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Technical Memorandum

To:	Kathy Arnold	**From:**	Amy L. Hudson, REM
Company:	Rosemont Copper Company	**Date:**	November 23, 2010
Re:	Rosemont Preliminary Geochemistry Review Response to Comments	**Doc #:**	269/114-320884-5.3
CC:	David Krizek, P.E. (Tetra Tech); Mark Williamson (Geochemical Solutions)		

1.0 Introduction

A technical review of the geochemical characterization reports for the Rosemont Copper Project (Project) was prepared by SRK Consulting (SRK) and presented in a Technical Memorandum titled *Preliminary Geochemistry Review – Proposed Rosemont Copper Project* dated February 10, 2010 (SRK, 2010). The reports included in the SRK review included:

- Preliminary Trip Report and Phase I Sampling and Analysis Plan (Vector, 2006a);
- Baseline Geochemical Characterization, Rosemont Copper (Tetra Tech, 2007a); and
- Geochemical Characterization, Addendum 1 (Tetra Tech, 2007b).

The technical review was conducted on behalf of the Coronado National Forest (CNF) and SWCA Environmental Consultants (SWCA) as part of the Environmental Impact Statement (EIS) process associated with the Rosemont Copper Project (Project).

The following presents responses to the specific comments presented by SRK. The section numbers below correspond to the sections of the February 10, 2010 memo (SRK, 2010) and each issue raised is addressed separately. Attachment 1 provides a copy of SRK's review comments.

2.0 Assessment of Investigative Methods and Protocols

The initial comments regarding the geochemical characterization reports relate to the methods implemented to collect the data presented in the three (3) subject reports. In general, there were four (4) comments regarding the methods and protocols:

- A detailed sampling and analysis plan was not provided;
- No information was provided regarding the source of the tailings material that was tested;

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Memorandum

To: Bev Everson
Cc: Tom Furgason
From: Kathy Arnold
Doc #: 046/10 – 15.3.2
Subject: **Transmittal of Technical Responses and Reports**
Date: November 30, 2010

Rosemont is pleased to transmit the following documents:

- *Survey of Salvage Topsoil Resources for the Rosemont Mining Area – Revision 1*, Tetra Tech, November 2010
- *Rosemont Preliminary Geochemistry Review Response to Comments*, Technical Memorandum, Tetra Tech, November 23, 2010
- *Rosemont Infiltration, Seepage, Fate and Transport Response to Comments*, Technical Memorandum, Tetra Tech, November 23, 2010
- *Regional Groundwater Flow Model*, Tetra Tech, November 2010

Rosemont is providing ~~three~~ two KAA hardcopies and two disk copies for the Forest and ~~two~~ one KAA hardcopies and one disk copy for SWCA of the technical memos. Copies of the reports are provided in a hardcopy format with the disk copies enclosed in the same number and these reports were posted to SWCA's FTP site yesterday.

- The reports lack a detailed description of the lithology; and
- There is no mineralogical description of the tested samples.

2.1 Sample Collection Methods and Representativeness (SRK Section 1.1)

In this section of the SRK comment document, the issues were raised as specific questions. Each question is presented below with a response to the issues raised.

How is "Waste Rock" defined at Rosemont?

Waste rock is defined strictly by its copper grade. Based on the current mine plan and understanding of the site, any rock material of less than 0.1 to 0.2% copper was classified as waste rock. The definition of waste rock, milled ore, and leach material was provided on page 2 of the Technical Memorandum titled *Preliminary Trip Report and Phase 1 Sample & Analysis Plan* (Vector, 2006a) dated July 26, 2006 and is still applicable. Please note that the reference to quartz latite porphyry below has been corrected to quartz monzonite porphyry.

> "Rocks contained in the pit will fall into three categories depending on their copper grade and leachability: mill grade ore (>0.2% sulfide copper), leach grade ore (other material, mostly Bisbee Group and quartz latite porphyry with 0.1 to 0.2% copper), and waste rock."

Percentages of Reported Rock Types Representing Waste, Ore, Tailings

The process of defining the quantity of ore, leach material, and waste rock was still ongoing when the three (3) subject reports were written. As each report or memo on the Project was written, the most current material tonnages as provided by Rosemont were used. The most up-to-date quantities of waste rock, heap material, and ore, as defined by the P673 pit shell, are defined in the following tables.

Table 1 summarizes the waste rock material proportions by rock type and the number of samples tested for acid base accounting (ABA), Synthetic Precipitation Leaching Procedure (SPLP), and Meteoric Water Mobility Procedure (MWMP). Table 2 provides a summary of oxide ore rock types and tonnages. Table 3 provides a summary of the tailings samples generated for the Rosemont Project and the associated test protocols applied to each sample. Table 4 shows the composition of these tailings samples.

Table 5 provides a breakdown of the tailings composition based on the following divisions:

- 0-3 Year Tailings Production
- 4-7 Year Tailings Sample
- 8-21 Year Tailings Sample

In addition to the 0-3 Year and 4-7 Year composite samples, the 8-21 Year Tailings Sample was prepared using the short-term geochemical leaching results of the 2010 tailings samples (Tetra Tech, 2010d). These results were proportionately mixed using the computer code PHREEQC (Parkhurst and Appelo, 1999) to obtain the 8-21 Year Tailings Sample. These results were used in the in the *Infiltration, Seepage, and Fate and Transport Modeling – Revision 1* report (Tetra Tech, 2010a). PHREEQC is a reaction path chemical equilibrium model supplied by the U.S. Geological Survey (USGS). PHREEQC is able to process multiple equilibria and mixing reactions to produce the final chemical speciation of a system.

Table 1 Summary of Waste Rock Types and Tonnages

Rock Type	Tons of Material	Percent of Material (by weight)	No. of ABA Tests	No. SPLP Tests	No. MWMP Tests
Arkose	546,336,000	44.38%	55	8	8
Tertiary Gravel	141,227,000	11.47%	5	0	0
Abrigo	113,815,000	9.24%	6	5	0
Horquilla	87,141000	7.08%	26	8	2
Glance	80,841,000	6.57%	4	0	0
Andesite	49,118,000	3.99%	38	4	6
Concha	34,107,000	2.77%	6	1	1
Martin	32,304,000	2.62%	7	4	0
Earp	29,577,000	2.40%	14	6	0
Epitaph	27,150,000	2.21%	16	6	0
Escabrosa	22,859,000	1.86%	10	4	0
Bolsa	23,447,000	1.90%	13	6	0
Colina	16,145,000	1.31%	11	4	0
Quartz Monzonite Porphyry	13,047,000	1.06%	9	2	1
Scherrer	8,524,000	0.69%	0	0	0
Pre-Cambrian	4,203,000	0.34%	0	0	0
Undefined	941,000	0.08%	0	0	0
Overburden	391,000	0.03%	6	2	2
Total Amounts	**1,231,173,000**	**100%**	**226**	**60**	**20**

Table 2 Summary of Oxide Ore Types and Tonnages

Rock Type	Tons of Heap Material	Percent of Heap Material
Arkose	44,269,000	63.26%
Quartz Monzonite Porphyry	14,436,000	20.63%
Andesite	11,270,000	16.11%
Totals	**69,975,000**	**100%**

Table 3 Tailings Sample Generation Date and Test Protocols

Sample ID	Sample Date	ABA	NAG pH	Whole Rock	SPLP	MWMP
Tailings – May 2006	05/19/2006	X		X	X	
Tailings 022807	02/28/2007	X	X	X	X	
Tailings-05 June2007	06/05/2007	X	X	X	X	X
Year 0-3 Tailings	July 2008	X		X	X	X
4-7 Year Composite	06/21/2010	X	X	X	X	X
Escabrosa	06/21/2010	X	X	X	X	
Horquilla	07/08/2010	X	X	X	X	X
Colina	07/08/2010	X	X	X	X	X
Epitaph	07/01/2010	X	X	X	X	X
Earp	07/01/2010	X	X	X	X	X

Table 4 Rock composition for Tailings Samples

Sample ID	Rock Units
Tailings – May 2006	Horquilla
Tailings 022807	Horquilla
Tailings-05 June2007	Horquilla
Year 0-3 Tailings	21.3% Earp 72.9% Horquilla 5.8% Escabrosa (Year 0 to 3 composite)
4-7 Yr. Composite	50% Horquilla 28% Earp 18% Colina 4% Epitaph
Horquilla	Horquilla
Colina	Colina
Epitaph	Epitaph
Earp	Earp
Escrabrosa	Escrabrosa

Table 5 Summary of Tailings Tonnages and Sulfide Ore Rocks Types

Rock Type	Tons of Tailings	Percent of Tailings	Tons of Tailings	Percent of Tailings	Tons of Tailings	Percent of Tailings
	Yrs 0-3		Yrs 4-7		Yrs 8-21	
Mixed Horquilla	0	0%	151	0%	12,209	3%
Sulfide Epitaph	86	0%	2,804	3%	45,105	13%
Sulfide Colina	21	0%	11,011	10%	68,188	19%
Sulfide Earp	9,051	11%	26,043	24%	55,959	16%
Sulfide Horquilla	51,061	63%	56,793	52%	39,043	39%
Sulfide Escabrosa	4,082	5%	1,222	1%	14,506	4%
Sulfide Other	17,219	21%	12,237	11%	18,663	5%
Total Sulfide Ore Mined	**81,520**	**15%**	**110,261**	**20%**	**353,673**	**65%**

Method to Classify Material Types and Select Samples

Sulfide ore, leach material, and waste rock were defined based on the copper grade of the material. The sample selection process involved comparing the interval of a borehole identified through the assay database with the mine plan block model, and the classification of all samples was verified by William L. Rose, P.E., the mine planner, prior to collecting the sample and submitting it for laboratory analysis. A detailed description of the sample compositing method is described in a Technical Memorandum titled *Rosemont Geochemical Sample Composite Method* dated November 2, 2009 (Tetra Tech, 2009a) Those samples referenced as waste rock within the geochemical characterization reports were verified through this process and are representative of the material that will be placed in the Waste Rock Storage Area or as buttress material for the Dry Stack Tailings Facility, etc.

Comments were made that the sample distribution seems to be sufficient in three-dimensions, but that the samples also tend to be from the central area of the pit. This comment was specifically addressed in a Technical Memorandum titled *Geochemical Sample Selection* dated August 26, 2010 (Tetra Tech, 2010b). In addition, the plan view maps (Figures 2 through 4 of Tetra Tech, 2007b) showing the sample locations, depths, and characterization were included in the August 26, 2010 memorandum (Tetra Tech, 2010b). These figures (revision 1) were also updated to include the additional 60 samples that were collected after the *Geochemical Characterization, Addendum 1* report (Tetra Tech, 2007b) was published.

A request was made to add the elevations to the mine pit contours on the revised Figures 2 through 4 or to include cross sections showing the locations of the samples. The decision was made to not include the elevations on the contours of these figures for clarity. These figures already have a significant amount of information and adding additional information would make them more difficult to read.

At the time the three (3) geochemical characterization documents (Vector, 2006a; Tetra Tech, 2007a and Tetra Tech, 2007b) were published, only a limited number of tailings samples had been developed and were available for testing. As additional samples were characterized, technical memorandums were written to provide the new information. Since November 2007, seven (7) additional tailings samples (Year 0-3 Tailings, 4-7 Year Composite, Escabrosa, Horquilla, Colina, Epitaph, and Earp) have been developed and analyzed using the same testing methods as those used for characterizing the waste rock (Acid-Base Accounting [ABA], Synthetic Precipitation Leaching Procedure [SPLP], Meteoric Water Mobility Procedure [MWMP], etc.). The information related to how each of the tailings samples was developed and tested for the Rosemont Project have been recently been reported in a technical memoranda titled *Rosemont Tailings Geochemistry Sample Sources* dated August 30, 2010 (Tetra Tech, 2010c) and *Rosemont 2006-2008 Tailings Material Sample Sources* (Tetra Tech, 2010d). These memos contain information about the material used to generate the tailings (e.g., borehole, depth interval, ore grade, rock type, etc.).

Was the Geochemical Sampling Program Representatives given the Stated Proportions of Rock Types in the Waste and Tailings?

From inspection of Tables 1, 4, and 5, the bulk of the material testing was targeted on the rock types with the highest percentages. In this manner, testing was representative of the waste rock and tailings major components. Minor sources of the rock types going to either the waste rock or to tailings were not tested. However, the rock types may have been tested in the other material stream. For example, although Arkose is a minor contribution to the tailings (1.90% of total sulfide ore types), this material is a major waste rock source and was therefore characterized under this material stream.

2.2 Laboratories, Analytical Methods, and QA/QC Protocols

SRK noted that the detection limits of the SPLP analysis performed by Turner Laboratories were above the Arizona Water Quality Standards (AWQS) for the May 2006 tailings sample. The May 2006 tailings sample represents the earliest stages of developing the Rosemont project. This sample was analyzed prior to development of a geochemical characterization sampling and analysis plan (Vector, 2006a). For this reason, the SPLP results of the May 2006 tailings sample was not used in the predictive modeling and site assessments. Section 6.3.3 of the *Infiltration, Seepage, Fate and Transport Modeling Report – Revision 1* (Tetra Tech, 2010a) discusses the data used in the predictive modeling of water quality related to the tailings facility, and those that were excluded.

SRK also noted that the thallium detection limit for the humidity cell testing performed in 2007 was equal to the AWQS. The majority of the analysis results were less than the detection limit, so it has been suggested that this data should not be used for determination of compliance. Additional samples were submitted for humidity cell testing after 2007, and the detection limit

used for the analysis of thallium was 0.001 mg/L. Again, the sample results reported were below the detection limits, which are below the AWQS. In 2009, six (6) samples were submitted for SPLP testing, and two (2) samples were submitted for MWMP testing. Both groups of samples were analyzed using low detection limits to ensure that they were below the AWQS. This data confirms that thallium is not readily leachable from the waste rock material (see Tetra Tech, 2009b).

The final comment related to laboratories and analytical methods is related to duplicate samples for QA/QC purposes. Although a formal QA/QC plan was not completed, QA/QC sampling and analysis did occur throughout the characterization program. A total of 16 blind duplicate samples were submitted for laboratory analysis using ABA testing (Table 6). This is approximately equal to one (1) duplicate sample for every 13 samples. To ensure that the samples were truly blind duplicates, the same sample naming scheme was used. The table below presents the 16 original samples and the 16 duplicate samples and their ABA results. In addition to the blind duplicate samples, the laboratory performed one (1) duplicate sample analysis for each group submitted. The results of the duplicate samples selected by the laboratory can be found in the individual data packages provided in the appendices of the geochemical characterization reports (Tetra Tech, 2007a and 2007b).

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Table 6 Summary of Duplicate ABA Sampling Results

Sample ID	Sample Interval	Rock Type	NNP	AP	NP	NP/AP	NAG Test	Pyritic Sulfur	Sulphate Sulfur	Total Sulfur	Non-Extractable Sulfur
AR2017-03	750-800	Arkose	32.3	40.9	73	1.79	7.89	1.31	0.29	1.60	0.01
AR2017-07	750-800	Arkose	33	41.6	75	1.79	7.68	1.33	0.01	1.33	0.01
AR2025-01	30-80	Andesite	7.5	30.3	38	1.25	8.12	0.97	0.33	1.30	0.01
AR2025-03	30-80	Andesite	39.1	0.3	39	260.6	7.66	0.01	1.39	1.39	0.01
AR2025-02	825-865	Arkose	56	15.9	72	4.52	8.18	0.51	0.21	0.72	0.01
AR2025-04	820-870	Arkose	24.9	6.3	31	4.94	8.56	0.20	0.12	0.42	0.1
AR2025-04	820-870	Arkose	24.9	6.3	31	4.94	8.56	0.20	0.12	0.42	0.1
AR2030-02	15-65	Arkose	97.2	<0.3	97	648	8.21	<0.01	<0.01	<0.01	<0.01
AR2030-04	15-75	Arkose	63.5	<0.3	64	423.3	8.49	<0.01	<0.01	<0.01	<0.01
AR2030-03	135-180	Andesite	56.6	11.9	69	5.76	8.65	0.38	0.07	0.45	<0.01
AR2030-05	135-185	Andesite	42.4	5.3	48	9	8.42	0.17	0.11	0.34	0.06
AR2036-01	800-850	Arkose	95.6	7.2	103	14.3	9.56	0.23	0.13	0.36	<0.01
AR2036-03	800-850	Arkose	70.2	5	75	15.04	8.69	0.16	0.02	0.24	0.06
AR2036-02	965-1015	Qmp	4.7	<0.3	4.7	31.3	7.56	<0.01	0.04	0.06	0.02
AR2036-04	965-1015	Qmp	0.3	<0.3	0.3	1	5.67	<0.01	0.01	0.03	0.02
AR2038-01	100-150	Andesite	13.4	0.3	14	45.6	9.42	0.01	0.01	0.02	<0.01
AR2038-04	100-150	Andesite	6.2	<0.3	6.2	41.3	8.66	<0.01	0.02	0.02	<0.01
AR2038-02	325-375	Arkose	100	<0.3	100	666.6	8.54	<0.01	<0.01	<0.01	<0.01
AR2038-05	325-375	Arkose	16.6	<0.3	17	110.6	7.80	<0.01	<0.01	<0.01	<0.01
AR2038-03	600-650	Andesite	43.5	<0.3	44	290	9.53	<0.01	<0.01	<0.01	<0.01
AR2038-06	600-650	Andesite	38.9	<0.3	39	259.3	8.63	<0.01	<0.01	<0.01	<0.01
AR2039-01	0-50	Overburden	7.6	1.9	9.5	5	8.95	0.06	0.21	0.32	0.05
AR2039-04	0-50	Overburden	4.2	<0.3	4.2	28	8.56	<0.01	0.09	0.19	0.1

Table 6 Summary of Duplicate ABA Sampling Results (Continued)

Sample ID	Sample Interval	Rock Type	NNP	AP	NP	NP/AP	NAG Test	Pyritic Sulfur	Sulphate Sulfur	Total Sulfur	Non-Extractable Sulfur
AR2039-02	200-250	Overburden	17.4	1.6	19	11.9	8.49	0.05	0.10	0.17	0.02
AR2039-05	200-250	Overburden	18.9	0.3	19	64	8.71	0.01	0.06	0.12	0.05
AR2039-03	575-625	Arkose	4.5	20.3	25	1.22	9.20	0.65	0.15	0.80	<0.01
AR2039-06	575-625	Arkose	-3.4	23.1	20	0.853	7.96	0.74	0.19	1.04	0.11
AR2042-02	110-155	Arkose	134	<0.3	134	893.3	8.80	<0.01	<0.01	<0.01	<0.01
AR2042-04	110-160	Arkose	111	<0.3	111	740	7.97	<0.01	<0.01	<0.01	<0.01
AR2042-01	300-350	Concha	432	<0.3	432	2880	8.78	<0.01	<0.01	<0.01	<0.01
AR2042-05	300-350	Concha	570	<0.3	570	3800	8.32	<0.01	<0.01	<0.01	<0.01
AR2042-03	1190-1220	Horquilla	285	<0.3	285	1900	8.90	<0.01	0.06	0.06	<0.01
AR2042-06	1190-1240	Horquilla	410	<0.3	410	2733.3	7.89	<0.01	<0.01	<0.01	<0.01

In addition to the blind duplicate samples submitted to the laboratory for ABA analysis, seven (7) samples were submitted to the laboratory for duplicate analysis using the SPLP method. This group of samples was also tested using a lower reporting limit as well. The duplicate samples were only analyzed for antimony, arsenic, and thallium. Table 7 presents the results for the seven (7) duplicate pairs.

