

4601 DTC Boulevard, Suite 130, Denver, CO 80237 T. (303) 862-3928

April 3, 2018

Colorado Department of Public Health and Environment Water Quality Control Division / WQCD-B2-CAS Compliance Assurance Section Attention: Eric Mink 4300 Cherry Creek Drive South Denver, CO 80246-1530

Dear Mr. Mink:

Regarding: February 2018 SW-AWD and SW-BPL Surface Water Monitoring Data for Sampling Stations, Schwartzwalder Mine, Paragraph 26, WQCD Order Number: IO 100601-1, June 1, 2010

Pursuant to Paragraph 26 of the above referenced Order, please find enclosed data reports from contract laboratories as received by Alexco Water and Environment, Inc. These data originate from the analysis of surface water samples collected in February 2018 at the Schwartzwalder Mine, monitoring stations SW-AWD and SW-BPL. A review of the data indicates that the total and dissolved uranium concentration at SW-BPL were below the 30-µg/L limit. Our review also indicates that arsenic was not detected at SW-BPL.

If you have any questions regarding this deliverable, please do not hesitate to contact me.

Sincerely,

Jon Mr. Myte.

Jim Harrington, Managing Director COLORADO LEGACY LAND Jim@ColoradoLegacy.Land

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Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Jon Mr. Myte.

Jim Harrington, Managing Director

COLORADO LEGACY LAND



February 2018 Schwartzwalder 7-Day Surface Water Report

Contents:

- AWD, table1, Sampled on: 13FEB2018
 - o ELI: C18020442-001
 - o SCG: 418126.A
- BPL, table1, Sampled on: 13FEB2018
 - o ELI: C18020442-002
 - o SCG: 418127.A



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client:Cotter CorporationProject:Schwartzwalder MineLab ID:C18020442-001Client Sample ID:SW-AWD

 Report Date:
 03/26/18

 Collection Date:
 02/13/18 11:20

 DateReceived:
 02/16/18

 Matrix:
 Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Fluoride	0.3	mg/L		0.1		A4500-F C	02/20/18 12:42 / mvr
INORGANICS							
Cyanide, Weak Acid Dissociable	ND	mg/L		0.005		Kelada-01	02/22/18 10:18 / eli-b
nen − Besus har en sekritere – tesse a veser societa este remensión i radio per a la referencia antica en							
NUTRIENTS	0.04	n		0.04		5050.0	
Nitrogen, Nitrate+Nitrite as N		mg/L		0.01		E353.2	02/26/18 15:39 / dmb
Phosphorous, Total as Phosphate		mg/L		0.03		Calculation	03/16/18 11:27 / sec
Phosphorus, Total as P	ND	mg/L		0.005		E365.1	02/27/18 11:07 / dmb
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.2		E200.7	02/26/18 12:31 / eli-b
Antimony	ND	mg/L		0.001		E200.8	02/26/18 16:47 / eli-b
Molybdenum		mg/L		0.005		E200.8	02/26/18 16:47 / eli-b
Thallium		mg/L		0.0002		E200.8	02/26/18 16:47 / eli-b
Uranium	0.0027	mg/L		0.0002		E200.8	02/26/18 16:47 / eli-b
METALS, TOTAL							
Aluminum	ND	mg/L		0.2		E200.7	02/23/18 01:49 / eli-b
Antimony	ND	mg/L		0.001		E200.8	02/23/18 06:07 / eli-b
Arsenic	ND	mg/L		0.001		E200.8	02/23/18 06:07 / eli-b
Boron	ND	mg/L		0.1		E200.7	02/23/18 01:49 / eli-b
Mercury	ND	mg/L		0.0001		E245.1	03/02/18 15:13 / eli-b
Volybdenum	ND	mg/L		0.005		E200.7	02/23/18 01:49 / eli-b
Thallium	ND	mg/L		0.0002		E200.8	02/23/18 06:07 / eli-b
Jranium	0.0026	mg/L		0.0002		E200.8	02/23/18 06:07 / eli-b
RADIONUCLIDES, DISSOLVED							
Radium 226	0.1	pCi/L	U			E903.0	03/05/18 14:33 / arh
Radium 226 precision (±)		pCi/L	-			E903.0	03/05/18 14:33 / arh
Radium 226 MDC		pCi/L				E903.0	03/05/18 14:33 / arh
RADIONUCLIDES, TOTAL							
Gross Alpha	3.6	pCi/L				E900.0	02/22/18 23:32 / trs
Gross Alpha precision (±)		pCi/L				E900.0	02/22/18 23:32 / trs
Gross Alpha MDC		pCi/L				E900.0	02/22/18 23:32 / trs
Gross Beta		pCi/L	υ			E900.0	02/22/18 23:32 / trs
Gross Beta precision (±)		pCi/L	-			E900.0	02/22/18 23:32 / trs
Gross Beta MDC		pCi/L				E900.0	02/22/18 23:32 / trs
Radium 226		pCi/L				E903.0	03/19/18 10:09 / arh
Radium 226 precision (±)		pCi/L				E903.0	03/19/18 10:09 / arh
Radium 226 MDC		pCi/L				E903.0	03/19/18 10:09 / arh
Radium 228		pCi/L	U			RA-05	03/23/18 10:39 / plj
Radium 228 precision (±)		pCi/L				RA-05	03/23/18 10:39 / plj
Radium 228 MDC		, pCi/L				RA-05	03/23/18 10:39 / plj

