ABL
Mercury by Method 7470A	WG1037867	1	11/01/17 22:12	11/03/17 03:41	EL
Metals (ICP) by Method 6010B	WG1037237	1	11/01/17 11:34	11/01/17 17:00	ST
Metals (ICP) by Method 6010B	WG1037241	1	10/31/17 15:07	11/01/17 01:59	TRB
Metals (ICPMS) by Method 6020	WG1037281	1	10/31/17 15:44	11/01/17 13:03	LAT
Metals (ICPMS) by Method 6020	WG1037292	1	11/01/17 22:23	11/02/17 16:47	LAT

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Shane Gambill
Technical Service Representative

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.0490	0.200	1	11/02/2017 11:51	WG1037865
Mercury,Dissolved	U		0.0490	0.200	1	11/03/2017 03:33	WG1037867

Metals (ICP) by Method 6010B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Aluminum	48.0	J	35.0	200	1	11/01/2017 18:24	WG1037237
Aluminum,Dissolved	38.4	J	35.0	200	1	11/01/2017 01:56	WG1037241
Arsenic	U		6.50	10.0	1	11/01/2017 18:24	WG1037237
Arsenic,Dissolved	U		6.50	10.0	1	11/01/2017 01:56	WG1037241
Barium	19.0		1.70	5.00	1	11/01/2017 18:24	WG1037237
Barium,Dissolved	18.1		1.70	5.00	1	11/01/2017 01:56	WG1037241
Beryllium	U		0.700	2.00	1	11/01/2017 18:24	WG1037237
Beryllium,Dissolved	0.754	J	0.700	2.00	1	11/01/2017 01:56	WG1037241
Cadmium	14.9		0.700	2.00	1	11/01/2017 18:24	WG1037237
Cadmium,Dissolved	14.9		0.700	2.00	1	11/01/2017 01:56	WG1037241
Calcium	18300		46.3	1000	1	11/01/2017 18:24	WG1037237
Calcium,Dissolved	18800		46.3	1000	1	11/01/2017 01:56	WG1037241
Chromium	U		1.40	10.0	1	11/01/2017 18:24	WG1037237
Chromium,Dissolved	U		1.40	10.0	1	11/01/2017 01:56	WG1037241
Cobalt	U		2.30	10.0	1	11/01/2017 18:24	WG1037237
Cobalt,Dissolved	U		2.30	10.0	1	11/01/2017 01:56	WG1037241
Copper	116		5.30	10.0	1	11/01/2017 18:24	WG1037237
Copper,Dissolved	99.3		5.30	10.0	1	11/01/2017 01:56	WG1037241
Iron	957		14.1	100	1	11/01/2017 18:24	WG1037237
Iron,Dissolved	139		14.1	100	1	11/01/2017 01:56	WG1037241
Magnesium	2590		11.1	1000	1	11/01/2017 18:24	WG1037237
Magnesium,Dissolved	2650		11.1	1000	1	11/01/2017 01:56	WG1037241
Manganese	3190		1.20	10.0	1	11/01/2017 18:24	WG1037237
Manganese,Dissolved	3350		1.20	10.0	1	11/01/2017 01:56	WG1037241
Nickel	U		4.90	10.0	1	11/01/2017 18:24	WG1037237
Nickel,Dissolved	U		4.90	10.0	1	11/01/2017 01:56	WG1037241
Potassium	1180	B	102	1000	1	11/01/2017 18:24	WG1037237
Potassium,Dissolved	946	J	102	1000	1	11/01/2017 01:56	WG1037241
Silver	U		2.80	5.00	1	11/01/2017 18:24	WG1037237
Silver,Dissolved	U		2.80	5.00	1	11/01/2017 01:56	WG1037241
Sodium	3270	B	98.5	1000	1	11/01/2017 18:24	WG1037237
Sodium,Dissolved	3300	B	98.5	1000	1	11/01/2017 01:56	WG1037241
Vanadium	U		2.40	20.0	1	11/01/2017 18:24	WG1037237
Vanadium,Dissolved	U		2.40	20.0	1	11/01/2017 01:56	WG1037241
Zinc	5900		5.90	50.0	1	11/01/2017 18:24	WG1037237
Zinc,Dissolved	5720		5.90	50.0	1	11/01/2017 01:56	WG1037241