Table 7 Summary of Duplicate SPLP Sampling Results

Sample ID	Sample Interval	Rock Type	Antimony	Arsenic	Thallium
1530-01	1009-1012	Horquilla	<0.02	<0.02	<0.02
1530-01_6.18.09	1009-1012	Horquilla	<0.003	<0.004	<0.001
1561-01	50-84 & 89-95	Abrigo	<0.02	<0.02	<0.02
1561-01_6.18.09	50-84 & 89-95	Abrigo	<0.003	<0.004	<0.001
1596-03	741-746	Horquilla	<0.02	<0.02	<0.02
1596-03_6.18.09	741-746	Horquilla	<0.003	<0.004	<0.001
A818-01	1057-1062	Abrigo	<0.02	<0.02	<0.02
A818-01_6.18.09	1057-1062	Abrigo	<0.003	<0.004	<0.001
AR2001-01	200-250	Arkose	<0.02	<0.025	NM
AR2001-01_6.18.09	200-250	Arkose	<0.003	0.02	<0.001
AR2041-01	465-500	Arkose	<0.02	0.01	<0.02
AR2041-01_6.18.09	465-500	Arkose	<0.003	0.01	<0.001

2.3 Leaching Tests – Laboratory and Field Procedures

The only comment made regarding the leaching tests was related to the on-site column testing. SRK accepts the method of the laboratory humidity cell testing as it followed ASTM methods. Testing methods for the on-site columns are not described by an ASTM procedure. However, a Standard Operating Procedure (SOP) was written and the on-site personnel that oversaw the operation of the columns received a day of training. Training included instrument calibration/use and specifics on the testing procedure. Testing and sample collection was assigned to the same person so that consistency was maintained from week to week.

The on-site column SOP (Tetra Tech, 2006b) was not published, but was part of the Project file. A copy of the SOP, including a diagram of the column construction, the field instrument calibration sheets, and an example field parameter datasheet is included as Attachment 2 of this Technical Memorandum.

The material placed in the on-site columns was the coarse reject material remaining from the static and short-term leaching analyses performed at SVL Analytical (SVL). The size distribution of the material ranged from silt to small gravel. Ideally, this material would have been less fine, but no other material was available to test the intervals of interest. The six (6) column tests were

only run for 21 weeks. Because of the fine material fractions, the column samples started to cement together, preventing proper drainage. Therefore, the column tests were discontinued. The column test results were never used in any of the geochemical analyses because of the short duration of the testing. The chemistry of the column leachate never stabilized before they cemented and became inoperable.

3.0 Preliminary Trip Report and Phase I Sampling and Analysis Plan (Vector Arizona, 2006)

The technical memorandum titled *Preliminary Trip Report and Phase 1 Sampling and Analysis Plan* (Vector Arizona, 2006a) was prepared as a trip report and planning document for the geochemical characterization program at the Rosemont site. No other Sampling and Analysis Plan (SAP) was prepared for the Project. Specific comments made by SRK regarding this document are addressed in the following bullets.

1. *No mineralogical study was proposed during the geochemical characterization program.*

   A detailed relogging program was being completed on core received from a new drilling program at the Project site, as well as from historic core, when the preliminary trip report and SAP (Vector Arizona, 2006a) was developed. Based on the information provided by the site geologist, and inspection of core during the site visit, it was decided that a separate mineralogical study was not necessary. Although sulfide minerals are present in rocks comprising the Rosemont pit, the system is dominated by acid neutralizing limestone (calcite). Calibration of conventional ABA methodology through the use of refine mineralogical analysis, while potentially very useful at project sites where there is a significant level of uncertainty related to acid generating potential, will have limited useful impact in refining waste rock leachate quality estimates at the Rosemont site. Therefore, it was decided that the geochemical characterization activities would focus on acid base accounting (ABA), short-term leaching (SPLP and MWMP), and overall composition method.

2. *Use of the SPLP data will likely give dilute results that are not representative because of the fresh nature of the rock samples. More aggressive leaching tests, such as Net Acid Generation (NAG) metals or MWMP, should be included.*

   A variety of testing methods were employed during the geochemical characterization program: SPLP; MWMP; and long-term humidity cell testing. The testing results compiled as part of the Rosemont geochemical characterization program suggest that SPLP should be adequate and acceptable. A Technical Memorandum titled *SPLP Usage for Pit Wall Runoff* (Tetra Tech, 2010c) assembled graphical representations of average humidity cell testing results along with average SPLP and MWMP results from the Rosemont geochemical characterization program. As shown in the memo, SPLP

results are consistent with long-term humidity cell testing results, if not higher in concentration. The results presented in the Tetra Tech (2010c) memo indicate that despite the relatively high water to rock ratio of the SPLP test (20:1), they should provide a reasonable source term characterization consistent with other leaching methods.

3. *The high buffering capacity of the site material will likely bias the results of the short term leaching tests, and SRK recommends using the NAG tests to confirm the predicted acid generation.*

   NAG pH testing was complete on approximately 180 of the 226 total waste rock samples. This testing method was used to confirm the results of the ABA testing due to the high neutralization capacity of the materials at Rosemont and its potential influence on the ABA neutralization potential results. The results of the NAG pH testing were consistent with the ABA testing, and confirmed the characterization of the waste rock material.

4. *The use of SPLP testing to characterize the tailings material is not considered suitable, and SRK recommends using either the NAG metal or MWMP testing methods*.

   The SPLP results used to represent the tailings material were consistent with the long-term humidity cell results and the MWMP results. These three (3) tests represent water to rock ratios of 20:1 (SPLP), about 1.5:1 (humidity cell) and 1:1 (MWMP). The results suggest that the leaching behavior of the tailings material, as tested, was not particularly sensitive to the water to rock ratio. However, the first flush of most of the humidity cell tests was elevated for some of the chemical constituents relative to the long-term results. This is typical because the samples have time to build up salts during transport and test setup. The salts are then flushed from the column material during the week zero leaching of the humidity cells resulting in elevated concentrations that may not be representative of the materials long term behavior under site conditions.

5. *The heap leach material characterization was not part of the request review by SRK; however, they provided the comment that the testing may not fully assess the formation of gypsum and the potentially high sulfate conditions that may exist.*

   A total of three (3) leach grade samples were tested for ABA, SPLP, MWMP, and whole rock analyses. The material was characterized as non-acid generating and gypsum could be a potential concern. For this reason, a water management plan and post-closure treatment option were considered as part of the report titled *Infiltration, Seepage, and Fate and Transport – Revision 1* (Tetra Tech, 2010a).

4.0 Baseline Geochemical Characterization (Tetra Tech, 2007)

The *Baseline Geochemical Characterization* report (Tetra Tech, 2007a) was prepared as a baseline summary of the geochemical characterization and conditions at the Rosemont site. The data reported included 94 waste rock and two (2) tailings samples and resulting analytical data.

At the time the report was published, only 94 waste rock samples had been available for testing. Currently, a total of 226 waste rock samples have been tested and used for characterizing the geochemical nature of the Project site. Tables 8 and 9 below are updated versions of Tables 3.3 and 3.4 from the *Baseline Geochemical Characterization* report (Tetra Tech, 2007a). Table 8 provides neutralization potential ratio (NPR) results for the 226 waste rock samples. Table 9 provides net neutralization potential (NNP) results. Tables 8 and 9 include the characterization of the 226 samples collected to date. In addition, updated tables containing the geochemical analytical data gathered to-date are presented in Attachment 3.

Table 8 Summary of Waste Rock NPR Results (total of 226 samples)

	NPR Range		
	Less than 1	**Between 1 and 3**	**Greater than 3**
	Likely Acid Generating	Uncertain or Moderate Acid Generation	Non-Acid Generating
Abrigo	0	0	5
Andesite	5	12	21
Arkose	1	6	47
Bolsa	6	3	6
Colina	0	1	10
Concha	0	0	6
Earp	0	1	13
Epitaph	0	0	16
Escabrosa	0	0	10
Horquilla	0	0	26
Limestone	0	0	4
Martin	0	0	7
Overburden	0	0	6
Qmp	0	1	8
Scherrer	0	0	5
Total	**12**	**24**	**190**

Table 9 Summary of Waste Rock NNP Results (total of 226 samples)

	NNP Range		
	Less than -20	**Between -20 and 20**	**Greater than 20**
	Likely Acid Generating	Uncertain or Moderate Acid Generation	Non-Acid Generating
Abrigo	0	0	5
Andesite	1	10	27
Arkose	0	15	39
Bolsa	1	12	2
Colina	0	0	11
Concha	0	0	6
Earp	0	1	13
Epitaph	0	0	16
Escabrosa	0	0	10
Horquilla	0	0	26
Limestone	0	0	4
Martin	0	0	7
Overburden	0	4	2
Qmp	0	7	2
Scherrer	0	3	2
Total	**2**	**52**	**172**

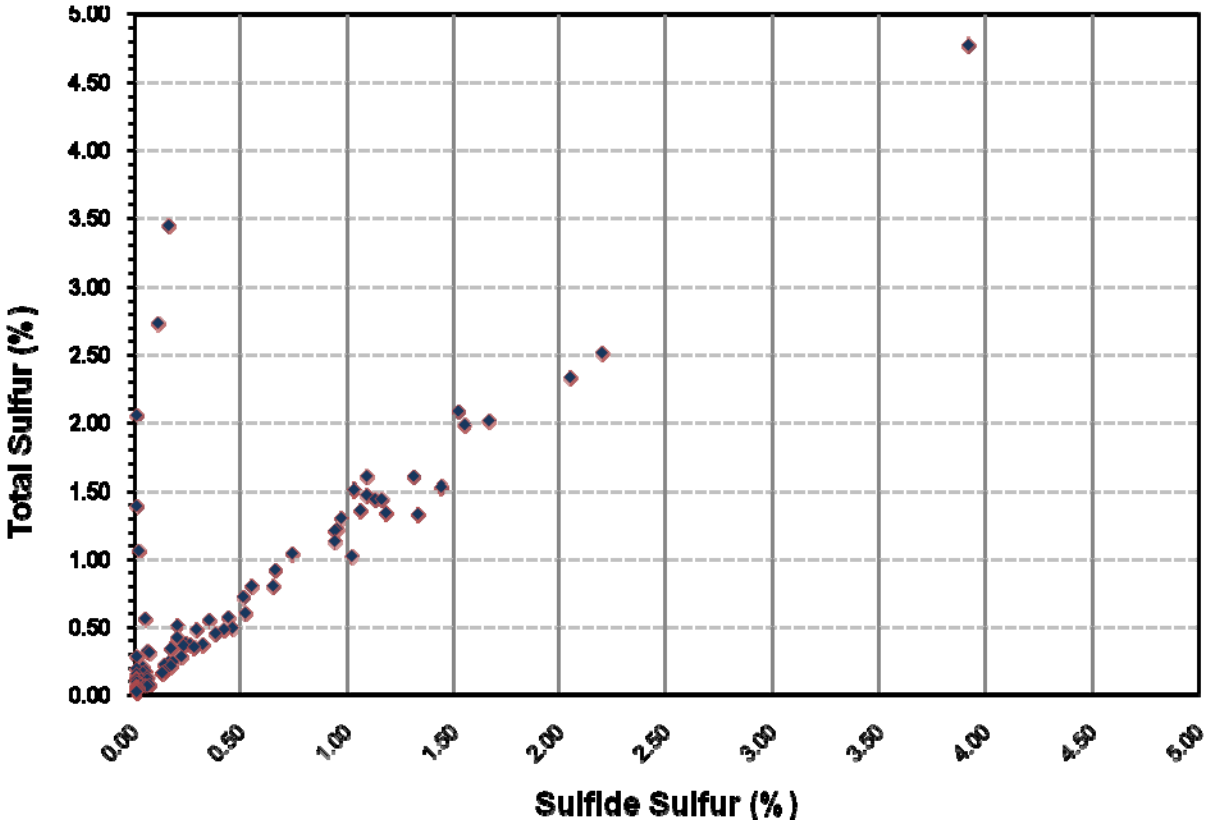
1. *The section on mineralogy is based on published works and is not site specific and is not directly applicable to the tested samples.*

   Based on the information provided by the Rosemont site geologist, and from looking at a selection of core during the initial geochemical characterization site visit, it was decided that a separate mineralogical study was not necessary. The deposit is a skarn formation, dominated by carbonate minerals and has a low sulfur (pyrite) content, making the development of acid rock drainage conditions unlikely. It was therefore decided that the geochemical characterization activities would focus on acid base accounting (ABA), short-term leaching (SPLP and MWMP), and overall composition (see also Section 3.0, item one, above).

2. *The presentation of the data needs improvement, including a different presentation of the sulfur speciation data and the inclusion of laboratory information and data package identification in the Appendix A tables.*

   Although no revision to the *Baseline Geochemical Characterization* report (Tetra Tech, 2007a) is planned, an updated version of Illustration 3.1 is presented below as Illustration 1 and an updated Table A-1 is provided in Attachment 3.

Illustration 1 Sulfur Speciation in Rosemont Samples



3. *Because site specific mineralogy was not completed, the neutralization potential cannot be directly related to the carbonate minerals and not an artifact of the testing method.*

   The Sobek NP test was designed and is used to provide an empirical measurement of the neutralization capacity of rock. It is true that silicate minerals can react to neutralize acidity, which only adds to the capacity of any non-ferrous carbonate to neutralize acidity. Silicate minerals most capable of neutralizing acidity during the Sobek NP laboratory measurements will favor mafic, high temperature phases that are volcanogenic in orgin (e.g., biotite, olivine). With the possible exception of the Andesite, mafic high temperature phases are not associated with most of the rock at Rosemont. For reference, andesite comprises 0.9% of the projected area of the ultimate pit walls and 6% of the waste rock tonnage.

4. *The whole rock analysis suggests that the materials are enriched in metals that are mobile under alkaline conditions. As was expected with the SPLP results, the dilute nature of the procedure resulted in non-detects for many of these analytes, but the inclusion of MWMP testing is useful.*

There is some indication that alkaline mobile constituents exist in the Rosemont deposit, and so SPLP, MWMP, and humidity cell testing methods were all employee to understand the leaching potential. The various testing method results were intended to be used together to provide a broad understanding of the site material behavior, including acid generation potential, overall composition, and leaching potential (both short and long term).

5. *The reference and terminology used in the draft ADEQ guidance for determining inertness should be removed, and the BADCT guidance should be referenced.*

   The draft guidance criteria for the determination of acid rock drainage (ARD) characteristics has been removed from current geochemical reports and studies being prepared for the Project. The Best Available Demonstrated Control Technology (BADCT) guidance document from the Arizona Department of Environmental Quality (ADEQ) is being used.

6. *The humidity cells tests as reported in this document only includes the first 20 weeks of testing. This is too short of a period to determine if a trend exists and to determine leaching rates.*

   At the time the *Baseline Geochemical Characterization* report (Tetra Tech, 2007a) was published, only 20 weeks of the humidity cell testing was completed. Additional reports and technical memorandums have been written since June 2007, which include the additional weeks of testing performed. This information is presented in the *Geochemical Characterization, Addendum 1 report* (Tetra Tech, 2007b).

7. *The use of SPLP and only ten weeks of humidity cell testing for the tailings material is insufficient to draw any conclusions concerning the behavior of the tailings material.*

   At the time the *Baseline Geochemical Characterization* report (Tetra Tech, 2007a) was published, only ten (10) weeks of the tailings humidity cell testing had been completed. Additional reports and technical memorandums have been written since June 2007 that includes additional weeks of testing data. This information is presented in the *Geochemical Characterization, Addendum 1* report (Tetra Tech, 2007b).

   Additional short-term leaching tests have also been performed since the Baseline Geochemical Report (Tetra Tech, 2007a) was produced in June 2007. These additional data were reported in the *Geochemical Characterization, Addendum 1* report (Tetra Tech 2007b) and in a series of technical memoranda. The most current data available can be found in the technical memoranda titled *Rosemont Tailings Geochemistry Sample Sources* (Tetra Tech, 2010d) and *Rosemont 2006-2008 Tailings Material Sample Sources* (Tetra Tech, 2010e).

5.0 Geochemical Characterization, Addendum 1 (Tetra Tech, 2007)

The report titled *Geochemical Characterization, Addendum 1* (Tetra Tech, 2007b) was prepared as a supplement to the *Baseline Geochemical Characterization* report (Tetra Tech, 2007a). The data reported included approximately 165 samples and resulting analytical data including waste rock, tailings, and leach grade material.

5.1 Waste Rock Characterization

1. *No documentation was provided to verify the materials are below the oxide/sulfide cutoff grades and are waste materials and what minerals are present such as percentage of silicate minerals, pyrite, and carbonate.*

   As described in Section 2.1 of this Technical Memorandum, ore, leach material, and waste rock were defined based on the copper grade of the material. The sample selection process involved comparing the interval of a borehole identified through the assay database with the mine plan block model. The classification of all selected samples was verified by Rosemont's mine planner prior to collecting the sample and submitting it for laboratory analysis. All samples referenced as waste rock within the geochemical characterization reports (Tetra Tech, 2007a and Tetra Tech, 2007b) were verified through this process and are representative of waste rock that will be placed in the Waste Rock Storage Area or used as buttress material for the Dry Stack Storage Facility, etc. Although assay data for the specific waste rock samples are not provided, the cutoff for oxide ore was 0.1% copper and 0.2% copper for sulfide ore.

   Based on the information provided by Rosemont's geologist during the initial geochemical characterization site visit in 2006, including inspection of select core samples, it was decided that a separate mineralogical study was not necessary. Although sulfide minerals are present in rocks comprising the Rosemont project, the system is dominated by acid neutralizing materials (limestone). This makes the development of acid rock drainage conditions unlikely. Calibration of conventional ABA methodology can be very useful at project sites where there is a significant amount of rock with uncertain ARD potential, however it is not deemed likely to have a limited useful impact in refining conditions at the Rosemont site. It was therefore decided that the geochemical characterization activities would focus on Acid Base Accounting (ABA), short-term leaching tests (SPLP and MWMP), and the overall composition of the waste rock. Therefore, a separate mineralogical study was not planned.

   Illustration 3.1 does not use standard graphing methodology to represent sulfur speciation in the ABA results.

Illustration 1 presented in this Technical Memorandum is a revision of Illustration 3.1 presented in the *Geochemical Characterization, Addendum 1* report (Tetra Tech, 2007b).

2. *It is difficult to cross reference the individual samples in the summary tables and to verify the information presented in the graphs of data collected.*

   Due to the amount of information summarized in the graphs (Tetra Tech, 2007b), a direct cross reference to the tables would be difficult and likely confusing.

3. *There are a number of samples that exceed the arsenic AWQS, and in some cases the method detection limit is at or above the numeric standard so no assessment of the water quality with respect to the standards can be made.*

   Analytical laboratory reporting limits are practical quantitation limits (PQL), not method detection limits (MDL). PQLs are occasionally above certain water quality standards that may or may not have application to interpretation site conditions. Inputs to the predictive modeling and characterization activities for values below laboratory reporting limits were assigned a value of one half the reporting limit to conservatively consider them in the water quality predictions.

4. *There are noticeable difference between the humidity cell testing results and the on-site column testing results. The use of five week sample composites for testing the metals does not adequately capture changes over the period, especially during the early weeks of testing. Additionally, the tests were terminated too early and 35 weeks of humidity cell testing and 20 weeks of on-site testing are insufficient to draw any conclusions with respect to metals leaching.*

   The humidity cell and column tests were performed in 2007 and the material associated with these tests is not available. In terms of the humidity cell tests, the materials were not producing acidic conditions or high metals concentrations during the testing period (35 weeks). Based on this information, and in consideration of the other data collected at the site such as ABA, SPLP, MWMP, and whole rock results, a sufficient level of information was available to terminate the column tests and make conclusions concerning the geochemical characteristics of the Rosemont site materials.

   The column tests were only run for 21 weeks and though some indications were shown that the material was reacting, the tests had to be terminated. The fine material fractions of the column samples started to cement together, preventing proper drainage, causing the column tests to be discontinued. The column test results were never used in any of the geochemical analyses because of the short duration of the testing. The chemistry of the column leachate never stabilized before they cemented and became in operable, so no conclusions can be drawn about the geochemical behavior of the samples.

5. *The humidity cell and on-site column testing are not conclusive as to the weathering nature of the rock materials and cannot be verified as being nonreactive.*

   In terms of the humidity cell tests, the materials were not reactive during the testing period (35 weeks). Based on this information, and in consideration of the other data collected at the site ABA, SPLP, MWMP, and whole rock results, a sufficient level of information was available to terminate the column tests and make conclusions concerning the geochemical characteristics of the Rosemont site materials.