 Report
 RL - Analyte reporting limit.

 Definitions:
 OCL - Quality control limit.

MCL - Maximum contaminant level.

QCL - Quality control limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client:Cotter CorporationProject:Schwartzwalder MineLab ID:C18020442-001Client Sample ID:SW-AWD

 Report Date:
 03/26/18

 Collection Date:
 02/13/18 11:20

 DateReceived:
 02/16/18

 Matrix:
 Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Radium 226 + Radium 228	0.9	pCi/L	U			A7500-RA	03/23/18 16:21 / sec
Radium 226 + Radium 228 precision (±)	0.7	pCi/L				A7500-RA	03/23/18 16:21 / sec
Radium 226 + Radium 228 MDC	1.2	pCi/L				A7500-RA	03/23/18 16:21 / sec
CLIENT PROVIDED FIELD PARAMETERS							
Field Conductivity	270	umhos/cm				FIELD	02/13/18 11:20 / ***
Field pH	7.97	s.u.				FIELD	02/13/18 11:20 / ***
Field Temperature, C *** Field data provided by client	1.3	°C				FIELD	02/13/18 11:20 / ***



Client: Analyte:	Cotter Corp Bicarbonate (A	As HCO3)				
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/24/2018 02/24/2018 40 CFR 136.3 Std. Methods 2 Std. Methods 2 Titrimetric				
Matrix: Sample volume used: Analyst:		Aqueous (wate 100 mL SE	r, wastewater, gro	oundwater)		
Location ID SW-AWD	<u>SmpDate</u> 02/13/18	<u>SCG #</u> 418126.A	<u>Results</u> 66	<u>Flags</u>	<u>RL</u> 10	<u>Units</u> mg/L
Client: Analyte:	Cotter Corp Alkalinity (tota	l as CaCO3)				
	Alkalinity (tota	l as CaCO ₃) 02/24/2018 02/24/2018 40 CFR 136.3 Std. Methods 2. Std. Methods 2. Titrimetric				
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Alkalinity (tota	02/24/2018 02/24/2018 40 CFR 136.3 Std. Methods 2 Std. Methods 2. Titrimetric		oundwater)		

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

.



Client: Analyte:	Cotter Corp Chloride							
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/16/2018 02/16/2018 40 CFR 136.3 SM 4500-Cl1 SM 4500-Cl1 Titrimetric						
Matrix: Sample volume used: Analyst:		Aqueous (water 100 mL SE	r, wastewater, gr	oundwater)				
<u>Location ID</u> SW-AWD	<u>SmpDate</u> 02/13/18	<u>SCG #</u> 418126.A	<u>Results</u> 46	<u>Flags</u>		<u>RL</u> 2		<u>Units</u> mg/L
						terretaria de la constante de l		
Client: Analyte:	Cotter Corp Sulfate, SO4 ²⁻							
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/20/2018 02/20/2018 40 CFR 136.3 ASTM D516-0 ASTM D516-0 Evo 160, UV/V	7					
Matrix: ´ Sample volume used: Analyst:		Aqueous (water 100 mL SE	r, wastewater, gr Dilut	oundwater) ion Factor: 2				
<u>Location ID</u> SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	Results 19.2	Flags	<u>MDL</u> 0.24	<u>RL</u> 1.18	<u>Units</u> mg/L	