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		0.754	2.00	1	11/01/2017 13:00	WG1037281
Antimony,Dissolved	U		0.754	2.00	1	11/02/2017 16:43	WG1037292
Lead	265		0.240	2.00	1	11/01/2017 13:00	WG1037281
Lead,Dissolved	141		0.240	2.00	1	11/02/2017 16:43	WG1037292
Selenium	U		0.380	2.00	1	11/01/2017 13:00	WG1037281
Selenium,Dissolved	U		0.380	2.00	1	11/02/2017 16:43	WG1037292
Thallium	U		0.190	2.00	1	11/01/2017 13:00	WG1037281
Thallium,Dissolved	U		0.190	2.00	1	11/02/2017 16:43	WG1037292

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.0490	0.200	1	11/02/2017 11:53	WG1037865
Mercury,Dissolved	U		0.0490	0.200	1	11/03/2017 03:41	WG1037867

Metals (ICP) by Method 6010B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Aluminum	84.0	J	35.0	200	1	11/01/2017 17:00	WG1037237
Aluminum,Dissolved	217		35.0	200	1	11/01/2017 01:59	WG1037241
Arsenic	U		6.50	10.0	1	11/01/2017 17:00	WG1037237
Arsenic,Dissolved	U		6.50	10.0	1	11/01/2017 01:59	WG1037241
Barium	18.0		1.70	5.00	1	11/01/2017 17:00	WG1037237
Barium,Dissolved	16.7		1.70	5.00	1	11/01/2017 01:59	WG1037241
Beryllium	1.04	J	0.700	2.00	1	11/01/2017 17:00	WG1037237
Beryllium,Dissolved	0.751	J	0.700	2.00	1	11/01/2017 01:59	WG1037241
Cadmium	15.4		0.700	2.00	1	11/01/2017 17:00	WG1037237
Cadmium,Dissolved	15.6		0.700	2.00	1	11/01/2017 01:59	WG1037241
Calcium	17300		46.3	1000	1	11/01/2017 17:00	WG1037237
Calcium,Dissolved	18000		46.3	1000	1	11/01/2017 01:59	WG1037241
Chromium	U		1.40	10.0	1	11/01/2017 17:00	WG1037237
Chromium,Dissolved	U		1.40	10.0	1	11/01/2017 01:59	WG1037241
Cobalt	U		2.30	10.0	1	11/01/2017 17:00	WG1037237
Cobalt,Dissolved	2.38	J	2.30	10.0	1	11/01/2017 01:59	WG1037241
Copper	139		5.30	10.0	1	11/01/2017 17:00	WG1037237
Copper,Dissolved	133		5.30	10.0	1	11/01/2017 01:59	WG1037241
Iron	1520		14.1	100	1	11/01/2017 17:00	WG1037237
Iron,Dissolved	251		14.1	100	1	11/01/2017 01:59	WG1037241
Magnesium	2360	O1	11.1	1000	1	11/01/2017 17:00	WG1037237
Magnesium,Dissolved	2340		11.1	1000	1	11/01/2017 01:59	WG1037241
Manganese	3220		1.20	10.0	1	11/01/2017 17:00	WG1037237
Manganese,Dissolved	3360		1.20	10.0	1	11/01/2017 01:59	WG1037241
Nickel	U		4.90	10.0	1	11/01/2017 17:00	WG1037237
Nickel,Dissolved	U		4.90	10.0	1	11/01/2017 01:59	WG1037241
Potassium	973	B J	102	1000	1	11/01/2017 17:00	WG1037237
Potassium,Dissolved	970	J	102	1000	1	11/01/2017 01:59	WG1037241
Silver	U		2.80	5.00	1	11/01/2017 17:00	WG1037237
Silver,Dissolved	U		2.80	5.00	1	11/01/2017 01:59	WG1037241
Sodium	3410	B	98.5	1000	1	11/01/2017 17:00	WG1037237
Sodium,Dissolved	3240	B	98.5	1000	1	11/01/2017 01:59	WG1037241
Vanadium	U		2.40	20.0	1	11/01/2017 17:00	WG1037237
Vanadium,Dissolved	U		2.40	20.0	1	11/01/2017 01:59	WG1037241
Zinc	6050		5.90	50.0	1	11/01/2017 17:00	WG1037237
Zinc,Dissolved	5890		5.90	50.0	1	11/01/2017 01:59	WG1037241