5.2 Tailings Characterization

The report did not include detail related to the source of the sample material used to generate the samples. In addition, the reporting limits for the May 2006 sample are above the AWQS and are incomplete. The limited number of samples is insufficient to make conclusions.

At the time the *Geochemical Characterization, Addendum 1* report (Tetra Tech, 2007b) was published, only a limited number of tailings samples had been developed and were available for testing. As additional samples were characterized, technical memoranda were written to provide the new information. Since November 2007, seven (7) additional tailings samples (Year 0-3 Tailings, 4-7 Year Composite, Escabrosa, Horquilla, Colina, Epitaph, and Earp) have been developed and analyzed using the same testing methods as those used for the waste rock characterization (ABA, SPLP, MWMP, etc.). The information related to how each of the tailings samples was developed and tested for the Rosemont Project have been reported in the most current tailings technical memoranda titled *Rosemont Tailings Geochemistry Sample Sources* (Tetra Tech, 2010d) dated August 30, 2010 and *Rosemont 2006-2008 Tailings Material Sample Sources* (Tetra Tech, 2010e). Additionally, these technical memoranda contain information about the material used to generate the tailings (e.g., borehole, depth interval, ore grade, rock type, etc.).

REFERENCES

SRK Consulting, Bowell, R. (2010). *Preliminary Geochemistry Review – Proposed Rosemont Copper Project.* Technical Memorandum to Tom Ferguson (SWCA). Technical Memorandum Dated February 10, 2010.

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Tetra Tech, Joggerst, J. (2009a). Rosemont *Geochemical Sample Composite Method*. Technical Memorandum to Kathy Arnold (Rosemont Copper Company). Technical Memorandum Dated November 2, 2009.

Tetra Tech, Williamson, M. (2009b). *Tailings Geochemistry*. Technical Memorandum to Jamie Sturgess (Rosemont Copper Company). Technical Memorandum Dated March 24, 2009.

Tetra Tech, 2010a. *Infiltration, Seepage, and Fate and Transport Modeling – Revision 1*. Prepared Rosemont Copper Company. Report Dated August 2010.

Tetra Tech, Hudson, A. (2010b). *Geochemical Sample Selection*. Technical Memorandum to Kathy Arnold (Rosemont Copper Company). Technical Memorandum Dated October 26, 2010.

Tetra Tech, Williamson, M. (2010c). *Rosemont SPLP Usage for Pit Wall Runoff*. Technical Memorandum to Kathy Arnold (Rosemont Copper Company). Technical Memorandum Dated October 26, 2010.

Tetra Tech, Dieckhaus, M. (2010d). *Rosemont Tailings Geochemistry Sample Sources*. Technical Memorandum to Kathy Arnold (Rosemont Copper Company). Technical Memorandum dated August 30, 2010.

Tetra Tech, Dieckhaus, M. (2010e). *Rosemont 2006-2008 Tailings Material Sample Sources*. Technical Memorandum to Kathy Arnold (Rosemont Copper Company). Technical Memorandum dated August 30, 2010.

Vector Arizona, Arnold, K. (Vector) (2006a). *Preliminary Trip Report and Phase I Sampling and Analysis Plan*. Technical Memorandum to Jamie Sturgess and Mike Pawlowski (Augusta Resources). Technical Memorandum Dated July 26, 2006.

Vector Arizona, Hudson, A. (Vector) (2006b). *Standard Operating Procedure for On-Site Column Testing*. Technical Memorandum to Rosemont Project File. Technical Memorandum Dated October 20, 2006.

ATTACHMENT 1
PRELIMINARY GEOCHEMISTRY REVIEW – PROPOSED ROSEMONT COPPER PROJECT (SRK, 2010)

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Technical Memorandum

To:	Tom Furgason, SWCA	**Date:**	February 10, 2010
cc:	Dale Ortman, P.E.	**From:**	Rob Bowell, Eur.Geol, C.Chem MI S, C.Geol. FGS Corolla Hoag, R.G.
Subject:	Preliminary Geochemistry Review – Proposed Rosemont Copper Project	**Project #:**	183101

The following comments are related to three documents provided by SWCA concerning geochemical test work performed on rock and tailings materials at the Augusta Resource Rosemont Copper Project. These documents include the:

- *Preliminary Trip Report and Phase 1 Sampling and Analysis Plan* (Vector, 2006)
- *Baseline Geochemical Characterization, Rosemont Copper* (main text, Appendix A, and Appendix B) (Tetra Tech, 2007a), and
- *Geochemical Characterization, Addendum 1, Rosemont Copper*, (Tetra Tech, 2007b).

SWCA requested that SRK review these documents and provide a professional opinion as to whether the test assumptions, test procedures, analytical methods used, types of data collected, and results presented in each document are reasonable and in conformance with standard industry accepted practice. The review was limited to reading the documents provided although references to other documents, such as the APP application (Tetra Tech, 2009a) are made. A review of the laboratory analytical reports included in Tetra Tech (2007) was not performed. SRK has not undertaken an extensive literature search outside of documents provided so cannot comment on the full adequacy of information available in the public domain to supplement those documents submitted through SWCA. It was necessary, however, to refer to selected public technical reports as discussed and cited below to find information defining Rosemont waste and ore. Additionally, it is difficult for the senior author (Bowell) to confirm complete applicability of the test work as he has not been to the site and is not being personally familiar with the site conditions.

SRK was not provided with a formal Sampling and Analysis Plan with sampling and test work protocols; industry test protocols are referred to in the documents. General comments on the test program (methods used) and specific comments about the suitability of the methods are provided below.

1 Assessment of Investigation Methods and Protocols

A brief assessment is provided below of the methods used in the geochemical characterization investigation. Documentation was not provided to answer all questions; for example the source of the tailings test materials and what stage of tailings deposition the samples represent is not adequately provided. The assumptions, sampling collection methods, tests, and analytical methods where referenced in these reports are in general conformance with industry standard practice. The results presented are reasonable given the background data available based on these reports. The scopes of the geochemical programs detailed in these documents, however, do have some deficiencies related to the characterization the materials present at the mine site and their long-term geochemical behavior.

A work plan for geochemical characterization should identify test work appropriate to characterize the potential discharging facility under the proposed operational method and address the physical and chemical characterization per regulatory guidelines. Rosemont Copper Company submitted an application for an Aquifer Protection Permit in February 2009 to the Arizona Department of Environmental Quality (ADEQ). The process recommended by ADEQ to characterize ore and waste materials is described in Appendix B *Solution, Ore and Waste Characterization* of the *Arizona Mining Guidance Manual BADCT* (ADEQ, 2005). ADEQ recommends a tiered approach to characterize solid materials and potential leachates derived from the solids. Static test work and studies performed under the Tier #1 stage include:

- Description of mineralogy and lithology (rock, color, angularity, induration, grain-size distribution, mineral types and proportions to assess acid rock drainage and metal leachability, sulfide percentages, etc.);
- Leaching Tests
  - Synthetic Precipitation Leaching Procedure (SPLP by EPA Method 1212),
  - Meteoric Water Mobility Procedure (MWMP), and
  - Leachable Sulfates and Soluble Solids tests,
  - Bottle Roll Tests.
- Acid-Base Accounting (ABA) Analysis
  - Acid generation potential (AGP),
  - Net neutralization potential (NNP), and
  - Net acid generating (NAG) pH.
- Physical Characteristics
  - Grain size, density, shear strength, moisture content, permeability.

Kinetic test work may be required under a Tier #2 stage to assess the rates of acid-generation, acid-neutralization, sulfide oxidation, and metal release. Typical tests performed under Tier #2 include:

- Humidity cells, column tests, barrel leach tests, and test plots;
- Total metals analysis;
- Radiochemical analysis;
- Toxicity Characteristic Leaching Procedure (TCLP); and
- Waste Extraction Test (WET).

The approximate number of static tests by rock type planned to characterize waste rock materials and the remaining pit wall materials are listed in Table 1 of Vector (2006). To date, only very brief lithology descriptions of the tested samples have been prepared and submitted to ADEQ; no information is provided on the mineralogy of the samples tested. ABA and NAG pH have been performed on all or nearly all of the tailings and waste rock samples. SPLP, MWMP, and total metals analyses have been performed on more than half the waste rock and tailings samples. Humidity cell tests have been performed on two of the four tailings samples and on four waste rock types (14 samples) that indicated a potential to generate acid. On-site columns were performed on three samples of andesite (potentially acid generating) and three mixed composites of uncertain potential. Physical testing of tailings materials include sieve and hydrometer testing, specific gravity, Atterberg Limits, Standard Proctor, Consolidation testing, Shear strength, Triaxial permeability, Capillary moisture retention, and Laboratory torque vane shear testing.

1.1 Sample Collection Methods and Representativeness

Summary – The methods used to collect representative geologic materials for geochemical testing follow standard industry practices. Waste rock samples collected for the geochemical investigation do appear to represent the rock types to be encountered during the mine life in appropriate percentages. Representative life-of-mine or early life-of-mine tailings has not yet been completed. Documentation was not provided to assess whether the sample materials actually tested are

representative of potential sulfide mill ore (subsequent tailings), oxide ore, or waste rock dump (WRD) material based on total copper cutoff grades and contained ore and gangue mineralogy.

The goal of the geochemical investigation program was to perform test work that would characterize the geochemistry of potential leachates related to mine waste rock materials, heap leach materials, tailings, cover and construction materials, and the rock remaining in the pit walls and then assess risks related to the leachates. The geochemical sampling program was intended to represent the range of geologic materials including lateral and vertical variation that would influence the types and percentages of rocks and minerals to be encountered during the life-of-mine. In order to assess whether the sampling program sufficiently represents the materials expected in the waste rock and tailings storage facilities, it is necessary to understand the site-specific definition of waste rock, how the rock materials were classified in the geology model, what percentages of rocks (including mineralization, oxidization) are generally expected life-of-mine, and if the proportion of samples selected for analysis match the expected proportions of rock materials. As mentioned above, geochemical programs generally follow a two-tiered approach where a selection of Tier I static tests are performed on a large number of samples to classify materials as potentially acid generating, of uncertain potential, and/or not acid generating. Tier II test work such as humidity cells are performed on selected Tier 1 materials that were identified to be potentially acid generating or of uncertain acid generating potential.

How is "Waste Rock" Defined at Rosemont? – Waste rock is typically defined as rock material overlying an ore deposit or within a mine plan that is below the cutoff grade required for economic extraction and processing. The waste rock is removed to access the ore materials and requires subsequent disposal in an overburden pile or WRD. Cutoff grades may decrease or increase throughout the mine life owing to fluctuations in capital and operating costs, processing recovery effectiveness and efficiencies, or other reasons. No definition of the cutoff grade or mineralogical description of Rosemont waste rock is provided in the reviewed reports. Based on the description of measured and indicated resources reported in the 2007 *NI 43-101 Technical Report for the Rosemont Copper Project, Updated Feasibility Study* (M3 Engineering & Technology Corporation), sulfide waste at Rosemont was classified as material that falls below a grade of 0.20 percent total copper (%TCu). The current technical reports continue to use this sulfide cutoff grade (M3, 2009). Oxide waste is reported to be material with a grade below a 0.10 %TCu (M3, 2009, p. 5).

Percentages of Reported Rock Types Representing Waste, Ore, Tailings – The percentages of rock types comprising potential waste materials at Rosemont are tabulated in all of the reports (i.e. Tetra Tech, 2007b, Table 3.1; Tetra Tech, 2009 v. 1, Table 7.28). The percentage of tabulated waste relative to ore has decreased over time as additional mineralized material has been delineated. Greater than half of the waste materials consist of oxidized and unoxidized arkose and other oxidized basin-fill overburden formations; andesite and a variety of Paleozoic formations comprise the remaining waste rock materials. Much less documentation is available on the rock types expected to be present in sulfide ore (and by extension in tailings) and oxide ore. A tabulation is found in Table 2 of Vector (2006). The copper sulfide-bearing materials in potentially economic concentrations consist primarily of Horquilla Limestone (50%), Colina Limestone (40%), quartz monzonite porphyry (QMP) (5%), and the Earp Formation (5%). Chalcopyrite, chalcocite, bornite, and molybdenite are the dominant sulfide minerals. The sulfide ore will be processed through milling, flotation, and concentration processes and the residual material will be subsequently disposed of as dry-stack tailings. The copper oxide-bearing materials in potentially economic concentrations consist primarily of arkose (50%), QMP (15%), quartz latite porphyry, and andesite (35%). Copper oxide mineralization primarily includes copper-bearing limonite, chrysocolla, tenorite, malachite, and azurite; oxide ore will be processed by leaching with dilute sulfuric acid on a heap leach facility.

Method to Classify Material Types and Select Samples – Although the approximate percentages of waste rock and ore materials are tabulated in the reviewed reports[1], the process of classifying the tested material as "ore" or "waste" was not described in detail in the reports reviewed. The general procedures for classifying ore and waste rock are described in more detail in the technical reports publically available to potential investors (i.e. WLR Consulting, 2006; M3 Engineering & Technology Corporation, 2009). Industry standard mine evaluation and design software was used by Rosemont personnel to interpolate the compiled drillhole data within boundaries established by the limits of topography, surface geology, and estimated subsurface geologic contacts. Rosemont's three-dimensional geologic and resource block model assigned a rock type, mineralization type (i.e. oxide, sulfide), grade, and material type (i.e., waste, leach ore, sulfide mill ore) to each model block (50' x 50' x 50') based on the geologic model including the laboratory analyses from surface samples, test pits, and diamond drill core. The block model was then used to estimate the percentages of various rock types that are potential ore and waste materials within the potential pit area. The model and pit shell was used to identify specific drill core intervals that contain the rock types necessary to ensure representative geochemical analyses. Composite samples representing 50-foot mine benches at various depths were collected for geochemical analysis from coarse rejects using appropriate drilling intervals selected by Rosemont geologists familiar with the site-specific geology and mineralogy.

The plan maps shown in Tetra Tech reports[2] document the rock types sampled and the depth of the bench composite samples; sample depths range between 0 and 1,820 feet below ground surface. The sample data are clustered primarily in the center portion of the pit area but do appear to represent the major and minor rock types to be encountered within the pit area. The samples also appear to represent various bench elevations based the available figures and table. A plan map with labeled elevation contours for the proposed pit and the sample depths listed in feet above sea level or a profile section with the drillhole sample locations would have been helpful to verify the vertical distribution of the samples collected. No copper grades, however, are listed with the sample intervals to verify whether the samples are waste, leach ore, or sulfide ore (future tailings).

The Tetra Tech sample location maps appear to provide sufficient lateral and vertical representativeness to provide a reasonable indication of the geochemical characteristics of the various waste rock types at this stage in the process. Tetra Tech (2007a) summarizes the rock types sampled and provides the borehole identification, depth of the sample, and the static test work performed. Detailed sample descriptions, however, were not provided that document what specific minerals were present in the samples, the proportions of potentially acid generating or acid neutralizing minerals that were present, and the oxidation type present.

Only a brief description was found to describe the nature of the ore materials processed to simulate the four samples of tailings materials (Tetra Tech, 2009b). Three tailings samples were evidently generated from Horquilla Limestone (May 2006, February 2007, and June 2007) although the rock type of the two earliest samples is not confirmed (see Table 1 in Tetra Tech, 2009b). The last sample from July 2008 was generated from mixed rock types (72.9% Horquilla, 21.3% Earp, and 5.8% Escabrosa Limestone) that represent sulfide mill tailings in Year 0 to 3. The tailings samples were likely generated from coarse rejects from drillhole sample intervals or composites with total copper grades that matched the grades and mineralization types expected in the first few years of operation. This is an assumption as no sample documentation is provided with the drillhole name and depth interval, rock type, oxidation type, and approximate grade. SRK is therefore unable to verify whether

[1] The percentage of waste rock types is listed in the all reports including the February 2009 APP application and has been updated through time. The only tabulation listing the relative proportions of various rock types in sulfide mill ore (and by extension tailings) appears to be in Vector (2006).

[2] Table A.1, Figures 2 and 3 and Table A.1 in Tetra Tech 2007a; Figures 2 and 3 in Tetra Tech 2007b

the generated tailings materials are representative of the future processed ore material based on the information compiled in the reports.

Presumably, descriptions of the geology, mineralogy, and oxidation type are available in the surface sample data and drill logs for the waste, tailings, and other geochemical samples; this information was compiled from the drillhole logs in order to select the sample intervals to be tested. The rock type, type of copper sulfide/oxide minerals and associated rock-forming, gangue minerals present in each sample (and in what proportions), total copper grade, and other relevant characterization information should be recorded for each sample analyzed. The three reviewed reports as well as the geochemical data compiled in the APP (Tetra Tech 2009a), however, lack this basic information. Verification of representativeness is possible based only on the spatial location of the sampled intervals within the pit area. No verification was possible during this review for the materials that generated the four tailings samples.

Was the Geochemical Sampling Program Representative Given the Stated Proportions of Rock Types in the Waste and Tailings? – The documentation for the waste rock sampling program is more comprehensive than that for the tailings or other sampling programs. The waste rock samples are considerably more numerous than other materials tested. SRK is satisfied that the geochemical program did sample and analyze samples representative of the waste rock that will be generated during the life-of-mine.

Ore samples are initially drilled and analyzed to define the extent of the ore body; a portion of the drill core is kept as a physical record, which reduces the material available for metallurgical, geotechnical, or geochemical testing. Material representing mineralized sulfide drill core rejects/core of various rock types (or composite mixes) at various grade ranges is limited at this stage of the project. The Horquilla Limestone represents 50% of the potential sulfide mill tailings during the life of mine, but more than 90% of the tailings material generated and tested to date is this material. This may be appropriate based on the dominant sulfide mill tailings expected during the first years of operations. Tailings materials generated from rock types in proportions expected during the life-of-mine (or in the dominant mixes by 5-year increments) have not yet been produced.

1.2 Laboratories, Analytical Methods, and QA/QC Protocols

The primary and sub-contracted laboratories used during this investigation are certified by the Arizona Department of Health Services to perform these types of environmental geochemical analyses in Arizona. The methods used for chemical analyses were standard test methods developed by the U.S. Environmental Protection Agency (EPA), ASTM, or by recognized academic experts. In addition, the static and kinetic (humidity cell) test work performed is approved by ADEQ for the classification of discharges related to mined materials as described in *Arizona Mining Guidance Manual – BADCT, Appendix B Solution, Ore and Waste Characterization* by ADEQ (2005).

The analytical method detection limits reported by the laboratories were appropriate with two exceptions – the Synthetic Precipitation Leaching Procedure (EPA Method 1312) test work performed in May 2006 by Turner Labs (Tetra Tech, 2007, Table 6.1) and the thallium results reported for the 2007 humidity cells test analyses by SVL Analytical (Tetra Tech, 2007, Table A-6). The method detection limits for all 7 of the leachate parameters analyzed for the May 2006 event were above the Arizona Aquifer Water Quality Standards (AWQS). Generally, a method detection limit that is below the AWQS (or other water quality relevant standard) is preferred. The method detection limit for the 2007 thallium analyses was equal to the 0.002 mg/L AWQS for thallium; the majority of the results are reported as <0.002 mg/L. The Turner Labs results for May 2006 and the 2007 SVL humidity cell thallium results should therefore not be used to assess compliance with AWQS.

The consulting reports reviewed did not list any duplicate samples that may have been sent for analysis to the primary laboratory or to a secondary laboratory. Although not required for test work, duplicates are typically a standard protocol with a minimum of at least one duplicate per every 20 samples. SRK was not provided with companion documents that address protocols for QA/QC or field instrument calibration but assume they exist.

1.3 Leaching Tests – Laboratory and Field Procedures

Two types of kinetic tests were performed on waste materials – 35-week humidity cells under laboratory conditions and 21-week on-site column tests under field conditions. The humidity cells tests were conducted on 14 samples using an industry standard method published by American Society for Testing and Materials (ASTM). The laboratory tests were performed by a qualified laboratory - SVL Analytical, Inc. of Kellogg, Idaho. Humidity cell tests are standard kinetic tests applicable to mine and waste materials found in a wide variety of climatic conditions including southern Arizona. Humidity cell tests are applicable to test work performed on conventional and dry stack tailings. The purpose of humidity cells is to provide a determination of rates of accelerated leaching under controlled laboratory conditions. They are not intended as a demonstration of weathering rates but as calibration data for further predictive calculations to determine weathering rates. As such they are applicable to any form of tailings disposal as baseline or calibration data for numerical predictions.