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

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Client: Analyte:	Cotter Corp Calcium, Ca –	Dis					
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/27/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLA/	11 B.				
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE	, wastewater, grou Dilutio	ndwater) n Factor: 25			
Location ID SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	<u>Results</u> 28,077	<u>Flags</u>	<u>MDL</u> 250	<u>RL</u> 1,250	<u>Units</u> µg/L
Client: Analyte:	Cotter Corp Magnesium, M	g – Dis					
	Magnesium, M	g – Dis 02/15/2018 02/22/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLAA	11 B.				
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Magnesium, M	02/15/2018 02/22/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLAA	wastewater, grou	ndwater) n Factor: 50			

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

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Client: Analyte:	Cotter Corp Potassium, K –	Dis					
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/22/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLAA	11 B.				
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE	wastewater, grou Dilution	ndwater) n Factor: 1			
Location ID SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	<u>Results</u> 1,588	Flags	<u>MDL</u> 10	<u>RL</u> 60	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Sodium, Na – D	is					
	Sodium, Na – D	is 02/15/2018 02/21/2018 40 CFR 136.3 Std. Methods 30: Std. Methods 31 iCE 3500, FLAA	11 B.				
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Sodium, Na – D	02/15/2018 02/21/2018 40 CFR 136.3 Std. Methods 30: Std. Methods 31 iCE 3500, FLAA	11 B. wastewater, grout	ndwater) n Factor: 100			

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

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Cotter Corp

Copper, Cu - Dis

Client:

Analyte:

Analytical Report

Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 3(USEPA 200.9 iCE 3500, STP(
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE		r, groundwater) Dilution Factor: 1				
Location ID SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	<u>Results</u> 0.251	<u>Flags</u> J	<u>MDL</u> 0.21	<u>RL</u> 1.07	<u>Units</u> μg/L	
Client: Analyte:	Cotter Corp Copper, Cu - T							
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	2.	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC	GFAA					
Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	22	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9	GFAA , wastewate	r, groundwater) Dilution Factor: 1				

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

7



Client: Analyte:	Cotter Corp Silver, Ag - Dis						
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/19/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC					
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE	, wastewa	ter, groundwater) Dilution Factor: 1			
Location ID SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	<u>Results</u> U	<u>Flags</u>	<u>MDL</u> 0.036	<u>RL</u> 0.18	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Silver, Ag - T						
	Silver, Ag - T	02/15/2018 02/19/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC					
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Silver, Ag - T	02/19/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC	GFAA	er, groundwater) Dilution Factor: 1			

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

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Client: Analyte:	Cotter Corp Chromium, Cr	- T					
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/19/2018 40 CFR 136.3 Std. Methods 3(USEPA 200.9 iCE 3500, STPC					
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE		roundwater) tion Factor: 1			
<u>Location ID</u> SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	<u>Results</u> 4.81	<u>Flags</u>	<u>MDL</u> 0.06	<u>RL</u> 0.31	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Lead, Pb - T						
	Lead, Pb - T	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC					
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Lead, Pb - T	02/17/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9	GFAA , wastewater, gi	oundwater) tion Factor: 1			

Qualifiers:

E = Extrapolated value. Value exceeds calibration range H = Analysis exceeded holding time J = Estimated value detected below the RL/MRL

S - Spike recovery outside acceptance limitsU - Analyte not detectedX - See case narrative

Confidential and Privileged

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Client: Analyte:	Cotter Corp Manganese, M	n - Dis					
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/20/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 20 iCE 3500, GFA	00.9				
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE	, wastewater, gro Diluti	undwater) on Factor: 1			
Location ID SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	Results 6.89	<u>Flags</u>	<u>MDL</u> 0.07	<u>RL</u> 0.33	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Manganese, Mi	n - T					
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/20/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 20 iCE 3500, GFA	0.9				
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE		undwater) on Factor: 1			
<u>Location ID</u> SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	Results 12.8	<u>Flags</u>	<u>MDL</u> 0.07	<u>RL</u> 0.33	<u>Units</u> μg/L

Qualifiers:

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative



Client: Analyte:	Cotter Corp Zinc, Zn - Dis						
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 3 iCE 3500, FLA	111 B.				
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE	r, wastewater, gro Dilut	oundwater) ion Factor: 1			
Location ID SW-AWD	Smp Date 02/13/18	<u>SCG #</u> 418126.A	<u>Results</u> U	<u>Flags</u>	<u>MDL</u> 1.6	<u>RL</u> 8.08	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Zinc, Zn - T						
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	2:1	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLA	11 B.				
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE	, wastewater, gro Diluti	oundwater) on Factor: 1			
Location ID							