Metals (ICPMS) by Method 6020

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		0.754	2.00	1	11/01/2017 13:03	WG1037281
Antimony,Dissolved	U		0.754	2.00	1	11/02/2017 16:47	WG1037292
Lead	375		0.240	2.00	1	11/01/2017 13:03	WG1037281
Lead,Dissolved	336		0.240	2.00	1	11/02/2017 16:47	WG1037292
Selenium	U		0.380	2.00	1	11/01/2017 13:03	WG1037281
Selenium,Dissolved	U		0.380	2.00	1	11/02/2017 16:47	WG1037292
Thallium	U		0.190	2.00	1	11/01/2017 13:03	WG1037281
Thallium,Dissolved	U		0.190	2.00	1	11/02/2017 16:47	WG1037292

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3262518-1 11/02/17 11:36

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Mercury	U		0.0490	0.200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3262518-2 11/02/17 11:38 • (LCSD) R3262518-3 11/02/17 11:41

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Mercury	3.00	2.74	2.67	91	89	80-120			3	20

L947581-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L947581-03 11/02/17 11:43 • (MS) R3262518-4 11/02/17 11:46 • (MSD) R3262518-5 11/02/17 11:48

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	3.00	ND	3.14	2.98	105	99	1	75-125			5	20

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3262730-1 11/03/17 03:20

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Mercury,Dissolved	U		0.0490	0.200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3262730-2 11/03/17 03:28 • (LCSD) R3262730-3 11/03/17 03:31

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Mercury,Dissolved	3.00	2.91	2.93	97	98	80-120			1	20

L946864-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L946864-01 11/03/17 03:33 • (MS) R3262730-4 11/03/17 03:36 • (MSD) R3262730-5 11/03/17 03:38

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury,Dissolved	3.00	U	3.19	3.35	106	112	1	75-125			5	20

Method Blank (MB)

(MB) R3262332-1 11/01/17 16:50

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Aluminum	U		35.0	200
Arsenic	U		6.50	10.0
Barium	U		1.70	5.00
Beryllium	U		0.700	2.00
Cadmium	U		0.700	2.00
Calcium	U		46.3	1000
Chromium	U		1.40	10.0
Cobalt	U		2.30	10.0
Copper	U		5.30	10.0
Iron	U		14.1	100
Magnesium	U		11.1	1000
Manganese	U		1.20	10.0
Nickel	U		4.90	10.0
Potassium	119	J	102	1000
Silver	U		2.80	5.00
Sodium	432	J	98.5	1000
Vanadium	U		2.40	20.0
Zinc	U		5.90	50.0

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3262332-2 11/01/17 16:53 • (LCSD) R3262332-3 11/01/17 16:56

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Aluminum	10000	10000	9900	100	99	80-120			1	20
Arsenic	1000	979	969	98	97	80-120			1	20
Barium	1000	1020	1000	102	100	80-120			2	20
Beryllium	1000	996	983	100	98	80-120			1	20
Cadmium	1000	973	958	97	96	80-120			1	20
Calcium	10000	9820	9760	98	98	80-120			1	20
Chromium	1000	966	956	97	96	80-120			1	20
Cobalt	1000	1010	997	101	100	80-120			1	20
Copper	1000	980	965	98	96	80-120			2	20
Iron	10000	9870	9760	99	98	80-120			1	20
Magnesium	10000	10200	10100	102	101	80-120			1	20
Manganese	1000	953	941	95	94	80-120			1	20
Nickel	1000	999	986	100	99	80-120			1	20
Potassium	10000	9510	9410	95	94	80-120			1	20
Silver	200	182	181	91	90	80-120			1	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3262332-2 11/01/17 16:53 • (LCSD) R3262332-3 11/01/17 16:56

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Sodium	10000	10100	9850	101	98	80-120			2	20
Vanadium	1000	990	980	99	98	80-120			1	20
Zinc	1000	976	962	98	96	80-120			1	20

L946864-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L946864-02 11/01/17 17:00 • (MS) R3262332-5 11/01/17 17:06 • (MSD) R3262332-6 11/01/17 17:09