Tetra Tech (2007) provides only a limited description of the construction of the 6 on-site column tests and operational protocols, but SRK accepts the general test approach. Details on the column dimensions, the size fractions and volumes of materials loaded into the columns, and protocols for manual irrigation and leachate sample collection were not provided. Three tests were performed on splits of andesitic waste and on leach ore material tested by the humidity cell tests. The materials were selected for additional study from those samples that showed the potential (or uncertain potential) to generate acid using standard static tests. The field columns were to be subjected to ambient rainfall, sun, and temperature conditions. Owing to abnormally low rainfall conditions encountered during the test period, the columns were manually irrigated weekly using one liter of distilled water over a period of several hours; no details were provided on this field procedure. SRK assumes that field personnel performing the work received training to ensure consistency in irrigation methods, application rates, and that field instrument calibration was performed and documented.

2 *Preliminary Trip Report and Phase 1 Sampling and Analysis Plan*, Vector Arizona, June 2006

The 2006 Vector memorandum is essentially a trip report and general work plan for Phase I of geochemical characterization. A general work approach and outline of the sampling and analysis plan is presented; a formal sampling and analysis plan is not attached. A detailed work plan for the later phases, if prepared, was not provided for review. Specific comments and concerns are provided below. The geochemical investigation, however, has already been executed.

1. No mineralogical study is proposed during the program to assess which acid-generating and acid-consuming minerals are present (and in what proportion) and how sulfide minerals occur in physical contact with the gangue minerals. This is an oversight because without it the results can only be interpreted as generalities, and will not be site-specific.

2. SPLP and Meteoric Water Mobility Procedure (ASTM E2242-02) analyses are proposed for approximately 20 percent of the waste rock samples. These methods are industry standard tests. Application of the SPLP test, however, will likely give a dilute result that is not really representative given the fresh nature and low pyrite content of the waste rock material described. A more

aggressive static leach test is recommended, such as analysis of Net Acid Generation (NAG) metals and/or MWMP-type extraction.

3. The high buffering nature of the material described will also likely give a positive (alkaline) bias to the results, especially with the low predicted sulfur. SRK recommends that NAG tests should be run to confirm the predicted acid generation behavior. Given the likely alkaline nature of the material, the generation of alkaline rock drainage (potentially still with water quality exceedances) may occur, and that salinity in the final pit lake may also be an issue. These questions need to be addressed.

4. Sobek and NAG pH, total metals, and SPLP analysis are proposed for tailings samples created during the metallurgical test program. As noted above, application of the SPLP method to tailings is unsuitable, and SRK advocates using a more appropriate method for prediction of tailings leachate chemistry such as NAG metals and MWMP extraction.

5. A review of the heap leach characterization program was not within SRK scope, but comments are provided based on the very brief description provided in the memorandum. The method for selecting the test materials based on copper grade and the expected leach ore rock types within the pit is a reasonable approach. The proposed program based on this work plan consists of analyzing the residues from three column leach tests performed by Mountain States R & D International for Sobek and NAG pH, whole rock analysis, and SPLP and MWMP extraction. One humidity cell test is also proposed. The proposed program will likely present a better impression of the resulting leachate chemistry than will actually occur. The high ore alkalinity will have a high acid consumption factor, which will cause the precipitation of gypsum – thus the heap may be a source of high sulfate concentrations.

3 *Baseline Geochemical Characterization*, Tetra Tech, June 2007

This report is a compilation of geochemical test work completed on 94 waste rock, leach ore, and mill ore samples and 2 tailings samples through April 27, 2007.

The report includes a number of compilation tables, illustrations, figures, and two appendices. Appendix A contains a compilation of test results. Appendix B provides copies of the analytical reports prepared by SVL Analytical, Inc. and Transwest Geochem in 2006 and 2007; no laboratory reports were noted for analyses by Turner Lab in 2006. Specific comments are provided below.

1. The number of samples and geologic representativeness appears reasonable for the size and stage of the project.

2. The section on mineralogy is poor and is based solely on published works, and thus is not site-specific and is not directly applicable to the tested samples.

3. The presentation of data is confusing. For example, the bar-chart approach shown in Illustration 5.3 to represent sulfur speciation is not a standard method. The compiled analytical found in the main text and in Appendix A lack basic information such as the laboratory name, lab identifiers to match the compiled data to specific laboratory reports, and consistent reporting of analytical units.

4. The data show a strong bias toward neutralizing conditions, but sample-specific mineralogy would have helped to confirm if the neutralizing conditions are directly related to carbonate-neutralizing potential (NP) or if some of the NP is an artifact of the test itself, as is common. The NAG pH data helps and reveals two samples that are clearly acid-generating (not potentially acid-generating, as stated in the report). The majority of the waste rock samples are neutralizing, although less strongly than predicted by the ABA results.

5. Whole rock chemistry indicates that elements mobile in alkaline environments (such as oxyanions, e.g. arsenic, antimony, molybdenum, and selenium) are strongly enriched in the deposit (see Illustration 5.6, p. 20). As expected, SPLP extraction tests at such high dilution on unweathered rocks show low solute leaching. Seven samples were analyzed after both SPLP and MWMP extractions were performed. The inclusion of MWMP tests is useful, and the results for selected constituents are compared in Illustration 5.8. The MWMP results reveal higher arsenic, selenium, and fluoride leaching than do the SPLP tests, although results for many other constituents are quite similar.

6. On page 28, Tetra Tech states:

   > "In general, approximately 73% of the material tested to date can be defined as inert based on the ADEQ draft policy titled "*Policy for the Evaluation of Mining Rock Materials for the Determination of Inertness*" (ADEQ, 1998). This policy defines inert materials as having a total sulfur concentration of less than 0.3% and an NNP greater than 0 or an NPR greater than 3. Those materials that are defined as inert by this definition do not require additional testing. However, it should be noted that materials defined as inert can have metals concentrations. Based on the data available, zinc and arsenic are present in the rocks and may be of concern when placed in the waste rock dump. Metals such as zinc, arsenic, and selenium can be mobile at alkaline pH values."

   The reference in the unpublished ADEQ draft policy to what constitutes "inert" material should be replaced by the terminology used in guidance published by ADEQ in Appendix B of the *Arizona Mining Guidance Manual BADCT* on the characterization of solution, ore, and waste (ADEQ, 2005). Appendix B classifies material as "non-acid generating with a low risk for acid drainage to develop" if the ratio of neutralization potential and acid production potential is greater than 3. Approximately 30 percent of the samples (25 of 94) submitted for acid-base accounting (ABA) and sulfur speciation analyses (Tetra Tech, 2007, Table A.2) have one or more components that exceed the criteria developed by the Arizona Department of Environmental Quality (ADEQ) (2005) to classify the material as non-acid generating mine rock material. Note that the ADEQ guidance only briefly addresses the potential to carry metals in solution under alkaline rock drainage conditions such as is discussed in Tetra Tech statement from page 28.

7. Humidity cell tests are reported to 20 weeks, which are not be a sufficient duration to determine a trend or to develop meaningful estimates of leaching rates for some constituents. Copper, manganese, arsenic, antimony, selenium, and possibly zinc were above detection and/or elevated in humidity cells, indicating potential for solute leaching and probable sulfide oxidation. In comparison with Arizona AWQS, the leachates measured antimony and selenium in concentrations exceeding their respective limits. Selenium initially exceeded the AWQS of 0.05 mg/L but was below detection for the remaining weeks; antimony showed elevated concentrations that exceeded the AWQS of 0.06 mg/L throughout the duration of the humidity cell tests. The on-site column tests show a possible early decrease in sulfate concentrations for some columns, which may indicate that flushing of the reactive alkalinity has taken place. It would be useful to see data obtained since the date of the June 2007 report.

8. The use of SPLP on tailings and only 10 weeks of humidity cell testing is insufficient to draw conclusions concerning the leaching behavior of the tailings. Additional data and the summary reports on test work and analyses completed after June 2007 are essential to complete a meaningful review.

4 *Geochemical Characterization, Addendum 1*, Tetra Tech, November 2007

This report is an addendum to the June 2007 Tetra Tech Report. It summarizes the previous and new geochemical characterization data through September 2007. The report focuses primarily on the Phase I and Phase II test work performed on waste rock with lesser focus on geochemical characterization of tailings, heap leach grade ore, and soil samples. The samples were collected from drill core with specific rock types and copper grade, drill core rejects, soil samples, and test pits. The coarse rejects from drill core samples were taken to METCON Laboratory of Tucson to be split and prepared for analysis by SVL Analytical, Inc. (SVL) of Kellogg, Idaho. SVL is a laboratory certified by the Arizona Department of Health Services. Documentation to verify grade (ore/waste classification) and mineralogy is absent.

4.1 Waste Rock Characterization

Two phases of sampling and geochemical analysis have been performed. Phase I sampling (42 of potential waste rock material, 1 composite sample, 4 historic waste rock dump (WRD), and 1 leach-grade) provided a preliminary indication of rock). Phase II included 121 samples of potential waste rock, 2 leach-grade samples, 4 test pits samples from existing WRDs, and 5 soil samples to characterize potential cover and construction borrow materials. Thirty-nine samples were tested by SPLP methods; 33 samples were tested using MWMP methods. The leachates from these tests were analyzed for a number of constituents – some of which have reference Arizona aquifer water quality standards. Humidity cell test were performed on 14 samples of Earp Formation, andesite, arkose, and arkose conglomerate based on the conclusions from the ABA tests.

1. On a spatial basis, the waste rock geochem samples appear to be representative of life-of-mine materials. No documentation was provided to verify the materials are below the oxide/sulfide cutoff grades and are waste materials and what minerals are present such as percentage of silicate minerals, pyrite, and carbonate.

2. Illustration 3.1 does not use standard graphing methodology to represent sulfur speciation in the ABA results. ABA results, however, do indicate that some waste rock types such as andesite and arkose have potential to generate acid in the absence of discharge management.

3. It is very difficult to cross reference the individual samples in the summary tables owing to lack of consistent presentation of sample identification, depth, laboratory identification numbers, and rock type. It is not possible without considerable effort to go from tabulated data to graphed data to verify conclusions. Verification of trends seen in the humidity cell results, for example, is difficult owing to the organizational format presented in data tables and graphs. Table 3.7 provides the rock type sampled and a Sample ID (drillhole name with sample number), but no sample footage interval; the Sample ID, sample depths, rock type sampled, and test work performed are shown in Appendix A Table A.1. The analytical results are tabulated by Sample ID in Appendix A Table A.7 with no cross-reference to laboratory job number or to rock type; the analytical results are graphed in Appendix A Illustration A.1 (Figures 1a through 15 b) but the Sample ID or rock type is not provided. A data compilation and statistical analysis by rock type would have assisted with the interpretation of the results based on waste type to be mined.

4. SPLP and MWMP leachate results for waste show that more than half of the results are below analytical detection for metals. There are number of samples, however, that exceeded the reference arsenic standard of 0.01 mg/L and isolated AWQS exceedances of other metals. In some cases the method detection limit is at or above the numeric standard so the water quality result with respect to the reference standards cannot be assessed.

5. There are noticeable differences in results between the humidity cells and the field column tests, which is not discussed in the report. Humidity cells tests showed the effluent pH oscillated between approximately 7.2 to 8.2 pH; sulfate concentrations decreased from week 0 to week 2 and remained below 200 mg/L with minor oscillations throughout the duration of the tests. With increasing time, the pH in the field tests decreased approximately 2 pH standard units to between pH 7 and pH 6, and sulfate was cyclic with sulfate concentrations ranging from 0 to approximately 500 mg/L (Illustration 3.7 and 3.8). The field columns appear to have been terminated too early and should have been continued until some stabilization of pH and sulfate was observed. The use of a 35-week humidity test with only 8 analytical samples over the 35 weeks is probably insufficient to draw any conclusions about the tests, especially with respect to metals. Generally, the most significant changes would be expected in weeks 0 to 5, and this period is not captured adequately in the metals data presented. Although it is true that the majority of reported results are below detection, there are several exceedances with respect to AWQSs for various constituents – noticeably antimony, selenium (Se), and arsenic (As). Metal concentrations in leachates are shown in Illustration 3-10, but are not shown relative to time so it is not possible to determine changes in metal concentration over time. Se and As show some exceedances with respect to their respective AWQSs in this illustration, and copper and manganese are elevated. No compilation or interpretation is provided by rock type or by constituent so it is difficult to derive meaningful relationships from the data for this review without significant effort.

6. The humidity cell and field test data are not conclusive as to the weathering nature of the rock materials, and they cannot be conclusively verified as being non-reactive. The information needs to be presented in a clearer fashion in order to support the proposed trends.

4.2 Tailings Characterization

Four tailings samples were tested using standard industry methods for ABA, SPLP, and whole rock analysis; one humidity cell was completed at the time of this report (Tailings-022807). As stated previously, no details other basic rock type were provided on the source of the sample material used to make the simulated tailings so SRK is not able to verify how representative the samples are.

SPLP results for February and June 2007 tailings samples of Horquilla Limestone indicate the leachate is near-neutral and metals are predominantly below detection. The results from May 2006 are incomplete and not usable owing to the fact that the method detection level was above the relevant reference standards. MWMP results were reported for the June 2007 sample and show near-neutral pH, and metals that are below detection with the exception of molybdenum. Molybdenum sulfide is a sulfide ore constituent. The limited number of MWMP and SPLP tests completed at the time of this report is not sufficient to represent all ore types expected during the life of mine.

The combination of sample leachates to represent a five-week period of sampling is not useful. The results confirm that the material has low reactivity. Molybdenum and selenium are potentially elevated in the humidity samples.

5 Summary of Comments and Questions

SRK comments based on a review of three geochemical test reports prepared to characterize the Rosemont waste materials are summarized below.

1. The materials tested are representative of the waste rocks to be encountered during the life of mine. A description of the oxidation type, grade, and minerals present in each sample was not provided to verify waste classification.

2. Mineralogy studies are recommended to assess the physical characteristics of the gangue metals and metalloids (for example, what percentage of pyrite is encapsulated in quartz or other silicate minerals and is therefore not accessible to be oxidized?).
3. Insufficient, representative tailings tests have been completed by November 2007 to provide an accurate assessment of the tailings leachate.
4. NAG metals are still recommended to assess the chemical character of tailings leachate to confirm potential behavior.
5. Alkaline or neutral rock drainage with elevated metalloids and sulfate may occur based on the results of the 35-week humidity cell tests; this is not adequately addressed in these reports. The tests need to be operated until some stabilization is observed in the field columns.

SRK is aware that two other geochemical reports or summaries exist including Tetra Tech (2009a and 2009b), so additional information may be provided in these reports. SRK questions based on a review of the three reports are listed below:

1. Is a description available for the oxidation type, mineralization observed, and total copper grade in the tested samples?
2. Have NAG metals and/or MWMP-type extractions been performed on waste rock and tailings materials subsequent to the November 2007 report?
3. Additional tailings test work was discussed in the Technology Transfer Meeting conducted on November 12, 2008 (Williamson, 2008, slide 9). Test work listed as "In Progress" as of November 2008 included July 2008 samples for ABA, whole rock, SPLP, MWMP, and kinetic tests. Have the additional tests been performed on tailings materials and are the results available for review?

6 References

Arizona Department of Environmental Quality, 2005, Appendix B Solution, ore and waste characterization *in* Arizona mining guidance manual BADCT: guidance document published by ADEQ, #TB 04-01, 20 p.

M3 Engineering & Technology Corporation, 2009, NI 43-1-1 technical report for the Rosemont Copper Project, Updated feasibility study, Pima County, Arizona: public document prepared for Augusta Resource Corporation and submitted to the Canadian Securities Administrators in the online SEDAR filing system, March 17, 2009, 168 p.

Tetra Tech, 2007a, Baseline geochemical characterization – Rosemont Copper: unpublished report prepared for Augusta Resource Corporation, June 2007, 75 p, 2 appendices.

Tetra Tech, 2007b, Geochemical characterization, Addendum 1, Rosemont Copper: unpublished report prepared for Rosemont Copper Company, November 2007, 23 p, 2 appendices.

Tetra Tech, 2009a, Aquifer Protection Permit application, Rosemont Copper Company, v. 1: unpublished application submitted to Arizona Department of Environmental Quality, February 2009, 246 p.

Tetra Tech, 2009b, Tailings geochemistry: unpublished memorandum to J. Sturgess, Rosemont Copper Company from M. A. Williamson, Tetra Tech, March 18, 2009, 7 p.

Vector Arizona, 2006, Preliminary report and phase 1 sampling and analysis plan: technical memorandum by K. Arnold, Vector, Arizona to J. Sturgess, Augusta Resource Corporation, July 26, 2006, 7 p.

Williamson, M., 2008, Mine rock geochemistry and pit lake model for the Rosemont Copper Project: unpublished Microsoft PowerPoint presentation presented at Technology Transfer Meeting, November 12, 2008, p. 31.

ATTACHMENT 2
STANDARD OPERATING PROCEDURE FOR ON-SITE COLUMN TESTING (VECTOR, 2006B)

VECTOR
ARIZONA

TECHNICAL MEMORANDUM

TO: Rosemont Project File

FROM: Amy Hudson

DATE: October 20, 2006

SUBJECT: **Standard Operating Procedure for On-Site Column Testing**

Document No.

Introduction

On-site columns have been proposed as part of the kinetic testing program for the Rosemont site. The information obtained from the on-site testing will supplement the laboratory testing also being performed as part of the geochemical investigation.

The on-site column tests have several advantages over laboratory run humidity cell tests:

- Laboratory run tests are intentionally accelerated, so the resulting information cannot be used to predict field rates of acid generation and neutralization;
- Laboratory run tests do not have site-specific sulfide oxidizing bacteria;
- Column tests are open to the atmosphere and have no forced oxygenation as with a humidity cell;
- On-site columns are run under site meteoric conditions; and
- On-site tests can be continued for a longer timeframe.

This memo summarizes the construction, operation, and sampling of the on-site column tests.

Column Construction

Figure 1 provides a schematic of the on-site testing column. The materials used for the construction of the on-site columns are readily available. The materials required to construct the columns include:

- 2 feet of 6-inch inner diameter PVC (SCH 40)
- 6 inches of 4-inch inner diameter PVC (SCH 40)
- 6-inch diameter slip-on PVC endcap
- 5.5-inch diameter perforated plexiglass support
- Threaded drain fitting
- Tubing and hose clamps
- Table to hold columns

The 6-inch inner diameter PVC will be cut into two foot lengths. The 4-inch inner diameter PVC will be cut into 6-inch lengths and notched on one end to allow for drainage. The 6-inch slip on end cap will have ½-inch threaded hole cut into the center, and the drain fitting will be passed in the hole. The tubing will be attached to the drain

fitting with a hose clamp to prevent the solution from draining out of the column prior to testing. The 4-inch inner diameter PVC piece will be placed in the base of the 6-inch PVC column with the perforated plexiglass support resting on the top. The column material will be placed on the plexiglass to a height of approximately 9 inches. A table will be set up to hold the columns in place and allow the tubing to pass through the table.

Specifications have been provided for a 6-inch diameter PVC test column. An 8 kilogram (kg) sample will be needed to fill the column to a height of approximately 9 inches (1.3 times the diameter of the sample column width or 4 to 6 times the maximum particle size).

Column Operation

The columns will be placed outdoors so that they are subject to ambient rainfall and temperature conditions of the site. The columns will be irrigated manually once per week with one liter of water added via a drip system over a period of approximately one hours. The drip system will be tested to insure that the application rate simulates typical storm rates. This will simulate the movement of rainwater infiltration through a typical waste rock pile.

A simple method for accomplishing the drip irrigation is to puncture the bottom of a one-liter plastic bottle with one or more pinholes to make a container that leaks dry over a period of several hours. Each week the leaky bottles should be filled with one liter of water and placed in each column on a piece of cheese cloth that covers the sample surface and allowed to drain. Leachate collection and testing can occur after column drainage is complete. It is anticipated that the columns will be irrigated in the morning and samples collected later the same day.