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

4

1



Client: Analyte:	Cotter Corp Iron, Fe - Dis						
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 3 Std. Methods 2 iCE 3500, FLA	200.9				
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE		, groundwater) vilution Factor: 1			
Location ID SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	Results 37.0	Flags	<u>MDL</u> 4	<u>RL</u> 10	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Iron, Fe - T						
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 2 iCE 3500, FLA	00.9				
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE		, groundwater) ilution Factor: 1			
Location ID SW-AWD	Smp Date	SCG #	Results	Flags	MDL	RL	<u>Units</u>

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative



Client:	Cotter Corp					
Analyte:	Residue - non, f	îlterable (TSS)				
		00/10/2010				
Prep Date:		02/19/2018				
Analysis Date:		02/20/2018				
Approved Method Source	:	40 CFR 136.3				
Prep ID:		Std. Methods 2540 D	1			
Analytical Method ID:		Std. Methods 2540 D	6			
Instrument:		AE-240 Dual Range	Analytical Balance			
		9	en de la constante de la consta Esca			
Matrix:		Aqueous (water, wast	tewater, groundwater)			
Sample volume used:		100 mL	, ,			
Analyst:		SB				
34. usto-2.000000 🗭 -00034004						
Location ID Smn D	to SCC #	Danulta	DI			
Location ID Smp Da	in the second	Results	Flags	<u>RL</u>	<u>Units</u>	
SW-AWD 02/13/13	8 418126.	A 4.4		4	mg/L	

Client: Analyte:	Cotter Corp Residue – filter	able (TDS)				
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	2:	02/19/2018 02/20/2018 40 CFR 136.3 Std. Methods 25 Std. Methods 25 AE-240 Dual Ra		Balance		
Matrix: Sample volume used: Analyst:		Aqueous (water, 100 mL SB	, wastewater, gro	undwater)		
Location ID SW-AWD	<u>Smp Date</u> 02/13/18	<u>SCG #</u> 418126.A	Results 176	Flags	<u>RL</u> 10	<u>Units</u> mg/L

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client:Cotter CorporationProject:Schwartzwalder MineLab ID:C18020442-002Client Sample ID:SW-BPL

 Report Date:
 03/26/18

 Collection Date:
 02/13/18
 11:36

 DateReceived:
 02/16/18

 Matrix:
 Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Fluoride	0.2	mg/L		0.1		A4500-F C	02/20/18 12:45 / mvr
INORGANICS							
Cyanide, Weak Acid Dissociable	0.007	mg/L		0.005		Kelada-01	02/22/18 10:26 / eli-b
NUTRIENTS							
Nitrogen, Nitrate+Nitrite as N	0.02	mg/L		0.01		E353.2	02/26/18 15:41 / dmb
Phosphorous, Total as Phosphate	ND	mg/L		0.03		Calculation	03/16/18 11:27 / sec
Phosphorus, Total as P	ND	mg/L		0.005		E365.1	02/27/18 11:10 / dmb
IETALS, DISSOLVED							
Aluminum	ND	mg/L		0.2		E200.8	02/22/18 21:27 / eli-b
Antimony	ND	mg/L		0.001		E200.8	02/22/18 21:27 / eli-b
Aolybdenum	ND	mg/L		0.005		E200.8	02/23/18 19:28 / eli-b
Thallium	ND	mg/L		0.0002		E200.8	02/22/18 21:27 / eli-b
Jranium	0.0103	mg/L		0.0002		E200.8	02/23/18 19:28 / eli-b
METALS, TOTAL							
Numinum	ND	mg/L		0.2		E200.7	02/23/18 02:01 / eli-b
ntimony	ND	mg/L		0.001		E200.8	02/23/18 06:10 / eli-b
rsenic	ND	mg/L		0.001		E200.8	02/23/18 06:10 / eli-b
loron	ND	mg/L		0.1		E200.7	02/23/18 02:01 / eli-b
/lercury	ND	mg/L		0.0001		E245.1	03/02/18 15:15 / eli-b
lolybdenum	ND	mg/L		0.005		E200.7	02/23/18 02:01 / eli-b
hallium	ND	mg/L		0.0002		E200.8	02/23/18 06:10 / eli-b
Jranium	0.0111	mg/L		0.0002		E200.8	02/23/18 06:10 / eli-b
ADIONUCLIDES, DISSOLVED							
Radium 226	0.7	pCi/L				E903.0	03/05/18 14:33 / arh
adium 226 precision (±)	0.2	pCi/L				E903.0	03/05/18 14:33 / arh
Radium 226 MDC	0.2	pCi/L				E903.0	03/05/18 14:33 / arh
RADIONUCLIDES, TOTAL							
Bross Alpha	7.3	pCi/L				E900.0	02/22/18 23:32 / trs
Bross Alpha precision (±)	2.2	pCi/L				E900.0	02/22/18 23:32 / trs
Bross Alpha MDC	1.6	pCi/L				E900.0	02/22/18 23:32 / trs
Bross Beta	1.6	pCi/L	U			E900.0	02/22/18 23:32 / trs
bross Beta precision (±)	1.2	pCi/L				E900.0	02/22/18 23:32 / trs
iross Beta MDC	3.2	pCi/L				E900.0	02/22/18 23:32 / trs
adium 226	0.4	pCi/L				E903.0	03/19/18 10:09 / arh
adium 226 precision (±)	0.2	pCi/L				E903.0	03/19/18 10:09 / arh
adium 226 MDC	0.2	pCi/L				E903.0	03/19/18 10:09 / arh
Radium 228	1.7	pCi/L				RA-05	03/13/18 08:09 / plj
Radium 228 precision (±)	0.7	pCi/L				RA-05	03/13/18 08:09 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	03/13/18 08:09 / plj