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	10000	84.0	9980	10100	99	100	1	75-125			1	20
Arsenic	1000	U	959	980	96	98	1	75-125			2	20
Barium	1000	18.0	1000	1020	98	101	1	75-125			2	20
Beryllium	1000	1.04	977	1000	98	100	1	75-125			2	20
Cadmium	1000	15.4	963	983	95	97	1	75-125			2	20
Calcium	10000	17300	28600	28700	112	114	1	75-125			1	20
Chromium	1000	U	939	957	94	96	1	75-125			2	20
Cobalt	1000	U	986	1010	99	101	1	75-125			2	20
Copper	1000	139	1080	1110	94	97	1	75-125			2	20
Iron	10000	1520	11000	11200	95	97	1	75-125			2	20
Magnesium	10000	2360	12200	12400	99	100	1	75-125			2	20
Manganese	1000	3220	4040	4030	82	81	1	75-125			0	20
Nickel	1000	U	974	996	97	100	1	75-125			2	20
Potassium	10000	973	10200	10300	92	94	1	75-125			1	20
Silver	200	U	178	182	89	91	1	75-125			2	20
Sodium	10000	3410	12900	13000	95	96	1	75-125			1	20
Vanadium	1000	U	970	992	97	99	1	75-125			2	20
Zinc	1000	6050	6810	6800	76	75	1	75-125			0	20

Method Blank (MB)

(MB) R3261997-1 11/01/17 00:33

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Aluminum,Dissolved	U		35.0	200
Arsenic,Dissolved	U		6.50	10.0
Barium,Dissolved	U		1.70	5.00
Beryllium,Dissolved	U		0.700	2.00
Cadmium,Dissolved	U		0.700	2.00
Calcium,Dissolved	U		46.3	1000
Chromium,Dissolved	U		1.40	10.0
Cobalt,Dissolved	U		2.30	10.0
Copper,Dissolved	U		5.30	10.0
Iron,Dissolved	U		14.1	100
Magnesium,Dissolved	27.1	J	11.1	1000
Manganese,Dissolved	U		1.20	10.0
Nickel,Dissolved	U		4.90	10.0
Potassium,Dissolved	U		102	1000
Silver,Dissolved	U		2.80	5.00
Sodium,Dissolved	651	J	98.5	1000
Vanadium,Dissolved	U		2.40	20.0
Zinc,Dissolved	U		5.90	50.0

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3261997-2 11/01/17 00:36 • (LCSD) R3261997-3 11/01/17 00:39

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Aluminum,Dissolved	10000	10200	10400	102	104	80-120			2	20
Arsenic,Dissolved	1000	950	954	95	95	80-120			0	20
Barium,Dissolved	1000	990	992	99	99	80-120			0	20
Beryllium,Dissolved	1000	999	1010	100	101	80-120			1	20
Cadmium,Dissolved	1000	981	984	98	98	80-120			0	20
Calcium,Dissolved	10000	9800	10000	98	100	80-120			2	20
Chromium,Dissolved	1000	984	986	98	99	80-120			0	20
Cobalt,Dissolved	1000	1030	1030	103	103	80-120			0	20
Copper,Dissolved	1000	996	998	100	100	80-120			0	20
Iron,Dissolved	10000	10300	10500	103	105	80-120			2	20
Magnesium,Dissolved	10000	9960	10100	100	101	80-120			2	20
Manganese,Dissolved	1000	987	995	99	100	80-120			1	20
Nickel,Dissolved	1000	989	995	99	100	80-120			1	20
Potassium,Dissolved	10000	9080	9290	91	93	80-120			2	20
Silver,Dissolved	200	196	198	98	99	80-120			1	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3261997-2 11/01/17 00:36 • (LCSD) R3261997-3 11/01/17 00:39

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Sodium,Dissolved	10000	9790	9870	98	99	80-120			1	20
Vanadium,Dissolved	1000	1010	1030	101	103	80-120			3	20
Zinc,Dissolved	1000	948	947	95	95	80-120			0	20

L946836-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L946836-05 11/01/17 00:43 • (MS) R3261997-5 11/01/17 00:49 • (MSD) R3261997-6 11/01/17 00:52

