ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

January 29, 2014

Report to:
Jake Wilkinson
Colorado Mining and Exploration LLC
502 South Wisconsin Ave
Gunnison, CO 81230

Bill to:
Jake Wilkinson
Colorado Mining and Exploration LLC
502 South Wisconsin Ave
Gunnison, CO 81230

M-2014-027
CRYSTAL HILL MINE
POTENTIAL ACID GENERATION
OF WASTE ROCK.

Project ID:
ACZ Project ID: L16374

Jake Wilkinson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on January 09, 2014. This project has been assigned to ACZ's project number, L16374. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L16374. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 28, 2014. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

Colorado Mining and Exploration LLC
Project ID:
Sample ID: CRYSTAL HILL WASTE ROCK

ACZ Sample ID: ***L16374-01***
Date Sampled: *01/14/14 12:00*
Date Received: *01/09/14*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4		0			t CaCO3/Kt	1	5	01/29/14 11:26	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3		39			t CaCO3/Kt	1	5	01/29/14 11:26	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3		39			t CaCO3/Kt	1	5	01/29/14 11:26	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3	1	3.9		*	%	0.1	0.5	01/28/14 13:03	cdb
Sulfur Forms	M600/2-78-054 3.2.4-MOD									
Sulfur HCl Residue		1	0.01	B	*	%	0.01	0.1	01/28/14 0:00	cra
Sulfur HNO3 Residue		1		U	*	%	0.01	0.1	01/28/14 0:00	cra
Sulfur Organic Residual		1		U	*	%	0.01	0.1	01/28/14 0:00	cra
Sulfur Pyritic Sulfide		1	0.01	B	*	%	0.01	0.1	01/28/14 0:00	cra
Sulfur Sulfate		1		U	*	%	0.01	0.1	01/28/14 0:00	cra
Sulfur Total		1		U	*	%	0.01	0.1	01/28/14 0:00	cra
Total Sulfur minus Sulfate		1		U	*	%	0.01	0.1	01/28/14 0:00	cra

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								01/16/14 16:38	brd
Crush and Pulverize	EPA-600/2-78-054 3.1.3								01/22/14 12:00	thf
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2								01/22/14 12:15	thf

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Quals)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method Reference

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Colorado Mining and Exploration LLC

ACZ Project ID: ***L16374***

Neutralization Potential as CaCO3 M600/2-78-054 3.2.3

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG358424													
WG358424PBS	PBS	01/28/14 12:26				U	%		-0.1	0.1			
WG358424LCSS	LCSS	01/28/14 12:44	PCN33453	100		102.5	%	102.5	80	120			
L16374-01DUP	DUP	01/28/14 13:22			3.9	3.88	%				0.5	20	

Sulfur Organic Residual M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG358274													
L16317-01DUP	DUP	01/27/14 16:54			U	.01	%				200	20	RA

Sulfur Pyritic Sulfide M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG358274													
L16317-01DUP	DUP	01/27/14 16:54			.16	.17	%				6.1	20	

Sulfur Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG358274													
L16317-01DUP	DUP	01/27/14 16:54			.03	U	%				200	20	RA

Sulfur Total M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG358274													
WG358274PBS	PBS	01/27/14 9:00				U	%		-0.03	0.03			
WG358274LCSS	LCSS	01/27/14 11:38	PCN44488	4.07		4.18	%	102.7					
L16317-01DUP	DUP	01/27/14 16:54			.19	.18	%				5.4	20	

Total Sulfur Minus Sulfate M600/2-78-054 3.2.4-MOD

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG358274													
L16317-01DUP	DUP	01/27/14 16:54			.16	.18	%				11.8	20	

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Inorganic Extended Qualifier Report

Colorado Mining and Exploration LLC

ACZ Project ID: ***L16374***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L16374-01	WG358274	Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4-MOD	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ

Neutralization Potential as CaCO3	M600/2-78-054 3.2.3
Sulfur HCl Residue	M600/2-78-054 3.2.4-MOD
Sulfur HNO3 Residue	M600/2-78-054 3.2.4-MOD
Sulfur Organic Residual	M600/2-78-054 3.2.4-MOD
Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4-MOD
Sulfur Sulfate	M600/2-78-054 3.2.4-MOD
Sulfur Total	M600/2-78-054 3.2.4-MOD
Total Sulfur minus Sulfate	M600/2-78-054 3.2.4-MOD

ACZ Laboratories, Inc.
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Sample Receipt

Colorado Mining and Exploration LLC

ACZ Project ID: L16374
Date Received: 01/09/2014 14:49
Received By: mtb
Date Printed: 1/14/2014

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?		X	
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		

The project manager contacted the client and a chain of custody was received on 1/14/14. The sample was received on 1/9/14.