Report RL - Analyte reporting limit.

Definitions:

QCL - Quality control limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client:Cotter CorporationProject:Schwartzwalder MineLab ID:C18020442-002Client Sample ID:SW-BPL

 Report Date:
 03/26/18

 Collection Date:
 02/13/18 11:36

 DateReceived:
 02/16/18

 Matrix:
 Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Radium 226 + Radium 228	2.1	pCi/L				A7500-RA	03/21/18 19:03 / sec
Radium 226 + Radium 228 precision (±)	0.7	pCi/L				A7500-RA	03/21/18 19:03 / sec
Radium 226 + Radium 228 MDC	1.3	pCi/L				A7500-RA	03/21/18 19:03 / sec
CLIENT PROVIDED FIELD PARAMETERS							
Field Conductivity	239	umhos/cm				FIELD	02/13/18 11:36 / ***
Field pH	7.75	s.u.				FIELD	02/13/18 11:36 / ***
Field Temperature, C Field data provided by client	4.7	°C				FIELD	02/13/18 11:36 / ***



Client: Analyte:	Cotter Corp Bicarbonate (A	As HCO3)				
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	ce:	02/24/2018 02/24/2018 40 CFR 136.3 Std. Methods Std. Methods Titrimetric	2320 B.			
Matrix: Sample volume used: Analyst:		Aqueous (wat 100 mL SE	er, wastewater, g	roundwater)		
<u>Location ID</u> SW-BPL	<u>SmpDate</u> 02/14/18	<u>SCG #</u> 418127.A	<u>Results</u> 72	<u>Flags</u>	<u>RL</u> 10	<u>Units</u> mg/L
Client: Analyte:	Cotter Corp Alkalinity (tota	al as CaCO3)				
	Alkalinity (tot:	al as CaCO ₃) 02/24/2018 02/24/2018 40 CFR 136.3 Std. Methods Std. Methods Titrimetric	2320 B.			-
Analyte: Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID:	Alkalinity (tot:	02/24/2018 02/24/2018 40 CFR 136.3 Std. Methods Std. Methods Titrimetric	2320 B.	roundwater)		

Qualifiers:

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative



Client: Analyte:	Cotter Corp Chloride							
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/162018 02/16/2018 40 CFR 136.3 SM 4500-CI1 SM 4500-CI1 Titrimetric						
Matrix: Sample volume used: Analyst:		Aqueous (wate: 100 mL SE	r, wastewater, g	roundwater)				
<u>Location ID</u> SW-BPL	<u>SmpDate</u> 02/14/18	<u>SCG #</u> 418127.A	Results 39	<u>Flags</u>		<u>RL</u> 2		<u>Units</u> mg/L
Client: Analyte:	Cotter Corp Sulfate, SO₄ ²⁻							
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	2:	02/20/2018 02/20/2018 40 CFR 136.3 ASTM D516-0 ASTM D516-0 Evo 160, UV/V	7					
Matrix: Sample volume used: Analyst:		Aqueous (water 100 mL SE		roundwater) tion Factor: 2				
<u>Location ID</u> SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	Results 22.5	Flags	<u>MDL</u> 0.24	<u>RL</u> 1.18	<u>Units</u> mg/L	