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum,Dissolved	10000	ND	10400	10200	104	102	1	75-125			2	20
Arsenic,Dissolved	1000	ND	1000	967	100	97	1	75-125			4	20
Barium,Dissolved	1000	31.5	1010	998	98	97	1	75-125			2	20
Beryllium,Dissolved	1000	ND	1000	991	100	99	1	75-125			1	20
Cadmium,Dissolved	1000	ND	1020	999	102	100	1	75-125			2	20
Calcium,Dissolved	10000	58700	67800	67300	91	86	1	75-125			1	20
Chromium,Dissolved	1000	ND	983	966	98	97	1	75-125			2	20
Cobalt,Dissolved	1000	ND	1060	1040	106	104	1	75-125			2	20
Copper,Dissolved	1000	ND	1020	1000	102	100	1	75-125			1	20
Iron,Dissolved	10000	ND	10500	10400	105	104	1	75-125			1	20
Magnesium,Dissolved	10000	52800	61600	60800	88	80	1	75-125			1	20
Manganese,Dissolved	1000	ND	988	973	99	97	1	75-125			2	20
Nickel,Dissolved	1000	ND	1010	995	101	100	1	75-125			2	20
Potassium,Dissolved	10000	3400	13300	13200	99	98	1	75-125			1	20
Silver,Dissolved	200	ND	205	203	103	101	1	75-125			1	20
Sodium,Dissolved	10000	250000	256000	255000	63	50	1	75-125	V	V	1	20
Vanadium,Dissolved	1000	ND	1040	1020	104	102	1	75-125			2	20
Zinc,Dissolved	1000	ND	945	926	95	93	1	75-125			2	20

Method Blank (MB)

(MB) R3262089-1 10/31/17 21:36

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		0.754	2.00
Lead	U		0.240	2.00
Selenium	U		0.380	2.00
Thallium	U		0.190	2.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3262089-2 10/31/17 21:40 • (LCSD) R3262089-3 10/31/17 21:43

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	48.8	46.9	98	94	80-120			4	20
Lead	50.0	47.2	45.7	94	91	80-120			3	20
Selenium	50.0	46.6	44.8	93	90	80-120			4	20
Thallium	50.0	46.4	45.4	93	91	80-120			2	20

L947042-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L947042-02 10/31/17 21:47 • (MS) R3262089-5 10/31/17 21:54 • (MSD) R3262089-6 10/31/17 21:57

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	ND	49.8	50.0	100	100	1	75-125			0	20
Lead	50.0	2.11	48.0	48.0	92	92	1	75-125			0	20
Selenium	50.0	ND	46.9	46.2	94	92	1	75-125			2	20
Thallium	50.0	ND	45.2	45.5	90	91	1	75-125			1	20

Method Blank (MB)

(MB) R3262773-7 11/02/17 15:46

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony,Dissolved	U		0.754	2.00
Lead,Dissolved	U		0.240	2.00
Selenium,Dissolved	U		0.380	2.00
Thallium,Dissolved	U		0.190	2.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3262773-8 11/02/17 15:50 • (LCSD) R3262773-9 11/02/17 15:53

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony,Dissolved	50.0	53.0	51.6	106	103	80-120			3	20
Lead,Dissolved	50.0	50.5	49.7	101	99	80-120			1	20
Selenium,Dissolved	50.0	52.6	52.4	105	105	80-120			0	20
Thallium,Dissolved	50.0	50.6	49.3	101	99	80-120			3	20

L947475-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L947475-01 11/02/17 15:57 • (MS) R3262773-11 11/02/17 16:04 • (MSD) R3262773-12 11/02/17 16:07

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony,Dissolved	50.0	ND	52.8	53.8	106	108	1	75-125			2	20
Lead,Dissolved	50.0	ND	49.8	50.7	99	100	1	75-125			2	20
Selenium,Dissolved	50.0	ND	53.9	53.4	104	103	1	75-125			1	20
Thallium,Dissolved	50.0	ND	49.7	50.3	99	101	1	75-125			1	20

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660
Alaska	UST-080
Arizona	AZ0612
Arkansas	88-0469
California	01157CA
Colorado	TN00003
Conneticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1]	90010
Kentucky [2]	16
Louisiana	AI30792
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico	TN00003
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [2]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	221
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T 104704245-07-TX
Texas [5]	LAB0152
Utah	6157585858
Vermont	VT2006
Virginia	109
Washington	C1915
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