Leachate Analysis

The leachate that passes through the column will be collected for field testing on a weekly basis and for laboratory testing on a bi-weekly schedule. A small amount of the leachate will be tested for field parameters (pH, electrical conductivity, and oxidation reduction potential). This information should be noted in a field log book, and entered into the geochemical database.

Laboratory samples will be collected by filling the 500 milliliter polyethylene unpreserved bottle, supplied and certified clean by the laboratory directly from the drain tubing at the base of the column. Each sample bottle will be properly labeled with the Column ID and the date and time of the sample collection. The samples will be immediately placed in a cooler and maintained at a temperature of 4 degrees Celsius.

The samples will be analyzed for dissolved metals, major cations, and anions using a lab certified by ADEQ for the methods performed. A Chain of Custody form will be completed and transmitted with the samples. Several of the parameters have short hold times and will require overnight priority shipping.

ATTACHMENT 3
LABORATORY TESTING RESULTS

TABLE A.1:
SUMMARY OF SAMPLES AND ANALYSES

Table A.1: Summary of Samples and Analyses

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
1461-01	1461	Escabrosa	0-48	129142		W802099	
1461-02	1461	Martin	156-210	129142	129142	W802099	
1462-01	1462	Tertiary Gravel	11-50	129142			
1462-02	1462	Tertiary Gravel	460-510	129142			
1485-01	1485	Overburden	7-42	129956			
1502-01	1502	Horquilla	846-851	W803236			
1503-01	1503	Qmp	75-82	130092			
1506-01	1506	Qmp	41-53	129956			
1506-02	1506	Escabrosa	608-613 & 618-641	129956	129956	W802099	
1506-03	1506	Martin	818-823	W803242			
1507-01	1507	Escabrosa	1124-1128	W803236			
1511-01	1511	Martin	300-350	129142			
1528-01	1528	Earp	794-822	130092			
1528-02	1528	Colina	727-732	W803242			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
1530-01	1530	Horquilla	1009-1012	W803236		W803236	
1530-01_6.18.09	1530	Horquilla	1009-1012			W9F0502	
1535-01	1535	Andesite	407-417&422-428	129142			
1538-01	1538	Epitaph	1026-1029	W803242			
1538-02	1538	Tertiary Gravel	363-369.5	W9F0593		W9F0593	W9F0593
1561-01	1561	Abrigo	50-84 & 89-95	129142		W802099	
1561-01_6.18.09	1561	Abrigo	50-84 & 89-95			W9F0502	
1561-02	1561	Bolsa	653-658	W803236		W803236	
1561-03	1561	Bolsa	540-545	W803236		W803236	
1561-04	1561	Bolsa	774-778	W8J0076			
1580-01	1580	Escabrosa	712-716	W803236			
1596-01	1596	Arkose	115-140 & 145-162	129956	129956		
1596-02	1596	Glance	320-340 & 350-376	129956			
1596-03	1596	Horquilla	741-746	W803236		W803236	
1596-03_6.18.09	1596	Horquilla	741-746			W9F0502	

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
1914-01	1914	Colina	491-495	W803242			
1916-01	1916	Martin	1739-1744	W803242			
1916-02	1916	Abrigo	1822-1827	W803236		W803236	
1920-01	1920	Arkose	412-461	129957			
1920-02	1920	Earp	593-598	W803242			
1926-01	1926	Qmp	224-232 & 237-246 & 258-262	130091	130091	130093	
1926-02	1926	Abrigo	770-795 & 800-825	130091	130091	130093	
1926-03	1926	Escabrosa	656-661	W803236			
4-7 Yr. Composite	Tailings	Tailings		W0F0728	W0F0728	W0F0728	W0F0728
A780-01	A780	Martin	260-270	129142			
A780-02	A780	Bolsa	447-452	W803236		W804519	
A780-02 Composite	A780	Bolsa	447-456	W9B0121			
A780-03	A780	Bolsa	496-500	W8J0076			
A780-03 Composite	A780	Bolsa	496.1-499	W9B0121			
A801-01	A801	Epitaph/Glance	430 - 480	127912			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
A804-01	A804	Concha	238 - 282	127912			
A805-01	A805	Glance	721-741	129956	129956		
A806-01	A806	Horquilla	1961-1966	W803548			
A808-01	A808	Andesite	180-200 &206.5-209.5 & 212-220	129957			
A808-02	A808	Concha	437-454 & 464-489	129957		129954	
A809-01	A809	Horquilla	584-619.5	130092			
A812-01	A812	Escabrosa	1181-1186	W803236			
A814-01	A814	Arkose	68-94	129956			
A814-02	A814	Escabrosa	902-951	129956	129956	W802099	
A815-01	A815	Colina	845-885	129142	129142	W802099	
A815-02	A815	Qmp	931-982	129142		129140	
A-816 569...	A816	Andesite	569-614	W801976			
A817-01	A817	Andesite	602-630 & 635-642	129957			
A818-01	A818	Abrigo	1057-1062	W803236		W803236	
A818-01_6.18.09	A818	Abrigo	1057-1062			W9F0502	

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
A-820 245.5...	A820	Andesite	245.5-255 and 264.5-302	W801976			
A821-01	A821	Overburden	604-638	130091	130091	130093	
A825-01	A825	Epitaph	1698-1703	W803242			
A828-01	A828	Epitaph	784-788	W803242			
A829-01	A829	Epitaph	932-936	W803242			
A830-01	A830	Epitaph	1290-1340	127912		127909	
A830-02	A830	Tertiary Gravel	100-150	129142	129142		
A830-03	A830	Arkose	690-698 & 713-740	129142			
A830-04	A830	Earp	1445-1449	W803242			
A831-01	A831	Arkose	142-147 & 152-169	130091			
A834-01	A834	Glance	382-392	130091			
A834-02	A834	Earp	629-644	130091			
A840-01	A840	Colina	1257-1262	W803242			
A842-01	A842	Horquilla	1146-1151	W803236		W803236	
A845-01	A845	Earp	509-513 & 517-537 & 541-551	129957		129954	

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
A845-02	A845	Horquilla	782-797 & 802-829	129957	129957		
A847-01	A847	Epitaph	897-917 & 922-947	130091		W802099	
A849-01	A849	Earp	625-631	W803242			
A850-01	A850	Epitaph	797-802 & 807-813 & 823-827 & 833-843	130091	130091	130093	
A852-01	A852	Colina	1147-1151	W803242			
A855-01	A855	Qmp	907-930 & 933-947	129956	129956		
A856-01	A856	Martin	994-1017 & 1022-1048	129957	129957	W802099	
A857-01	A857	Arkose	280-299	130091			
A860-01	A860	Colina	1028-1033 & 1074-1087	130091	130091		
A860-02	A860	Epitaph	1244-1249 & 1259-1264 & 1325-1351	130091	130091	130093	
A860-03	A860	Epitaph	1351-1361	130091			
A865-01	A865	Colina	1108-1129 & 1133-1161	129957	129957	W802099	
A866-01	A866	Martin	1261 - 1281	127912		W802099	
A866-02	A866	Horquilla	576-581	W803236		W803236	
A871-01	A871	Escabrosa	432-481	127912			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
A872-01	A872	Escabrosa	1075-1085 & 1090-1110	129956	129956	W802099	
A873-01	A873	Arkose	218-223 & 228-243	130091			
A878-01	A878	Martin	1016-1056	129956		W802099	
A878-02	A878	Horquilla	714-719	W803236			
A-882 109...	A882	Andesite	109-173	W801976			
A-886 888...	A886	Andesite	888-937	W801976			
A886-01	A886	Arkose	425-475	129142			
AH4-01	AH4	Arkose	169-205	129957			
AH4-02	AH4	Concha	298-345	129957			
Andesite Col. Leach	Leach	Leach Grade Ore		129877	129877	129875	129876
AR2000-01	AR2000	Arkose	14.5-63.5	125080			
AR2000-02	AR2000	Earp	450-500	125080	125080		
AR2000-03	AR2000	Earp	620-635 & 650-680	125080			
AR2000-04	AR2000	Horquilla	1770-1820	125080			125097
AR2000-05	AR2000	Horquilla	1950-1955	W9B0112			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2001-01	AR2001	Arkose	200-250	125080	125080	125096	125097
AR2001-01_6.18.09	AR2001	Arkose	200-250			W9F0502	
AR2001-02	AR2001	Arkose	400-445	125080			
AR2001-03	AR2001	Scherrer	800-850	125080			
AR2002-01	AR2002	Arkose	100-150	125080	125080		
AR2002-02	AR2002	Epitaph	1300-1315 + 1320-1330 + 1410-1430 + 1460-1470	125080			
AR2002-03	AR2002	Epitaph	835-840	W803242		W803242	
AR2003-01	AR2003	Arkose	200-250	125080			
AR2003-02	AR2003	Arkose	400-450	125080			
AR2003-03	AR2003	Arkose	600-650	125080	125080	125096	
AR2004-01	AR2004	Arkose	50-100	125080	125080		
AR2004-02	AR2004	Glance	200-250	125080			
AR2004-03	AR2004	Horquilla	1231-1282	125080			
AR2004-04	AR2004	Horquilla	1720-1771	125082	125082	125096	
AR2004-05	AR2004	Escabrosa	1961-1966	W803236			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2004-06	AR2004	Horquilla	1761-1766	W9B0112			
AR2005-01	AR2005	Arkose	155-195	125082	125082		
AR2005-02	AR2005	Arkose	650-700	125082	126259		
AR2006-01	AR2006	Concha	400-450	125082			
AR2006-02	AR2006	Horquilla	1745-1750	W9B0112			
AR2007-01	AR2007	Arkose	150-195	125082	125082		
AR2007-02	AR2007	Horquilla	1242-1292	125082			
AR2009-01	AR2009	Arkose	400-450	125082	125082	125096	
AR2009-02	AR2009	Arkose	550-600	125082			
AR2009-03	AR2009	Andesite	750-800	125082	125082	125096	
AR2009-04	AR2009	Epitaph	1000-1050	125082	126259		
AR2010-01	AR2010	Arkose	200-235	125082			
AR2010-02	AR2010	Arkose	550-600	125082	125082		
AR2010-03	AR2010	Andesite	763-808	125082	125082		
AR2010-04	AR2010	Colina	1643-1648	W9B0112			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2011-01	AR2011	Arkose	50-100	125082	125082	125096	
AR2011-02	AR2011	Arkose	500-550	125082	125082		
AR2011-03	AR2011	Andesite	700-750	125082	125082		125097
AR2011-04	AR2011	Colina	1488-1518	125082		W802099	
AR2013-01	AR2013	Andesite	150-200	125082	125082	125096	
AR2013-02	AR2013	Andesite	350-400	125082	125082		
AR2013-03	AR2013	Andesite/Arkose	500-550	125082	126259		
AR2013-04	AR2013	Arkose	700-750	125095			
AR2013-05	AR2013	Arkose	850-900	125095	125095		
AR2014-01	AR2014	Arkose	265-300	125095	125095		
AR2014-02	AR2014	Andesite	650-700	125095	126259		
AR2014-03	AR2014	Andesite	800-850	125095			
AR2014-04	AR2014	Epitaph	950-1002	125095	125095		
AR2014-05	AR2014	Earp	1621-1641	125095		W802099	
AR2015-01	AR2015	Arkose	290-330 & 335-340	129956			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2015-02	AR2015	Horquilla	2120-2125	W9B0112			
AR2016-01	AR2016	Andesite	250-280	129956	129956	129954	
AR2017-01	AR2017	Andesite	200-225 & 245-260	129142			
AR2017-02	AR2017	Earp	1310-1350	129142	129142	129140	
AR2017-03	AR2017	Arkose	750-800	129142			
AR2017-05	AR2017	Andesite	50-85	129957			129955
AR2017-06	AR2017	Andesite	200-210	129957			
AR2017-07	AR2017	Arkose	750-800	129957			129955
AR2017-08	AR2017	Horquilla	1920-1925	W803236			
AR2019-01	AR2019	Arkose	0-30 & 40-50	129956	129956		
AR2019-02	AR2019	Andesite	310-360	129956			
AR2019-03	AR2019	Earp	1115-1125 & 1140-1145 & 1170-1190	129956	129956	W802099	
AR2020-01	AR2020	Arkose	275-295 & 300-320	129956			
AR2020-02	AR2020	Andesite	335-345 & 355-380	129956	129956		
AR2021-01	AR2021	Andesite	55-90 & 95-105	129956			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2022-01	AR2022	Andesite	725-735 & 740-770	128457			
AR2022-02	AR2022	Tertiary Gravel	284.5-291	W9F0593		W9F0593	W9F0593
AR2023-01	AR2023	Bolsa	945-1154.5	W8J0076			
AR2025-01	AR2025	Andesite	30-80	129142			
AR2025-02	AR2025	Arkose	825-865	129142	129142		
AR2025-03	AR2025	Andesite	30-80	129957			129955
AR2025-04	AR2025	Arkose	820-870	129958			129955
AR2026-01	AR2026	Andesite	215-235 & 245-255	129957			
AR2026-02	AR2026	Arkose	380-400 & 405-410 & 415-430	129957			
AR2028B-01	AR2028B	Andesite	645-700	128457			
AR2028B-02	AR2028B	Earp	1760-1765	W9B0112			
AR2029-01	AR2029	Andesite	205-210	129957			
AR2030-01	AR2030	Earp	675-725	129142	129142	W802099	
AR2030-02	AR2030	Arkose	15-65	129142	129142		
AR2030-03	AR2030	Andesite	135-180	129141			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2030-04	AR2030	Arkose	15-75	129958			129955
AR2030-05	AR2030	Andesite	135-185	129958			129955
AR2030-06	AR2030	Andesite	95-125	129957			
AR2030-07	AR2030	Horquilla	1780-1785	W9B0112			
AR2032-01	AR2032	Andesite	535-540	128457	128457	128458	
AR2032-02	AR2032	Arkose	555-565	129957			
AR2032-03	AR2032	Horquilla	1715-1720	W9B0112			
AR2033-01	AR2033	Bolsa	1527-1553	W8J0076			
AR2034-01	AR2034	Qmp	0-5 & 10-50	129957	129957		
AR2034-02	AR2034	Epitaph	755-760	W803242		W803242	
AR2035-01	AR2035	Arkose	175-225	130091			
AR2035-02	AR2035	Earp	885-895 & 900-910 & 940-955	130091	130091	130093	
AR2035-03	AR2035	Horquilla	1850-1855	W9B0112			
AR2036-01	AR2036	Arkose	800-850	129141	129141	129140	
AR2036-02	AR2036	Qmp	965-1015	129141	129141		

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2036-03	AR2036	Arkose	800-850	129958			129955
AR2036-04	AR2036	Qmp	965-1015	129958			129955
AR2037-01	AR2037	Andesite	210-235 & 245-265	130091			
AR2037-02	AR2037	Arkose	400-430	130091			
AR2037-03	AR2037	Qmp	705-725	130091			
AR2038-01	AR2038	Andesite	100-150	129141			
AR2038-02	AR2038	Arkose	325-375	129141	129141		
AR2038-03	AR2038	Andesite	600-650	129141	129141		
AR2038-04	AR2038	Andesite	100-150	129958			129955
AR2038-05	AR2038	Arkose	325-375	129958			129955
AR2038-06	AR2038	Andesite	600-650	129958			129955
AR2039-01	AR2039	Overburden	0-50	129141	129141	129140	
AR2039-02	AR2039	Overburden	200-250	129141	129141		
AR2039-03	AR2039	Arkose	575-625	129141			
AR2039-04	AR2039	Overburden	0-50	129958			129955

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2039-05	AR2039	Overburden	200-250	129958			129955
AR2039-06	AR2039	Arkose	575-625	129958			129955
AR2039-07	AR2039	Horquilla	1835-1840	W803236		W803236	
AR2040-01	AR2040	Arkose	315-330	129956		129954	
AR2040-02	AR2040	Epitaph	905-910	W803242			
AR2041-01	AR2041	Arkose	465-500	130091	130091	130093	
AR2041-01_6.18.09	AR2041	Arkose	465-500			W9F0502	
AR2041-02	AR2041	Colina	1030-1045 & 1090-1100	130091		W802099	
AR2042-01	AR2042	Concha	300-350	129141	129141		
AR2042-02	AR2042	Arkose	110-155	129141			
AR2042-03	AR2042	Horquilla	1190-1220	129958	129958	129954	
AR2042-04	AR2042	Arkose	110-160	129958			129955
AR2042-05	AR2042	Concha	300-350	129958			129955
AR2042-06	AR2042	Horquilla	1190-1240	129958			129955
AR2043-01	AR2043	Andesite	670-715	128457			

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
AR2043-02	AR2043	Arkose	715-775	128457	128457		
AR2043-03	AR2043	Horquilla	2145-2150	W803236		W803236	
AR2043-05	AR2043	Horquilla	1990-1995	W9B0112			
AR2059-01	AR2059	Bolsa	900-905	W8J0076		W8J0076	
AR2060-01	AR2060	Bolsa	635-640	W8J0076			
AR2066-01	AR2066	Bolsa	740-745	W8J0076		W8J0076	
AR2067-01	AR2067	Bolsa	655-660	W8J0076			
AR2072-01	AR2072	Bolsa	765-770	W8J0076		W8J0076	
AR2073-01	AR2073	Bolsa	560-565	W8J0076			
Arkose (AR2054)	AR2054	Arkose	surface	127438			
Colina	Tailings	Tailings		W0G0359	W0G0359	W0G0359	W0G0359
Composite-1	Composite			125095	125095	125096	125097
Earp	Tailings	Tailings		W0G0173	W0G0173	W0G0173	W0G0173
Epitaph	Tailings	Tailings		W0G0173	W0G0173	W0G0173	W0G0173
Escabrosa	Tailings	Tailings		W0F0728	W0F0728	W0F0728	

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
Horquilla	Tailings	Tailings		W0G0359	W0G0359	W0G0359	W0G0359
Leach-01	Leach		Leach grade material (not leached)	125080	125080	125096	125097
Qmp Column Leach	Leach	Leach Grade Ore		129877	129877	129875	129876
S-01	Surface		Existing Dump - Surface Sample	125080	125080	125096	125097
S-02	Surface		Existing Dump - Surface Sample	125080	125080	125096	125097
S-03	Surface		Existing Dump - Surface Sample	125080	125080	125096	125097
S-04	Surface		Existing Dump - Surface Sample	125080	125080	125096	125097
Tailings-022807	Tailings	Tailings		128101	128101 & 128576	128100	
Tailings-05 June2007	Tailings	Tailings		129789	129789	129791	129790
TTTP-07-02 (BU-01)	TTTP-07-02	Qmp	9-13	127806			
TTTP-07-03 (BU-01)	TTTP-07-03	Limestone	surface	127806 & 129902	129902	129899	129901
UAGH-ARKOSE-01	UAGH-ARKOSE	Soil	surface	129789	129789	129791	129790
UAGH-GILA-01	UAGH-GILA	Soil	surface	129789	129789	129791	129790
UAGH-GLANCE-01	UAGH-GLANCE	Soil	surface	129789	129789	129791	129790
VABH0608-01	VABH0608	Bolsa	28-56	129345	129345	129342	

Sample ID	Borehole	Rock Type	Sample Depth	ABA/NAG	Whole Rock	SPLP	MWMP
VABH0609-01	VABH0609	Arkose	26-46	129346	129346	129343	
Year 0-3 Tailings	Tailings	Tailings		W804583	W804583	W804583	W804583
Year 0-3 Tailings_6.18.09	Tailings	Tailings				W9F0502	