7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA18978	16.7	13	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L16374

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Jake Wilkinson
Company: Colorado Mining and Exploration LLC
E-mail: wilkinson.4@live.com
Address: 502 SOuth Wisconsin
Gunnison, Co 81230
Telephone: 970-417-3311

Copy of Report to:

Name:
Company:
E-mail:
Telephone:

Invoice to:

Name: Jake Wilkinson
Company: Colorado Mining and Exploration LLC
E-mail: wilkinson.4@live.com
Address: 502 South Wisconsin St
Gunnison, Co 81230
Telephone: 970-417-3311

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes No X

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Jake Sampler's site Information State: Colorado Zip code 81230 Time Zone mountain

Check box if observe Daylight Savings Time: X

PROJECT INFORMATION

Quote #: CRYSTAL-HILL-ABA
PO#:
Reporting state for compliance testing: Colorado
Check box if samples include NRC licensed material?

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE/TIME	Matrix	# of Containers								
Crystal Hill waste rock	1/14/14 : 12:00	SO									

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
[signature]	1-14-14	11:00	[signature]	1.14.14	14:40

FRMAD050.12.12.12 White - Return with sample. Yellow - Retain for your records.

L16374 Chain of Custody

ACZ Laboratories, Inc.
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Analytical Quote

Jake Wilkinson
Aspen Mineral Resources
502 South Wisconsin Ave
Gunnison, CO 81230

9/5/2013

Quote Number: CRYSTAL-HILL-ABA

Matrix: Soil — 1 Waste Rock Sample, 1 Time Analysis for ABA

Parameter	Method	Detection Limit	Cost/Sample
Misc.			
Electronic Data Deliverable			$0.00
Quality Control Summary			$0.00
Sample Preparation			
Air Dry at 34 Degrees C	USDA No. 1, 1972		$12.00
Crush and Pulverize	EPA-600/2-78-054 3.1.3		$18.00
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2		$18.00
Soil Analysis			
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 3.2.4	Calculation	$0.00
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	Calculation	$0.00
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	Calculation	$0.00
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3	0.1 %	$24.00
Sulfur Forms	M600/2-78-054 3.2.4-MOD	0.01 %	$111.00
		Cost/Sample:	**$183.00**

This quote is based on a Standard Turnaround Time (TAT) of approximately 21 days for soil and solid matrices (15 working days). TAT may vary with seasonal heavy workload. Please contact your PM if rush TAT is required. Rush TAT needs to be pre-approved prior to sample shipment to assure that due dates can be met. Pricing includes standard reporting formats and standard ACZ EDDs. All projects received are subject to a $125.00 Minimum Charge. Please note that method detection limits are estimates and may be elevated depending on sample matrices that require dilution. Pricing includes coolers, soil jars or bags, labels, COCs and ice-packs if needed for your analysis, shipped to your site or office via UPS ground. Return shipping is the responsibility of the client. Please allow ample time for your bottles to arrive. Please note that soil preparation charges may fluctuate depending on the condition and volume of samples upon receipt. Wet samples may increase your TAT if air-drying is needed per your analysis.

ACZ Laboratories, Inc.
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Analytical Quote

Jake Wilkinson
Aspen Mineral Resources
502 South Wisconsin Ave
Gunnison, CO 81230

9/5/2013

Quote Number: CRYSTAL-HILL-ABA

CONTRACT DETAILS

Pricing includes shipment of all standard sample containers and related paperwork by UPS Ground Service. Please allow three to five days for delivery when ordering containers. ACZ must be notified prior to receiving samples of all special requests such as electronic data deliverables or special reporting reqirements. The client will be charged for special sample containers or express shipping and additional charges may apply for non-standard requests.

This quotation is valid for six months from the bid date unless specified otherwise in the bid. All bids must be signed and returned to ACZ before the project(s) is received. The authorized signature represents acceptance of the pricing as well as the general terms and conditions of ACZ Laboratories, Inc. which may be downloaded from our web site at http://www.acz.com/PDF/termsconditions.pdf. Please note that MDL's in this quote may possibly increase due to sample matrix or samples with high TDS.

All orders that require shipping of coolers are subject to a minimum charge of $200.00. Local orders without shipping are subject to a minimum charge of $125.00. Samples may incur a $11.00/sample disposal fee for any samples deemed to be hazardous.

ACZ Representative (Authorized signature and date)

Client Representative (Authorized signature and date)