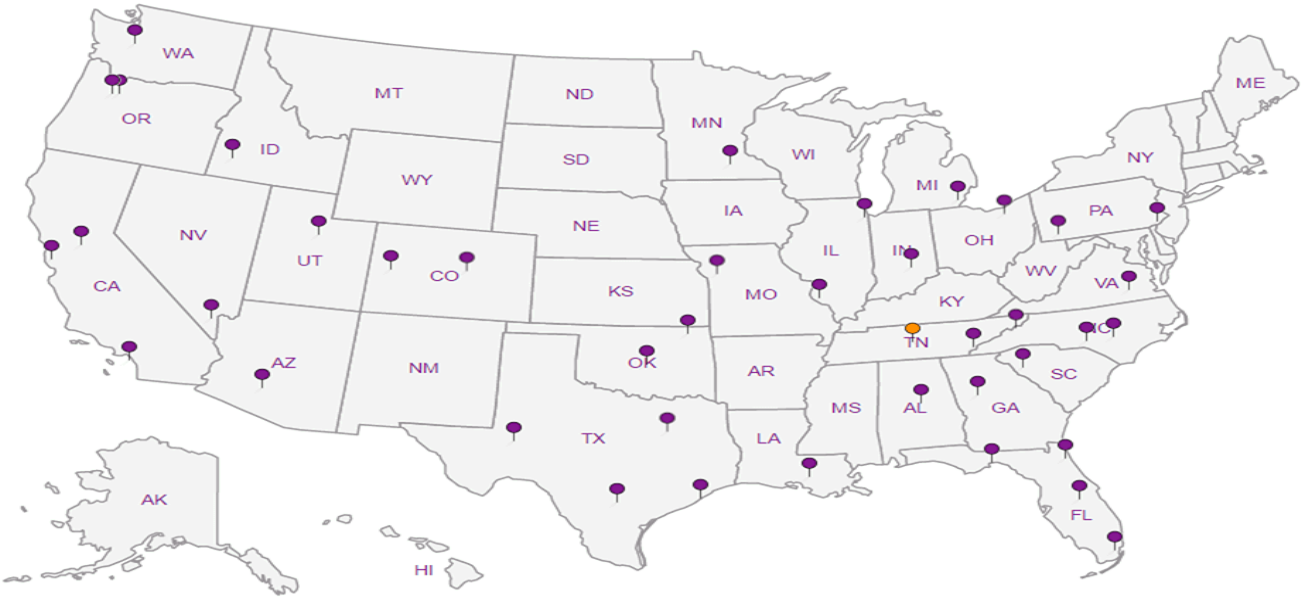
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA-LAP,LLC	100789
DOD	1461.01
USDA	S-67674

[1.] Drinking Water [2.] Underground Storage Tanks [3.] Aquatic Toxicity [4.] Chemical/Microbiological [5.] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



WESSOLLCO

USEPA
DateShipped: 10/25/2017
CarrierName:
AirbillNo:

Weston Solutions

CHAIN OF CUSTODY RECORD
Jumbo Mine/CO
Contact Name: James Fieman
Contact Phone: 3033046505

C095

No: 8-102517-172811-0001
Cooler #: 1
Lab: ESC Lab Sciences
Lab Phone: 18007675859
946864

Lab #	Sample #	Location	Analyses	Matrix	Sample Date	Sample Time	Numb Cont	Container	Preservative	Lab QC
	JM-Treated-10252017	JM-Treated	Metals	W	10/25/2017	13:52	1		HNO3 pH<2	01
	JM-Treated-10252017	JM-Treated	Dissolved Metals	W	10/25/2017	13:52	1		HNO3 pH<2	01
	JM-Adit-10252017	JM-Adit	Metals	W	10/25/2017	14:28	1		HNO3 pH<2	02
	JM-Adit-10252017	JM-Adit	Dissolved Metals	W	10/25/2017	14:28	1		HNO3 pH<2	03

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
4	James Fieman (Weston)	10/25/17 18:00	[signature]	10/27/22	Good on Ice
			[signature] 841	10/27/17 0822	

2.8°C

ESC LAB SCIENCES
Cooler Receipt Form

Client: Wessolloo	SDG#	946 864	
Cooler Received/Opened On: 10/27 /17	Temperature:	2.8	
Received by: Kelly Mercer			
Signature: Kelly Mercer			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

ESC Lab Sciences
Non-Conformance Form

Login # 946864	Client: WESSOLLCO	Date:10/27	Evaluated by:Matt S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time	x	Login Clarification Needed		**If Broken Container:**
	Improper temperature		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	Improper preservation		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courier
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments: please clarify total and dissolved metals.

Client informed by:		Call		Email		Voice Mail		Date: 10/27/17	Time:
TSR Initials: CSG	Client Contact:								

Login Instructions:

TAL Metals by 6010 for both total and dissolved.

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