TABLE A.2:
SUMMARY OF ABA AND SULFUR SPECIATION TESTING

Table A.2: Summary of ABA and Sulfur Speciation Testing

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
1461-01	< 0.3	788	5253	788	8.46	<0.01	<0.01	<0.01	< 0.01
1461-02	< 0.3	876	5840	876	8.48	<0.01	<0.01	<0.01	< 0.01
1462-01	< 0.3	115	767	115	8.23	0.02	<0.01	0.02	0.04
1462-02	0.9	12	12	10.8	8.04	<0.01	0.03	0.04	0.07
1485-01	< 0.3	26	171	25.7	8.14	<0.01	<0.01	0.28	0.28
1502-01	< 0.3	887	5913	887		<0.01	<0.01	<0.01	< 0.01
1503-01	< 0.3	5.6	37.3	5.6	7.43	<0.01	<0.01	0.02	0.02
1506-01	< 0.3	9.3	62	9.3	7.28	<0.01	<0.01	<0.01	< 0.01
1506-02	< 0.3	838	5587	838	7.95	<0.01	<0.01	<0.01	< 0.01
1506-03	2	489	245	487		<0.01	0.06	0.26	0.32
1507-01	< 0.3	912	6080	912		<0.01	<0.01	<0.01	< 0.01
1511-01	< 0.3	863	2877	863	8.78	<0.01	<0.01	<0.01	< 0.01
1528-01	4.4	182	41.4	178	8.27	<0.01	0.14	0.08	0.22
1528-02	12	337	28.1	325		0.02	0.38	5.41	5.81
1530-01	32	202	6.31	170		<0.01	1.03	1.02	2.05
1535-01	34	41	0.83	7	8.08	<0.01	1.09	0.37	1.47
1538-01	< 0.3	621	4140	621		<0.01	<0.01	<0.01	< 0.01
1538-02	0.5	4.5	8.65	3.98		0.02	0.02	0.04	0.08
1561-01	< 0.3	439	2927	439	8.39	<0.01	<0.01	<0.01	< 0.01
1561-02	6.0	1.5	0.25	-4.5		<0.01	0.19	0.16	0.35

* Units are in tons of $CaCO_3$ per 1000 tons of material

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
1561-03	< 0.3	665	4433	665		<0.01	<0.01	<0.01	< 0.01
1561-04	0.5	4.2	8.4	3.66		<0.01	0.02	0.01	0.03
1580-01	< 0.3	35	233	34.8		<0.01	<0.01	<0.01	< 0.01
1596-01	< 0.3	66	437	65.6	8.96	<0.01	<0.01	<0.01	< 0.01
1596-02	< 0.3	784	5227	784	7.74	<0.01	<0.01	<0.01	< 0.01
1596-03	6.3	212	33.7	206		<0.01	0.20	0.78	0.98
1914-01	18	403	22.4	385		<0.01	0.58	0.01	0.68
1916-01	< 0.3	738	4920	738		<0.01	<0.01	<0.01	< 0.01
1916-02	< 0.3	630	4200	630		<0.01	<0.01	<0.01	< 0.01
1920-01	< 0.3	45	302	45.3	7.95	<0.01	<0.01	<0.01	< 0.01
1920-02	1.2	249	208	248		<0.01	0.04	0.03	0.07
1926-01	< 0.3	12	81.3	12.2	7.00	<0.01	<0.01	<0.01	< 0.01
1926-02	< 0.3	550	3667	550	8.36	<0.01	<0.01	<0.01	< 0.01
1926-03	< 0.3	862	5747	862		<0.01	<0.01	<0.01	< 0.01
4-7 Yr. Composite	4.9	241	49.2	236	9.34	0.02	0.16	0.18	0.36
A780-01	< 0.3	501	3340	501	8.21	<0.01	<0.01	<0.01	< 0.01
A780-02	9.7	3.5	0.36	-6.2		<0.01	0.31	0.14	0.45
A780-02 Composite	9.1	3	0.32	-6.1		<0.01	0.29	0.13	0.42
A780-03	40	< 0.3	0.008	-40		<0.01	1.27	0.18	1.45
A780-03 Composite	9.8	1	0.1	-8.8		<0.01	0.31	0.13	0.45
A801-01	< 0.3	770	5133	770	7.18	<0.01	<0.01	<0.01	< 0.01
A804-01	< 0.3	889	5927	889	7.40	<0.01	<0.01	<0.01	< 0.01

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
A805-01	< 0.3	473	3153	473	8.17	<0.01	<0.01	<0.01	< 0.01
A806-01	< 0.3	194	1293	194		<0.01	<0.01	<0.01	< 0.01
A808-01	37	19	0.51	-18	2.84	<0.01	1.18	0.16	1.34
A808-02	< 0.3	740	4933	740	7.90	<0.01	<0.01	<0.01	< 0.01
A809-01	0.6	219	365	219	8.02	<0.01	0.02	0.07	0.09
A812-01	< 0.3	112	747	112		<0.01	<0.01	<0.01	< 0.01
A814-01	< 0.3	90	600	90	8.26	<0.01	<0.01	<0.01	< 0.01
A814-02	< 0.3	874	5287	874	7.77	<0.01	<0.01	<0.01	< 0.01
A815-01	< 0.3	453	3020	453	8.06	<0.01	<0.01	<0.01	< 0.01
A815-02	< 0.3	10	67.3	10.1	8.27	<0.01	<0.01	0.01	0.01
A-816 569...	29	121	4.17	92.1		0.12	0.92	0.57	1.61
A817-01	45	47	1.04	1.8	7.72	<0.01	1.44	0.09	1.53
A818-01	< 0.3	693	4620	693		<0.01	<0.01	<0.01	< 0.01
A-820 245.5...	18	88	4.89	69.4		0.09	0.58	0.07	0.75
A821-01	< 0.3	47	315	47.3	8.79	<0.01	<0.01	0.01	0.01
A825-01	< 0.3	933	6220	933		<0.01	<0.01	<0.01	< 0.01
A828-01	5.5	165	30	160		<0.01	0.18	0.07	0.24
A829-01	< 0.3	680	4533	680		<0.01	<0.01	<0.01	< 0.01
A830-01	< 0.3	638	4253	638	7.36	<0.01	<0.01	<0.01	< 0.01
A830-02	1.3	63	417	61.3	8.17	0.06	0.04	0.06	0.16
A830-03	< 0.3	18	117	17.6	8.16	<0.01	<0.01	<0.01	< 0.01
A830-04	15	178	11.9	163		<0.01	0.49	0.15	0.64

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
A831-01	0.3	29	96.6	28.7	8.32	<0.01	0.01	0.01	0.02
A834-01	< 0.3	519	3460	519	8.21	<0.01	<0.01	<0.01	< 0.01
A834-02	5.6	109	19.5	104	8.36	<0.01	0.18	0.06	0.24
A840-01	< 0.3	492	3280	492		<0.01	<0.01	<0.01	< 0.01
A842-01	< 0.3	224	1493	224		<0.01	<0.01	<0.01	< 0.01
A845-01	4.1	26	6.64	22.2	8.02	<0.01	0.13	0.03	0.16
A845-02	< 0.3	201	1340	201	8.04	<0.01	<0.01	<0.01	< 0.01
A847-01	< 0.3	774	5160	774	8.19	<0.01	<0.01	0.12	0.12
A849-01	1.8	208	116	206		<0.01	0.06	0.05	0.12
A850-01	0.3	176	587	175	8.66	0.01	0.01	0.13	0.15
A852-01	75	203	2.71	128		0.05	2.39	0.74	3.18
A855-01	< 0.3	21	137	20.6	9.61	<0.01	<0.01	<0.01	< 0.01
A856-01	< 0.3	707	4713	707	7.83	<0.01	<0.01	<0.01	< 0.01
A857-01	< 0.3	92	611	91.6	8.25	<0.01	<0.01	<0.01	< 0.01
A860-01	2.2	354	161	352	7.93	<0.01	0.07	0.24	0.31
A860-02	5	252	50.4	247	7.00	0.01	0.16	3.27	3.44
A860-03	< 0.3	405	2700	405	7.00	<0.01	<0.01	2.05	2.05
A865-01	3.4	129	37.9	125	7.69	0.01	0.11	2.61	2.73
A866-01	< 0.3	599	3993	599	7.49	<0.01	<0.01	<0.01	< 0.01
A866-02	< 0.3	766	5106	766		<0.01	<0.01	<0.01	< 0.01
A871-01	0.6	570	950	569	7.44	<0.01	0.02	0.02	0.04
A872-01	< 0.3	203	1353	203	9.44	<0.01	<0.01	<0.01	< 0.01

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
A873-01	< 0.3	79	526	78.9	8.22	<0.01	<0.01	<0.01	< 0.01
A878-01	4.1	576	141	572	8.41	<0.01	0.13	0.03	0.16
A878-02	2.2	175	79.4	173		<0.01	0.07	0.05	< 0.12
A-882 109...	12	72	6	59.6		0.05	0.38	0.10	0.54
A-886 888...	28	156	5.57	128		0.09	0.88	0.32	1.29
A886-01	1.9	9.1	4.79	7.2	7.77	<0.01	0.06	<0.01	0.03
AH4-01	< 0.3	43	288	43.2	8.13	<0.01	<0.01	<0.01	< 0.01
AH4-02	< 0.3	530	3533	530	8.36	<0.01	<0.01	<0.01	< 0.01
Andesite Col. Leach	7.5	11	1.45	3.4	4.01	0.02	0.24	0.12	0.38
AR2000-01	< 0.3	43	285	42.7	8.08	<0.01	<0.01	<0.01	< 0.01
AR2000-02	11	62	5.7	51.3	7.76	0.01	0.35	0.19	0.55
AR2000-03	8.1	112	13.8	104	8.27	<0.01	0.26	0.11	0.37
AR2000-04	< 0.3	467	3113	467	7.94	<0.01	<0.01	<0.01	< 0.01
AR2000-05	< 0.3	862	5746	862		<0.01	<0.01	<0.01	< 0.01
AR2001-01	< 0.3	27	181	27.1	8.19	<0.01	<0.01	<0.01	< 0.01
AR2001-02	0.3	26	87	25.8	8.44	0.02	0.01	0.06	0.09
AR2001-03	< 0.3	99	661	99.1	9.19	<0.01	<0.01	<0.01	< 0.01
AR2002-01	1.6	27	16.9	25.5	8.46	<0.01	0.05	0.02	0.07
AR2002-02	0.6	617	1028	616	7.94	0.02	0.02	1.02	1.06
AR2002-03	< 0.3	522	3480	522		<0.01	<0.01	<0.01	< 0.01
AR2003-01	< 0.3	38	251	37.6	8.84	<0.01	<0.01	<0.01	< 0.01
AR2003-02	< 0.3	24	161	24.1	8.90	<0.01	<0.01	<0.01	< 0.01

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
AR2003-03	21	31	1.5	10.5	7.60	<0.01	0.66	0.26	0.92
AR2004-01	< 0.3	56	375	56.2	8.06	<0.01	<0.01	<0.01	< 0.01
AR2004-02	< 0.3	722	4813	722	8.31	<0.01	<0.01	<0.01	< 0.01
AR2004-03	< 0.3	270	1800	270	8.17	<0.01	<0.01	<0.01	< 0.01
AR2004-04	< 0.3	459	3060	459	8.89	<0.01	<0.01	<0.01	< 0.01
AR2004-05	< 0.3	880	5867	880		<0.01	<0.01	<0.01	< 0.01
AR2004-06	< 0.3	590	3933	590		<0.01	<0.01	<0.01	< 0.01
AR2005-01	< 0.3	36	237	35.6	8.37	0.04	<0.01	0.02	0.06
AR2005-02	29	34	1.2	4.7	7.64	<0.01	0.94	0.27	1.21
AR2006-01	< 0.3	740	4933	740	8.63	<0.01	<0.01	<0.01	< 0.01
AR2006-02	< 0.3	167	1113	167		<0.01	<0.01	<0.01	< 0.01
AR2007-01	< 0.3	74	493	74	8.66	<0.01	<0.01	<0.01	< 0.01
AR2007-02	0.9	98	109	96.9	8.61	<0.01	0.03	0.08	0.11
AR2009-01	< 0.3	53	351	52.7	8.49	<0.01	<0.01	<0.01	< 0.01
AR2009-02	< 0.3	20	131	19.6	8.01	<0.01	<0.01	<0.01	< 0.01
AR2009-03	64	99	1.5	35	7.49	0.02	2.05	0.26	2.33
AR2009-04	17	80	4.7	63.1	7.64	0.01	0.55	0.24	0.80
AR2010-01	< 0.3	20	131	19.6	7.97	<0.01	<0.01	<0.01	< 0.01
AR2010-02	14	18	1.3	3.8	3.46	<0.01	0.44	0.13	0.57
AR2010-03	52	27	0.5	-26	7.43	<0.01	1.67	0.34	2.01
AR2010-04	< 0.3	930	6200	930		<0.01	<0.01	<0.01	< 0.01
AR2011-01	0.3	11	35	10.2	7.17	<0.01	0.01	<0.01	0.01

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
AR2011-02	< 0.3	22	144	21.6	6.65	<0.01	<0.01	<0.01	< 0.01
AR2011-03	69	54	0.8	-15	7.43	<0.01	2.20	0.31	2.51
AR2011-04	1.6	299	187	297	8.56	<0.01	0.05	0.51	0.56
AR2013-01	48	60	1.2	11.3	7.55	0.03	1.55	0.40	1.98
AR2013-02	33	70	2.1	37.1	7.89	<0.01	1.06	0.30	1.36
AR2013-03	32	79	2.5	47.1	8.35	<0.01	1.02	<0.01	1.02
AR2013-04	6.9	70	10.2	63.4	11.10	0.04	0.22	0.02	0.28
AR2013-05	9.1	83	9.1	73.7	11.30	0.04	0.29	0.15	0.48
AR2014-01	< 0.3	31	207	31.1	10.30	0.04	<0.01	<0.01	0.04
AR2014-02	123	105	0.9	-17	3.75	0.04	3.92	0.81	4.77
AR2014-03	30	72	2.4	42.1	8.95	0.04	0.95	0.23	1.22
AR2014-04	< 0.3	584	3893	584	10.10	0.04	<0.01	0.07	0.11
AR2014-05	10	104	10.4	94.1	10.40	0.05	0.32	<0.01	0.37
AR2015-01	< 0.3	73	489	73.3	8.46	<0.01	<0.01	<0.01	< 0.01
AR2015-02	< 0.3	874	5827	874		<0.01	<0.01	<0.01	< 0.01
AR2016-01	< 0.3	26	175	26.2	8.82	<0.01	<0.01	<0.01	< 0.01
AR2017-01	< 0.3	45	302	45.3	8.29	<0.01	<0.01	<0.01	< 0.01
AR2017-02	< 0.3	47	318	47.4	8.17	<0.01	<0.01	<0.01	< 0.01
AR2017-03	41	73	1.79	32.3	7.89	<0.01	1.31	0.29	1.60
AR2017-05	0.6	26	42.8	25.1	8.04	<0.01	0.02	0.01	0.03
AR2017-06	< 0.3	40	264	39.6	8.21	<0.01	<0.01	<0.01	< 0.01
AR2017-07	42	75	1.79	33	7.68	<0.01	1.33	<0.01	1.33

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
AR2017-08	< 0.3	251	1673	251		<0.01	<0.01	<0.01	< 0.01
AR2019-01	< 0.3	12	78.6	11.8	9.04	<0.01	<0.01	0.02	0.02
AR2019-02	< 0.3	44	295	44.2	8.78	<0.01	<0.01	<0.01	< 0.01
AR2019-03	8.8	23	2.63	14.4	8.39	<0.01	0.28	0.07	0.35
AR2020-01	< 0.3	14	92.6	13.9	8.50	<0.01	<0.01	0.11	0.11
AR2020-02	5.3	50	9.45	44.8	8.64	<0.01	0.17	0.04	0.21
AR2021-01	35	47	1.34	12	7.87	<0.01	1.13	0.31	1.44
AR2022-01	34	89	2.6	54.5	7.93	<0.01	1.09	0.51	1.60
AR2022-02	< 0.3	17	116	17.4		<0.01	0.00	0.00	< 0.01
AR2023-01	22	8.3	0.38	-13		0.01	0.69	0.11	0.80
AR2025-01	30	38	1.25	7.5	8.12	<0.01	0.97	0.33	1.30
AR2025-02	16	72	4.52	56	8.18	<0.01	0.51	0.21	0.72
AR2025-03	< 0.3	39	261	39.1	7.66	<0.01	<0.01	1.39	1.39
AR2025-04	6.3	31	4.94	24.9	8.56	0.1	0.20	0.12	0.42
AR2026-01	14	48	3.35	34	8.14	<0.01	0.46	0.03	0.49
AR2026-02	< 0.3	108	720	108	8.39	<0.01	<0.01	<0.01	< 0.01
AR2028B-01	29	76	2.57	46.3	7.89	<0.01	0.94	0.19	1.13
AR2028B-02	< 0.3	58	387	58.4		<0.01	<0.01	<0.01	< 0.01
AR2029-01	< 0.3	105	700	105	8.04	<0.01	<0.01	<0.01	< 0.01
AR2030-01	4.4	85	19.4	80.8	8.21	<0.01	0.14	0.03	0.17
AR2030-02	< 0.3	97	648	97.2	8.21	<0.01	<0.01	<0.01	< 0.01
AR2030-03	12	69	5.76	56.6	8.65	<0.01	0.38	0.07	0.45

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
AR2030-04	< 0.3	64	423	63.5	8.49	<0.01	<0.01	<0.01	< 0.01
AR2030-05	5.3	48	9	42.4	8.42	0.06	0.17	0.11	0.34
AR2030-06	< 0.3	34	226	33.9	8.01	<0.01	<0.01	0.02	0.02
AR2030-07	0.8	413	515	412		0.11	0.02	0.23	0.36
AR2032-01	< 0.3	40	265	39.8	8.11	<0.01	<0.01	0.01	0.01
AR2032-02	< 0.3	37	243	36.5	8.41	<0.01	<0.01	0.11	0.11
AR2032-03	< 0.3	154	1027	154		<0.01	<0.01	<0.01	< 0.01
AR2033-01	0.6	14	23.3	12.9		<0.01	0.02	<0.01	0.02
AR2034-01	< 0.3	2.1	14	2.1	6.58	<0.01	<0.01	0.01	0.01
AR2034-02	< 0.3	928	6187	928		<0.01	<0.01	<0.01	< 0.01
AR2035-01	0.3	45	149	44.5	8.47	<0.01	0.01	0.04	0.05
AR2035-02	1.9	171	90	169	8.30	<0.01	0.06	0.07	0.13
AR2035-03	< 0.3	272	1813	272		<0.01	<0.01	<0.01	< 0.01
AR2036-01	7.2	103	14.3	95.6	9.56	<0.01	0.23	0.13	0.36
AR2036-02	< 0.3	4.7	31.3	4.7	7.56	0.02	<0.01	0.04	0.06
AR2036-03	5	75	15.0	70.2	8.69	0.06	0.16	0.02	0.24
AR2036-04	< 0.3	< 0.3	1	< 0.3	5.67	0.02	<0.01	0.01	0.03
AR2037-01	36	80	2.21	44.2	8.14	<0.01	1.16	0.28	1.44
AR2037-02	< 0.3	49	326	48.9	8.77	<0.01	<0.01	<0.01	< 0.01
AR2037-03	< 0.3	37	245	36.7	8.46	<0.01	<0.01	<0.01	< 0.01
AR2038-01	0.3	14	45.6	13.4	9.42	<0.01	0.01	0.01	0.02
AR2038-02	< 0.3	100	667	100	8.54	<0.01	<0.01	<0.01	< 0.01