Qualifiers:

Quantiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

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Client: Analyte:	Cotter Corp Calcium, Ca –	Dis					
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/27/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLAA	11 B.				
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE	wastewater, grou Dilutio	ndwater) n Factor: 50			
Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	<u>Results</u> 48,079	<u>Flags</u>	<u>MDL</u> 500	<u>RL</u> 2,500	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Magnesium, M	g – Dis					
	Magnesium, M	g – Dis 02/15/2018 02/22/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLAA	11 B.				
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Magnesium, M	02/15/2018 02/22/2018 40 CFR 136.3 Std. Methods 30: Std. Methods 31 iCE 3500, FLAA	11 B. wastewater, grou	ndwater) n Factor: 50			

Qualifiers:

Quantiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

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Client: Analyte:	Cotter Corp Potassium, K –	Dis					
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/22/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLAA	11 B.				
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE	wastewater, groun Dilution	ndwater) 1 Factor: 1			
<u>Location ID</u> SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	<u>Results</u> 1,606	<u>Flags</u>	<u>MDL</u> 10	<u>RL</u> 60	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Sodium, Na – D	lis					
	Sodium, Na – D	02/15/2018 02/21/2018 40 CFR 136.3 Std. Methods 301 Std. Methods 311 iCE 3500, FLAA	11 B.				
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Sodium, Na – D	02/15/2018 02/21/2018 40 CFR 136.3 Std. Methods 301 Std. Methods 31 iCE 3500, FLAA	11 B. wastewater, grour	ndwater) n Factor: 100			

Qualifiers:

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected V – Second recovery outside

X - See case narrative



Client:	Cotter Corp
Analyte:	Copper, Cu - Dis

Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument: Matrix: Sample volume used: Analyst:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPO Aqueous (water 50 mL SE	GFAA , wastewater, j	groundwater) ution Factor: 1			
Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	<u>Results</u> U	Flags	<u>MDL</u> 0.21	<u>RL</u> 1.07	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Copper, Cu - T						
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC					
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE		groundwater) ution Factor: 1			
Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	<u>Results</u> U	<u>Flags</u> J	<u>MDL</u> 0.21	<u>RL</u> 1.07	<u>Units</u> μg/L

Qualifiers:

Qualitiers: E = Extrapolated value. Value exceeds calibration range<math>H = Analysis exceeded holding timeJ = Estimated value detected below the RL/MRLS = Spike recovery outside acceptance limitsU = Analyte not detectedX = See case narrative



Client: Analyte:	Cotter Corp Silver, Ag - Dis						
Prep. Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/19/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC					
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE		er, groundwater) Dilution Factor: 1			
Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	Results U	<u>Flags</u>	<u>MDL</u> 0.036	<u>RL</u> 0.18	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Silver, Ag - T						
	Silver, Ag - T	02/15/2018 02/19/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC					
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Silver, Ag - T	02/19/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9	GFAA , wastewate	er, groundwater) Dilution Factor: 1			

Qualifiers:

 Qualitiers:

 E - Extrapolated value. Value exceeds calibration range

 H - Analysis exceeded holding time

 J - Estimated value detected below the RL/MRL

 S - Spike recovery outside acceptance limits

 U - Analyte not detected

 X - See case narrative



Client: Analyte:	Cotter Corp Chromium, Cr	- T					
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/19/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPC					
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE		groundwater) lution Factor: 1			
Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	Results 0.50	<u>Flags</u>	<u>MDL</u> 0.06	<u>RL</u> 0.31	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Lead, Pb - T						
	Lead, Pb - T	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9 iCE 3500, STPG					
Analyte: Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID:	Lead, Pb - T	02/17/2018 40 CFR 136.3 Std. Methods 30 USEPA 200.9	FAA wastewater, g	groundwater) ution Factor: 1			