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
AR2038-03	< 0.3	44	290	43.5	9.53	<0.01	<0.01	<0.01	< 0.01
AR2038-04	< 0.3	6.2	41.3	6.2	8.66	<0.01	<0.01	0.02	0.02
AR2038-05	< 0.3	17	111	16.6	7.80	<0.01	<0.01	<0.01	< 0.01
AR2038-06	< 0.3	39	259	38.9	8.63	<0.01	<0.01	<0.01	< 0.01
AR2039-01	1.9	9.5	5	7.6	8.95	0.05	0.06	0.21	0.32
AR2039-02	1.6	19	11.9	17.4	8.49	0.02	0.05	0.10	0.17
AR2039-03	20	25	1.22	4.5	9.20	<0.01	0.65	0.15	0.80
AR2039-04	< 0.3	4.2	28	4.2	8.56	0.1	<0.01	0.09	0.19
AR2039-05	0.3	19	64	18.9	8.71	0.05	0.01	0.06	0.12
AR2039-06	23	20	0.85	-3.4	7.96	0.11	0.74	0.19	1.04
AR2039-07	< 0.3	169	1127	169		<0.01	<0.01	<0.01	< 0.01
AR2040-01	0.3	7.7	25.6	7.4	8.60	0.01	0.01	0.03	0.05
AR2040-02	< 0.3	707	4713	707		<0.01	<0.01	<0.01	< 0.01
AR2041-01	13	44	3.38	31.2	8.06	<0.01	0.42	0.06	0.48
AR2041-02	1.6	221	138	220	8.30	<0.01	0.05	0.01	0.06
AR2042-01	< 0.3	432	2880	432	8.78	<0.01	<0.01	<0.01	< 0.01
AR2042-02	< 0.3	134	893	134	8.80	<0.01	<0.01	<0.01	< 0.01
AR2042-03	< 0.3	285	1900	285	8.90	<0.01	<0.01	0.06	0.06
AR2042-04	< 0.3	111	740	111	7.97	<0.01	<0.01	<0.01	< 0.01
AR2042-05	< 0.3	570	3800	570	8.32	<0.01	<0.01	<0.01	< 0.01
AR2042-06	< 0.3	410	2733	410	7.89	<0.01	<0.01	<0.01	< 0.01
AR2043-01	48	103	2.17	55.2	7.54	<0.01	1.52	0.55	2.08

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
AR2043-02	32	175	5.43	142	7.60	<0.01	1.03	0.48	1.51
AR2043-03	< 0.3	449	2993	449		<0.01	<0.01	<0.01	< 0.01
AR2043-05	43	272	6.3	229		0.01	1.37	0.61	1.99
AR2059-01	2.7	2.7	1	<0.04		<0.01	0.09	0.08	0.17
AR2060-01	< 0.3	3.2	21	3.2		<0.01	<0.01	<0.01	0.01
AR2066-01	15	38	2.5	22.7		<0.01	0.49	0.20	0.69
AR2067-01	< 0.3	7.3	48.7	7.3		<0.01	<0.01	<0.01	< 0.01
AR2072-01	5.5	10	1.8	4.93		<0.01	0.18	0.07	0.25
AR2073-01	< 0.3	9.9	66	9.9		<0.01	<0.01	<0.01	< 0.01
Arkose (AR2054)	< 0.3	8.3	55.3	8.3	6.70	<0.01	<0.01	<0.01	< 0.01
Colina	1.1	181	165	180	11.48	<0.01	0.03	0.04	0.07
Composite-1	16	83	5.1	66.5	9.38	0.05	0.52	0.03	0.60
Earp	6.1	145	23.8	138	8.88	0.01	0.19	0.09	0.29
Epitaph	23	400	17.7	377	7.99	0.02	0.72	0.46	1.20
Escabrosa	8.2	371	45.2	363	9.63	0.02	0.26	0.55	0.83
Horquilla	9	548	60.9	539	11.27	0.02	0.29	0.49	0.80
JR-032807-04 0-4	1.6	< 0.3	0.09	-1.6		0.05	0.05	0.07	0.17
JR-032807-04 11-34	0.3	155	517	155		0.02	0.01	0.02	0.05
JR-032807-04 4-11	0.9	< 0.3	0.17	-0.9		0.04	0.03	0.09	0.16
LC-032707-01 3-12	< 0.3	1.3	8.66	1.3		<0.01	<0.01	<0.01	< 0.01
LC-032707-01 36-60	< 0.3	18	121	18.1		<0.01	<0.01	<0.01	< 0.01
Leach-01	1.9	54	28.3	51.8	9.51	<0.01	0.06	0.05	0.11

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
Qmp Column Leach	< 0.3	1.6	10.6	1.6	4.44	<0.01	<0.01	0.06	0.06
RS-032807-01 0-6	< 0.3	57	379	56.8		<0.01	<0.01	<0.01	< 0.01
RS-032807-01 21-24	< 0.3	170	1133	170		<0.01	<0.01	<0.01	< 0.01
RS-032807-01 6-15	< 0.3	170	1133	170		<0.01	<0.01	<0.01	< 0.01
RS-032807-02 0-9	< 0.3	23	155	23.2		<0.01	<0.01	0.02	0.02
RS-032807-02 19-24	< 0.3	93	620	93		<0.01	<0.01	<0.01	< 0.01
S-01	6.3	54	8.6	47.7	8.45	0.13	0.20	0.18	0.51
S-02	< 0.3	161	1073	161	7.37	<0.01	<0.01	<0.01	< 0.01
S-03	2.2	43	19.6	41	7.33	<0.01	0.07	<0.01	0.07
S-04	1.3	321	247	320	7.91	<0.01	0.04	0.16	0.20
Tailings-022807	< 0.3	332	2213	332	7.87	<0.01	<0.01	<0.01	< 0.01
Tailings-05 June2007	< 0.3	248	1653	248	8.25	<0.01	<0.01	0.04	0.04
Tailings-May 2006	1	426	426	425		<0.01	0.01	0.04	0.05
TTTP-07-02 (BU-01)	< 0.3	3.1	20.7	3.1	5.68	<0.01	<0.01	<0.01	< 0.01
TTTP-07-02, BU-01	< 0.3	5.3	35.3	5.3	8.21	<0.01	<0.01	<0.01	< 0.01
TTTP-07-03	< 0.3	825	5500	825	11.40	<0.01	<0.01	<0.01	< 0.01
TTTP-07-03 (BU-01)	< 0.3	866	5773	866	9.45	<0.01	<0.01	<0.01	< 0.01
UAGH-ARKOSE-01	0.6	5.7	9.5	5.1	7.30	0.03	0.02	<0.01	0.05
UAGH-GILA-01	< 0.3	96	638	95.7	9.06	0.02	<0.01	0.10	0.12
UAGH-GLANCE-01	< 0.3	450	3000	450	8.42	<0.01	<0.01	<0.01	< 0.01
VABH0608-01	< 0.3	2.6	17.3	2.6		<0.01	<0.01	0.01	0.01
VABH0609-01	< 0.3	4.3	28.7	4.3		<0.01	<0.01	0.01	0.01

Sample ID	AP*	NP*	NPR	NNP*	NAG Test	Non-Extractable Sulfur (%)	Pyritic Sulfur (%)	Sulphate Sulfur (%)	Total Sulfur (%)
Year 0-3 Tailings	< 0.3	304	2027	304		<0.01	<0.01	<0.01	< 0.01

TABLE A.3:
SUMMARY OF WHOLE ROCK TESTING DATA

Table A.3: Summary of Whole Rock Testing Data

Sample ID	Ca	Cl	F	K	Mg	Na	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn
1461-02	232000	17.90	1.36	3560	121000	< 250	36.2	2.50	7470	14.0		21.4	< 1.00	< 1.00	20.7	7	6670	0.058	217		< 5.0	< 3.8	15	21	7.5	6
1506-02	449000	17.80	6.11	270	771	< 50	39.6	0.50	1260	< 2.5		2.4	< 0.20	1.32	13.8	465	2680	<0.033	708	4	1.8	< 7.5	< 2	6	1.5	144
1596-01	41200	23.50	10.70	795	4750	< 50	13	0.50	7120	18.9		12.8	0.46	3.79	47.6	294	13500	<0.033	977	2.5	4.7	49.1	2.7	< 4	1.5	263
1926-01	3490	29.80	2.37	2420	778	86	31.8	0.50	4080	7.3		19.5	0.69	0.60	55.1	962	5360	<0.033	95.7	35.5	1.7	12.1	< 2	< 4	1.5	21.3
1926-02	185000	16.70	3.54	5520	26700	54	21	0.77	13000	25.0		29.9	1.60	2.20	22.7	23.8	15700	0.047	489	< 0.8	10.5	9.13	2.8	4	1.5	45.4
4-7 Yr. Composite	99900	6.72	11.70	1120	24400	262	219	1.92	9180	8.8		22.0		< 0.20	23.9	2380	26100	0.058	1990	109		4.92	< 2	29.2		146
A805-01	199000	46.40	1.72	190	698	< 50	17.3	0.50	2340	< 2.5		0.7	< 0.20	0.40	12.9	< 10	1440	1.020	585	< 0.8	< 1.0	9.3	< 2	< 4	1.5	7.9
A814-02	235000	19.30	3.71	1390	72200	< 50	20.3	0.50	5230	7.5		17.1	< 0.20	0.32	11.5	11	5290	<0.033	250	< 0.8	2.1	4.84	< 2	< 4	1.5	5.5
A815-01	183000	18.80	9.82	3140	26700	< 250	143	2.50	12500	<13.0		47.0	< 1.00	1.00	46.4	433	11600	0.093	1250		10.0	85.1	<10	< 20	7.5	141
A821-01	21800	25.50	4.00	2010	3720	311	58.5	0.50	9030	40.0		145.0	0.94	1.62	26.7	27.9	10400	0.067	415	1.8	6.6	29.7	< 2	< 4	1.7	37.7
A830-02	31300	11.90	5.26	1820	2730	60	45.8	1.08	6200	71.1		69.1	0.54	2.65	35.7	37.9	14800	0.482	695		4.6	373	6.1	< 4	1.5	172
A845-02	90300	32.20	5.74	603	18400	103	77.7	0.83	11600	19.9		111.0	1.05	1.69	43.5	622	16200	0.162	2450	23.6	14.4	10.1	2.2	< 4	1.5	198
A850-01	62700	35.80	31.80	1460	19200	262	74.5	17.70	17000	7.3		7.7	1.09	2.00	61.8	707	15600	<0.033	1260	168	16.7	3.92	< 2	30	2.4	60.2
A855-01	8770	26.10	4.92	1480	695	< 50	55.9	0.50	1930	2.6		12.8	0.32	0.65	68.0	326	4070	<0.033	145	17.4	1.4	7.03	2.2	< 4	1.5	25.3

Sample ID	Ca	Cl	F	K	Mg	Na	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn
A856-01	213000	20.90	3.32	4210	79200	< 50	29.2	0.50	7000	6.6		29.8	< 0.20	0.61	19.4	4.9	6460	<0.033	343	< 0.8	4.2	4.26	< 2	< 4	1.5	14.8
A860-01	139000	34.50	5.50	223	25100	110	482	1.97	1310	10.0		2.6	1.05	3.44	24.3	1100	19600	<0.033	2580	202	4.9	87.9	< 2	< 4	5.7	239
A860-02	93100	45.40	21.10	817	40800	58	16600	1.14	5480	12.4		34.0	0.42	1.24	15.5	1480	8260	<0.033	638	80.2	2.4	1.21	< 2	< 4	1.5	65.6
A865-01	86000	36.40	1.08	1790	51000	94	15900	1.24	9850	7.6		28.6	0.32	0.83	16.9	1410	6870	<0.033	701	115	< 1.0	4.46	< 2	< 4	1.5	104
A872-01	102000	52.50	8.00	1140	2600	242	35.9	0.50	7850	< 2.5		2.3	0.46	2.54	65.0	71	10900	<0.033	1050	16.8	27.0	< 7.5	< 2	< 4	1.5	373
Andesite Col. Leach	12300	30.00	10.00	2350	11000	60	9340	6.02	11500	11.9		55.4	1.00	3.98	47.8	1250	25100	0.142	751	15.7	23.4	67.3	< 2	< 4	1.5	533
AR2000-02	27600	7.11	3.91	2150	14700	1970	142	0.75	17900	< 2.5	0.014	17.0		0.22	57.9	1120	8640	<0.033	603	111		2.72	< 2	< 4		118
AR2001-01	13400	4.02	4.29	2580	5220	80	9.04	0.50	15100	21.7	0.018	23.7		2.15	72.9	52	24100	0.042	390	3.5		135	< 2	< 4		133
AR2002-01	13700	7.96	3.59	2760	8250	86	24.8	0.50	18200	20.7	0.017	42.4		2.30	73.3	29.1	24900	<0.033	1030	3.9		48	< 2	< 4		159
AR2003-03	15600	5.10	3.26	2350	7090	246	286	0.50	14400	8.3	0.014	16.1		2.17	70.2	33.3	20400	0.068	379	3.2		55.5	< 2	< 4		81.4
AR2004-01	29400	6.89	3.19	2330	7040	80	19.2	0.50	17700	13.0	0.025	33.9		3.20	52.4	556	27000	<0.033	972	2.4		35.5	< 2	< 4		583
AR2004-04	238000	26.50	4.34	1090	3050	65	85.2	5.16	4370	2.9	0.028	8.1		0.54	15.3	3400	3500	<0.033	788	252		4.12	< 2	< 4		80.8
AR2005-01	12700	3.44	3.83	2580	3820	66	24.6	0.50	7940	74.4	0.027	97.7		0.68	27.7	22.9	16100	<0.033	1690	4.6		122	3	< 4		277
AR2005-02	10900	5.27	1.37	2230	6540	189	356	0.50	7910	9.2	0.006	11.2	0.45	0.85	30.4	6.8	17000	<0.033	310	1.1	2.4	11.6	3	< 4	1.5	16.4
AR2007-01	32300	7.54	1.60	1450	9040	107	30.3	0.51	9540	41.4	0.011	27.8		2.87	44.2	1160	18100	<0.033	1210	1.9		57.6	< 2	< 4		637

Sample ID	Ca	Cl	F	K	Mg	Na	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn
AR2009-01	21000	3.18	2.03	1830	3890	135	15.3	0.50	8560	27.6	0.018	174.0		< 0.20	23.8	11.5	12100	<0.033	396	1.6		19	< 2	< 4		37.4
AR2009-03	34600	4.41	6.70	4560	27000	279	404	2.49	19500	20.0	0.013	47.8		0.30	62.8	626	43400	<0.033	928	1.9		47.1	< 2	< 4		283
AR2009-04	25600	3.46	4.78	4890	18000	67	130	0.50	14100	3.7	0.003	6.2	0.94	0.88	61.7	695	12900	<0.033	266	52.9	13.0	< 0.75	4	< 4	1.5	28.2
AR2010-02	7580	3.47	5.09	2630	8570	380	305	1.06	10500	5.6	0.015	11.0		0.97	42.4	21.3	17700	0.087	275	2.5		57	< 2	< 4		56.2
AR2010-03	27100	4.49	6.81	2420	22600	537	86.4	0.75	16100	16.9	0.011	44.8		3.00	67.7	210	35000	0.050	753	3.3		277	< 2	< 4		202
AR2011-01	3930	6.48	5.14	2570	4360	109	21.9	1.41	8140	13.1	0.011	18.1		0.84	61.4	38.9	22600	<0.033	197	3.7		149	< 2	< 4		313
AR2011-02	3110	5.73	5.91	2630	4620	77	9.91	0.50	7890	23.1	0.020	11.9		0.72	53.1	19.5	23000	0.097	254	4		128	2	< 4		247
AR2011-03	25000	4.71	5.75	4190	16500	573	248	1.10	13200	21.7	0.018	31.3		0.75	61.0	235	32500	<0.033	650	2.2		151	< 2	< 4		355
AR2013-01	27600	8.56	6.29	4350	14200	370	700	1.67	12700	14.0	0.025	49.2		0.28	46.9	458	26100	<0.033	759	1.3		136	< 2	< 4		243
AR2013-02	21100	4.76	4.14	12000	21300	496	434	0.50	19600	20.1	0.010	212.0		0.39	61.6	25.4	43700	0.048	623	1.5		11.2	< 2	< 4		111
AR2013-03	27900	4.15	4.34	3000	10300	213	210	0.85	9410	25.3	0.010	34.8	0.97	3.20	45.9	198	26700	0.128	618	3.8	18.0	46.5	7	10	1.5	118
AR2013-05	29500	5.83	4.58	2590	6580	182	94.6	0.66	7270	8.1	<0.010	10.7		1.30	50.9	441	19800	<0.033	810	3.4		10.4	< 2	< 4		68.5
AR2014-01	9230	2.83	8.72	9210	13600	293	23.2	1.60	16700	10.9	0.010	25.9		3.29	32.4	55.1	22500	0.060	552	3.7		325	2	< 4		619
AR2014-02	34800	7.94	6.82	1130	17700	133	276	6.24	9540	28.3	0.008	15.0	1.42	5.91	53.1	1580	48300	0.090	1020	1.2	68.0	170	16	< 4	1.5	548
AR2014-03	21900	5.09	5.54	2990	18400	198	238	0.62	11600	14.1	<0.010	36.8		1.61	48.8	191	27600	<0.033	603	2.2		80.8	< 2	< 4		118

Sample ID	Ca	Cl	F	K	Mg	Na	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn
AR2014-04	201000	14.20	5.71	1630	15700	89	56	0.50	7270	< 2.5	0.010	6.5		< 0.20	34.3	682	8110	0.035	1350	45.7		2.56	< 2	< 4		50.5
AR2016-01	13700	18.10	6.21	1750	5350	81	18.7	0.50	7980	16.4		12.2	0.69	3.48	46.3	19.6	18800	<0.033	316	2.7	3.8	42.8	< 2	< 4	1.5	55.8
AR2017-02	14300	13.80	4.29	3240	11400	369	80.1	3.30	6520	2.7		12.3	0.31	0.20	67.5	480	5800	<0.033	142		7.6	48.1	2.1	< 4	1.5	58.2
AR2019-01	6590	17.70	8.19	3540	6130	132	27.2	0.50	9800	7.2		23.9	0.83	3.45	47.8	46.4	20500	0.073	400	3.1	5.2	220	< 2	< 4	1.5	234
AR2019-03	22400	21.00	5.91	869	16600	184	441	2.76	5470	< 2.5		18.0	0.48	1.43	59.0	931	8290	<0.033	428	150	5.3	182	< 2	< 4	1.5	152
AR2020-02	30200	15.20	7.80	2410	26000	338	47.5	1.35	22400	15.0		36.3	1.21	10.70	73.2	383	39900	0.033	1130	2.5	59.7	452	3.2	< 4	1.5	469
AR2025-02	33300	13.90	4.51	1480	7410	< 50	195	0.50	7650	18.6		9.1	0.55	1.67	69.2	163	24400	0.045	725		7.4	5.54	2.7	< 4	1.5	121
AR2030-01	38800	21.50	7.37	2160	20600	978	84.4	0.81	12600	3.5		43.8	1.04	0.57	61.6	1120	7740	<0.033	739		10.5	7.14	2.9	< 4	7.5	112
AR2030-02	42300	19.40	5.54	6390	22900	180	35.7	2.41	17300	12.1		70.2	1.24	2.58	73.5	800	24500	<0.033	1100		52.7	784	4.2	< 4	7.5	365
AR2032-01	15400	4.22	4.02	1780	7750	< 50	9.88	0.80	7810	26.7		16.5		1.76	38.0	329	32100	0.078	749	4.3		86.2	8	7		149
AR2034-01	2600	72.90	6.37	1110	1850	159	28	0.50	3630	11.7		11.5	0.65	1.08	31.7	44.3	7350	0.033	231	4.7	< 1.0	196	< 2	10	1.5	177
AR2035-02	47700	21.90	8.62	2020	16200	2000	59.6	0.50	14100	5.9		37.5	1.00	1.04	58.4	594	7840	0.053	720	25.3	10.9	3.2	3.5	< 4	1.5	45
AR2036-01	40600	16.80	5.56	1200	5510	< 50	102	0.50	6100	26.9		11.5	0.25	1.16	71.7	153	21500	0.493	850		6.4	4.96	< 2	< 4	2.2	33.7
AR2036-02	558	14.10	3.13	1180	192	< 50	50.8	0.50	1290	3.7		18.6	0.21	< 0.20	53.0	991	7310	<0.033	61.5		< 1.0	1.48	< 2	< 4	1.5	5.9
AR2038-02	41100	13.10	5.12	2100	5550	80	12.3	0.62	7310	50.0		16.9	1.12	2.94	53.0	60.4	19300	0.068	409		4.2	109	2.5	< 4	3.1	161