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative



Client: Analyte:	Cotter Corp Manganese, M	n - Dis					
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/20/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 2 iCE 3500, GFA	00.9				
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE	, wastewater, grou Dilutic	undwater) on Factor: 10			
Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	Results 27.0	Flags	<u>MDL</u> 0.70	<u>RL</u> 3.3	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Manganese, Mi	n - T					
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/20/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 20 iCE 3500, GFA	00.9				
Matrix: Sample volume used: Analyst:		Aqueous (water, 50 mL SE	wastewater, grou Dilutio	indwater) on Factor: 10			
Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	Results 34.9	<u>Flags</u>	<u>MDL</u> 0.70	<u>RL</u> 3.3	<u>Units</u> μg/L

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

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Client: Analyte:	Cotter Corp Zinc, Zn - Dis						
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 3 iCE 3500, FLA	111 B.				
Matrix: Sample volume used: Analyst:		Aqueous (water 50 mL SE	, wastewater, gr Dilu	oundwater) tion Factor: 1			
<u>Location ID</u> SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	<u>Results</u> U	<u>Flags</u>	<u>MDL</u> 1.6	<u>RL</u> 8.08	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Zinc, Zn - T						
Prep Date: Analysis Date: Approved Method Source Prep ID: Analytical Method ID: Instrument:		02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 30 Std. Methods 31 iCE 3500, FLA.	11 B.				
Matrix: Sample volume used: Analyst:		Aqueous (water, wastewater, groundwater) 50 mL Dilution Factor: 1 SE					

Qualifiers:

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

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Client: Analyte:	Cotter Corp Iron, Fe - Dis						
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 3 Std. Methods 2 iCE 3500, FLA	200.9				
Matrix: Sample volume used: Analyst:		Aqueous (wate 50 mL SE		, groundwater) Dilution Factor: 1			
Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	<u>Results</u> 86.6	<u>Flags</u>	<u>MDL</u> 4	<u>RL</u> 10	<u>Units</u> μg/L
Client: Analyte:	Cotter Corp Iron, Fe - T						
Prep Date: Analysis Date: Approved Method Sourc Prep ID: Analytical Method ID: Instrument:	e:	02/15/2018 02/17/2018 40 CFR 136.3 Std. Methods 3 Std. Methods 2 iCE 3500, FLA	200.9				
Matrix: Sample volume used:		Aqueous (water 50 mL		, groundwater) Dilution Factor: 1			
Analyst:		SE	-				

Qualifiers:

Qualifiers: E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time J – Estimated value detected below the RL/MRL S – Spike recovery outside acceptance limits U – Analyte not detected X – See case narrative

Confidential and Privileged



Client:	Cotter Corp				
Analyte:	Residue – non, l	ilterable (TSS)			
Prep Date:		02/19/2018			
Analysis Date:		02/20/2018			
Approved Method Source	;	40 CFR 136.3			
Prep ID:		Std. Methods 2540 D			
Analytical Method ID:		Std. Methods 2540 D			
Instrument:		AE-240 Dual Range An	alytical Balance		
Matrix:		Aqueous (water, wastew	vater, groundwater)		
Sample volume used:		100 mL			
Analyst:		SB			
Location ID Smp Da	ate <u>SCG #</u>	Results	Flags	<u>RL</u>	<u>Units</u>
SW-BPL 02/14/1	No. 0		1 1455	4	mg/L
Client:	Cotter Corp				
Analyte:	Residue – filtera	ble (TDS)			
Prep Date:		02/19/2018			
Analysis Date:		02/20/2018			
Approved Method Source	:	40 CFR 136.3			
Prep ID:		Std. Methods 2540 C			
Analytical Method ID:		Std. Methods 2540 C			
Instrument:		AE-240 Dual Range An	alytical Balance		

AE-240 Dual Range Analytical Balance Matrix: Aqueous (water, wastewater, groundwater) Sample volume used: 100 mL Analyst: SB

SW-BPL 02/14/18 418127.A 188 10 mg/L	Location ID SW-BPL	<u>Smp Date</u> 02/14/18	<u>SCG #</u> 418127.A	Results 188	Flags	<u>RL</u> 10	<u>Units</u> mg/L	
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Qualifiers:

E – Extrapolated value. Value exceeds calibration range H – Analysis exceeded holding time

J - Estimated value detected below the RL/MRL

S – Spike recovery outside acceptance limits U – Analyte not detected

X - See case narrative