Sample ID	Ca	Cl	F	K	Mg	Na	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn
AR2038-03	17700	11.10	4.81	1720	6880	< 50	8.29	0.50	8430	28.7		13.4	0.80	3.06	39.4	552	22400	0.095	495		6.1	248	3.7	< 4	2.2	222
AR2039-01	4670	12.90	5.63	2480	1010	81	63.3	1.25	3970	84.8		56.3	0.40	2.35	31.2	19.6	8660	0.088	177		1.6	416	6.2	< 4	1.5	121
AR2039-02	8700	15.70	6.22	1950	1450	59	50.8	1.83	3830	73.4		82.9	0.32	1.61	43.5	30.5	13700	0.083	325		3.0	598	8.6	< 4	2.3	91.9
AR2041-01	14000	16.00	8.75	2940	6730	167	71.4	0.50	9250	28.4		19.1	0.87	3.44	46.8	358	29200	0.092	568	4.8	8.5	23.6	2.2	< 4	1.5	75.3
AR2042-01	181000	11.40	2.17	620	3400	< 50	11.8	0.50	2480	8.6		20.6	< 0.20	3.67	43.2	129	5200	0.057	992			103	< 2	< 4	1.5	152
AR2042-03	159000	40.40	8.00	377	15600	< 50	78.5	0.74	10500	30.7		4.8	0.74	1.30	34.2	60.6	14300	0.693	1350	4.4	9.6	41.9	2.3	< 4	1.5	65.1
AR2043-02	58700	6.43	7.38	3240	22500	126	218	4.24	12900	21.3		22.1		5.42	47.4	2040	32800	<0.033	1040	8		267	2	6		1070
Colina	167000	12.80	5.78	1130	57900	76.1	129	2.60	4870	27.6		12.5		0.58	11.8	2770	20100	0.057	1460	112		2.55	< 2	22.1		163
Composite-1	36000	3.82	2.56	2850	9210	191	116	0.91	8650	15.8		42.9		3.05	16.7	493	17900	0.433	656	23.5		83.6	< 2	< 4		229
Earp	62600	5.62	4.16	2020	16600	579	351	2.29	13700	5.3		67.6		0.29	30.7	2250	25900	0.053	1720	78.9		14.8	3.3	< 4		140
Epitaph	155000	11.10	6.50	799	35800	94.2	3990	2.22	5500	28.7		13.6		0.64	11.8	1780	37700	<0.033	1980	122		11.9	4.6	< 4		141
Escabrosa	163000	8.83	5.47	1040	11400	97.5	796	1.59	7350	16.5		15.0		0.60	36.6	1120	36800	0.050	2510	94.8		27.4	< 2	52.7		234
Horquilla	84600	12.10	11.70	435	6010	102	6220	0.56	7110	13.5		5.2		0.24	14.3	1030	33800	0.130	1950	53.3		30.4	< 2	5.5		184
Leach-01	35700	34.00	4.18	2610	11300	252	102	3.95	20200	20.5	0.013	27.4		3.38	95.5	2730	32700	<0.033	1160	19		500	< 2	< 4		821
Qmp Column Leach	1710	21.50	6.65	1430	913	94	1450	2.03	3000	10.9		17.9	0.28	0.77	45.2	722	11600	0.037	92.7	32.6	2.2	37.3	2.3	< 4	1.5	69.5

Sample ID	Ca	Cl	F	K	Mg	Na	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn
S-01	20700	10.70	13.30	3710	8320	93	108	5.00	25100	120.0	0.020	167.0		2.18	81.6	9530	63500	0.273	1290	31		834	< 2	< 4		1060
S-02	67800	16.80	1.72	1230	11600	86	87.8	34.20	9690	23.4	0.094	18.6		66.30	94.7	15200	37800	0.232	1410	113		92.9	3	5		10600
S-03	25000	9.43	3.57	2540	13000	127	146	30.30	18100	8.6	0.010	54.4		13.70	91.2	4600	37100	0.043	1700	29.3		7700	< 2	5		4020
S-04	186000	37.30	1.15	402	7350	64	92.5	52.70	22500	8.3	0.108	16.9		2.18	68.8	16900	28800	0.088	2270	9.4		67.3	< 2	< 4		184
Tailings-022807	125000	11.30	8.72	786	4960	117	123	2.41	3910	8.6		7.7	0.36	1.51	10.4	2070	15300	0.038	1520	90.4	8.8	10.4	2	< 4	1.5	271
Tailings-05 June2007	146000	46.00	10.50	977	5410	154	311	0.87	6210	8.2		12.2	0.58	0.97	21.0	1100	23600	0.042	2000	46.3	5.5	13.6	2.2	< 4	2	118
Tailings-May 2006	150000	40.00	1.10	1000	8400	< 250	320	0.80	12000	5.5		20.0		0.90	14.0		18000	<0.100	2100			7	<10	< 5		85
TTTP-07-02, BU-01	544	7.09	2.32	600	1690	< 50	31.8	0.59	2070	< 2.5		182.0	< 0.20	< 0.20	107.0	70.1	2770	0.098	83.5		4.6	2.89	< 2	< 4	1.5	11.5
TTTP-07-03	379000	13.20	1.50	94	2790	< 50	23.9	0.50	1180	< 2.5		13.6	< 0.20	2.69	30.5	86.1	1180	0.068	652	< 0.8	5.4	1.55	< 2	< 4	1.5	60.7
UAGH-ARKOSE-01	2810	59.60	7.72	1180	4850	58	36.3	0.50	6500	9.5		31.6	0.89	4.27	56.6	145	23300	0.085	1980	6.4	5.4	917	2.9	< 4	2.7	812
UAGH-GILA-01	45400	26.10	11.50	1930	4770	53	27.6	0.50	11000	38.5		134.0	0.79	1.05	33.7	40.1	19100	<0.033	896	5.6	6.3	148	4.5	< 4	1.5	188
UAGH-GLANCE-01	204000	70.60	6.49	281	7100	< 50	27.9	0.50	3310	13.6		26.8	0.44	2.94	23.8	123	4820	<0.033	2400	3.8	4.9	27.4	< 2	< 4	4.4	504
VABH0608-01	791	17.90	9.62	3870	4190	< 50	15.3	0.50	6110	9.5		36.2	1.35	< 0.20	49.1	1030	24900	<0.033	162		4.0	1.5	3.2	< 4	1.5	32.6
VABH0609-01	4570	38.30	3.61	863	3540	< 50	18.1	0.65	4960	24.3		20.7	0.96	0.25	31.6	2720	23000	<0.033	287		6.9	4.44	< 2	< 4	2.2	250
Year 0-3 Tailings	126000	10.30	2.35	1040	8300	225	632	1.15	5870	22.0		25.6	0.54	1.10	17.7	1120	21700	1.770	1670	13.8	11.2	20	< 2	< 4	1.5	108

TABLE A.4:
SUMMARY OF SPLP METALS TESTING DATA

Table A.4: Summary of SPLP Metals Testing Data

Sample ID	TDS	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mb	Ni	Pb	Sb	Se	Tl	Zn
1461-01																												
		5.8	0.98	0.230	0.69	2.90	2.30		1.4	< 0.0050	0.08	< 0.020		0.0030	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
1461-02																												
		4.5	0.86	0.140	4.10	3.20	1.70		1.6	< 0.0050	0.08	< 0.020		0.0030	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
1506-02																												
		6.7	0.61	0.820	0.50	0.10	1.70		3.9	< 0.0050	0.08	< 0.020		0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.010	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
1530-01																												
		130	6.95	0.440	2.23	8.00	2.40		342	< 0.0050	0.08	< 0.020		0.1100	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	0.0100	0.060	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
1530-01_6.18.09																												
												< 0.004													<0.00		< 0.001	
1538-02																												
	41	4.8	0.68	0.156	2.50	0.80	6.10		2.76	< 0.0050	0.70	0.046		0.0100	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.40	0.0300	0.0400	0.020	< 0.010	0.0379	<0.00	<0.04	< 0.001	0.010
1561-01																												
		5.6	1.36	0.400	3.47	0.40	1.90		6	< 0.0050	0.20	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
1561-01_6.18.09																												
												< 0.004													<0.00		< 0.001	
1561-02																												
		2.6	0.42	0.540	2.61	0.40	2.80		15.3	< 0.0050	0.08	< 0.020		0.0100	< 0.0020	0.0060	< 0.0060	0.300	<0.06	< 0.0002	0.6100	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	0.120
1561-03																												
		6.4	0.38	0.350	2.56	0.40	1.20		1.9	< 0.0050	0.20	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
1596-03																												
		198	0.63	0.530	0.93	8.70	1.50		514	< 0.0050	0.08	< 0.020		0.0200	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	0.0300	0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
1596-03_6.18.09																												
												< 0.004													<0.00		< 0.001	

Sample ID	TDS	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mb	Ni	Pb	Sb	Se	Tl	Zn
1916-02		6.3	< 0.20	0.150	8.84	0.50	1.90		4.4	< 0.0050	0.40	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	0.0006	< 0.0040	0.240	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
1926-01	24	4.7	2.03	0.200	3.95	0.35	6.00		1.88	< 0.0050	0.67	0.013		0.0334	< 0.0020	< 0.0020	< 0.0060	0.050	0.19	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
1926-02	13	5.1	1.39	0.300	5.87	0.80	1.01		1.55	< 0.0050	0.08	0.005		0.0053	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
4-7 Yr. Composite		11	0.43	1.120	1.05	2.50	3.20	0.120	24.3	< 0.0050	0.08	< 0.020		0.0200		< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
A780-02		1.5	0.49	< 0.100	3.06	0.40	3.20		10.4	< 0.0050	0.08	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	0.010	<0.06	< 0.0002	0.2200	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A808-02	25	5.0	0.88	< 0.100	2.14	2.61	0.80		1.4	< 0.0050	0.08	< 0.003		0.0182	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
A814-02		4.3	0.63	0.280	2.29	2.00	2.00		2.1	< 0.0050	0.08	< 0.020		0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010			< 0.0040	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A815-01		6.9	0.78	2.420	3.04	1.30	2.00		13.6	< 0.0050	0.08	< 0.020		0.0300	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.050	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A815-02	46	5.2	0.84	0.400	3.22	0.67	6.35		2.87	< 0.0050	0.25	0.003		0.0048	< 0.0020	< 0.0020	< 0.0060	0.011	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
A818-01		5.7	0.66	0.100	2.08	0.60	2.20		3.2	< 0.0050	0.10	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.020	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A818-01_6.18.09												< 0.004													<0.00		< 0.001	
A821-01	59	4.7	1.94	0.330	2.03	0.56	10.30		3.52	< 0.0050	0.24	0.013		0.0717	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.09	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
A830-01	2200	534	1.00	1.370	11.90	15.20	1.73	0.082	1450	< 0.0050	0.08	< 0.003		0.0393		< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010

Sample ID	TDS	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mb	Ni	Pb	Sb	Se	Tl	Zn
A842-01		7.5	2.09	0.290	2.49	0.50	2.60		1.9	< 0.0050	0.09	< 0.020		0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.020	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A845-01	50	7.6	1.60	0.150	3.00	0.78	3.83		9.88	< 0.0050	0.08	< 0.003		0.0022	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
A847-01		6.1	0.87	0.760	1.59	1.30	4.00		10.2	< 0.0050	0.08	< 0.020		0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.030	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A850-01	43	5.8	1.94	2.490	2.76	0.75	11.40		3.6	< 0.0050	0.08	0.004		0.0053	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
A856-01		4.7	0.94	0.160	3.12	1.90	1.70		2.3	< 0.0050	0.08	< 0.020		0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.030	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A860-02	2310	576	5.90	< 1.000	2.32	8.07	2.80		1480	< 0.0050	0.08	< 0.003		0.0466	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	0.0067		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
A865-01		574	0.79	0.300	4.21	8.40	4.00		1540	< 0.0050	0.08	< 0.020		0.0200	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	0.0090	0.040	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A866-01		8.1	1.74	0.470	1.55	1.10	2.20		9.3	< 0.0050	0.08	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.010	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A866-02		12	3.45	1.210	0.50	0.10	1.20		8.5	< 0.0050	0.08	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.040	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A872-01		7	1.10	0.360	0.88	0.10	1.90		3.7	< 0.0050	0.08	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.009	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
A878-01		4.7	1.01	0.410	3.24	1.30	6.00		7.1	< 0.0050	0.08	< 0.020		0.0040	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.020	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
Andesite Col. Leach	773	163	1.72	0.660	3.94	14.00	2.63		508	0.0281	3.56	< 0.003		0.0453	0.0021	0.0310	< 0.0060	3.920	<0.06	< 0.0002	2.8600	0.013	0.046	0.0114	<0.02	<0.04	< 0.015	1.840
AR2001-01		6.1	0.32	0.120	3.17	0.68	2.89	0.030	0.98	< 0.0050	0.37	< 0.025	< 0.005	0.0041		< 0.0020	< 0.0060	< 0.010	0.52	< 0.0002	0.0054			< 0.0075	<0.02	<0.04		< 0.010

Sample ID	TDS	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mb	Ni	Pb	Sb	Se	Tl	Zn
AR2001-01_6.18.09												0.016													<0.00		< 0.001	
AR2002-03		9.9	0.48	0.450	2.12	1.10	2.80		13.8	< 0.0050	0.08	< 0.020		0.0300	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
AR2003-03		9.8	0.24	0.160	4.29	0.95	1.97	0.020	16.9	< 0.0050	0.23	< 0.025	< 0.005	0.0040		< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
AR2004-04		8.9	0.89	0.410	0.50	0.16	1.21	0.040	3.85	< 0.0050	0.03	< 0.025	< 0.005	0.0030		< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
AR2009-01		4.8	0.34	0.140	1.43	0.85	6.45	0.030	1.14	< 0.0050	0.28	< 0.025	< 0.005	0.0038		< 0.0020	< 0.0060	< 0.010	0.08	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
AR2009-03		11	0.29	0.250	5.19	1.30	3.40	0.030	15.3	< 0.0050	0.11	< 0.025	< 0.005	0.0028		< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
AR2011-01		4.4	0.54	0.230	3.34	0.72	3.36	0.030	2.18	< 0.0050	0.45	< 0.025	< 0.005	0.0040		< 0.0020	< 0.0060	< 0.010	0.66	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
AR2011-04		7.6	1.06	1.120	0.99	0.40	1.60		6.2	< 0.0050	0.08	< 0.020		0.0070	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.070	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
AR2013-01		19	0.53	0.400	10.50	3.27	1.82	< 0.020	53.7	< 0.0050	0.07	< 0.025	< 0.005	0.0049		< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	0.0112			< 0.0075	<0.02	<0.04		< 0.010
AR2014-05		6.8	0.57	0.490	2.07	0.30	5.40		12.5	< 0.0050	0.08	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.020	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
AR2016-01	46	5.1	1.01	0.220	2.76	0.44	7.11		1.21	< 0.0050	0.28	0.024		0.0029	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.32	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
AR2017-02	33	6.0	0.37	0.210	1.70	0.39	3.35	0.000	3.56	< 0.0050	0.18	0.004		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
AR2019-03		9.4	0.62	0.560	2.44	1.40	5.90		28.5	< 0.0050	0.08	< 0.020		0.0100	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.310	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010

Sample ID	TDS	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mb	Ni	Pb	Sb	Se	Tl	Zn
AR2022-02																												
	43	4.9	0.75	0.263	1.76	1.10	8.40		2.11	< 0.0050	0.40	0.026		0.0030	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.30	< 0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	<0.00	<0.04	< 0.001	< 0.010
AR2030-01																												
		5.6	0.77	0.760	1.60	0.60	4.20		4.4	< 0.0050	0.08	< 0.020		0.0100	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.009	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
AR2032-01																												
	32	5.9	0.46	0.286	2.94	0.60	5.49	0.075	1.14	< 0.0050	0.12	0.016		< 0.0020		< 0.0020	< 0.0060	< 0.010	0.15	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
AR2034-02																												
		7.6	< 0.20	0.750	1.02	2.70	1.20		12.4	< 0.0050	0.08	< 0.020		0.0040	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.040	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
AR2035-02																												
	35	5.6	1.50	0.370	3.05	0.77	3.58		2.63	< 0.0050	0.08	< 0.003		0.0125	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
AR2036-01																												
	26	7.2	0.55	0.390	3.33	0.79	2.30		6.33	< 0.0050	0.12	0.012		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
AR2039-01																												
	43	5.9	0.42	0.310	3.40	0.61	7.50		3.56	< 0.0050	1.00	0.048		0.0544	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.57	< 0.0002	0.0108		< 0.010	0.0310	<0.02	<0.04	< 0.015	0.015
AR2039-07																												
		7.7	2.32	0.330	0.50	0.30	1.60		2	< 0.0050	0.20	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.580	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
AR2040-01																												
	41	4.1	0.95	0.240	2.07	0.73	10.30		1.83	< 0.0050	0.28	0.060		0.0040	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.10	0.0019	0.0069		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
AR2041-01																												
	32	6.8	1.32	0.550	3.41	0.51	3.42		4.51	< 0.0050	0.16	0.009		0.0305	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
AR2041-01_6.18.09																												
												0.007													<0.00		< 0.001	
AR2041-02																												
		4.8	0.71	0.610	3.35	1.00	3.10		3.7	< 0.0050	0.08	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.120	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
AR2042-03																												
	30	6.4	1.30	0.390	1.20	1.07	2.45		4.41	< 0.0050	0.08	0.005		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010

Sample ID	TDS	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mb	Ni	Pb	Sb	Se	Tl	Zn
AR2043-03		7.4	1.12	0.470	0.60	0.10	4.10		2.9	< 0.0050	0.08	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	< 0.06	< 0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	< 0.02	< 0.04	< 0.020	< 0.010
AR2059-01		0.6	0.	0.100	0.58	0.10	2.80		0.9	< 0.0050	0.08	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	0.010	0.07	< 0.0002	0.0070	< 0.008	< 0.010	< 0.0075	< 0.02	< 0.04	< 0.020	< 0.010
AR2066-01		6.9	0.	0.270	0.50	0.90	3.80		1.8	< 0.0050	0.20	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	0.010	< 0.06	0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	< 0.02	< 0.04	< 0.020	< 0.010
AR2072-01		2.1	0.	0.170	1.45	0.40	5.60		2.5	< 0.0050	0.20	< 0.020		< 0.0020	< 0.0020	< 0.0020	< 0.0060	0.010	0.20	< 0.0002	0.0040	< 0.008	< 0.010	< 0.0075	< 0.02	< 0.04	< 0.020	< 0.010
Colina		193	0.22	0.844	1.27	3.70	1.40	< 0.100	432	< 0.0050	0.08	< 0.020		0.0200		< 0.0020	< 0.0060	< 0.010	< 0.06	< 0.0002	< 0.0040			< 0.0075	< 0.02	< 0.04		< 0.010
Composite-1		7.6	0.46	0.220	5.49	0.94	4.27	0.030	9.57	< 0.0050	0.10	< 0.025	< 0.005	0.0037		< 0.0020	< 0.0060	< 0.010	< 0.06	< 0.0002	0.0066			< 0.0075	< 0.02	< 0.04		< 0.010
Earp		18	0.63	0.630	1.97	1.00	3.30	< 0.100	36.8	< 0.0050	0.08	< 0.020		0.0500		< 0.0020	< 0.0060	< 0.010	< 0.06	< 0.0002	< 0.0040			< 0.0075	< 0.02	< 0.04		< 0.010
Epitaph		107	0.34	0.849	1.04	8.50	3.30	0.111	278	< 0.0050	0.08	< 0.020		0.0200		< 0.0020	< 0.0060	< 0.010	< 0.06	< 0.0002	0.0100			< 0.0075	< 0.02	< 0.04		< 0.010
Escabrosa		27	0.35	1.000	0.86	1.30	2.10	< 0.100	61.5	< 0.0050	0.08	< 0.020		0.0200		< 0.0020	< 0.0060	< 0.010	< 0.06	< 0.0002	0.0070			< 0.0075	< 0.02	< 0.04		< 0.010
Horquilla		9.8	< 0.20	0.694	0.84	1.90	2.40	< 0.100	6.88	< 0.0050	0.70	< 0.020		0.0050		< 0.0020	< 0.0060	0.170	1.20	< 0.0002	0.1000			< 0.0075	< 0.02	< 0.04		0.050
Leach-01		7.2	1.73	0.100	2.80	0.77	4.42	0.060	2.61	< 0.0050	0.15	< 0.025	< 0.005	0.0027		< 0.0020	< 0.0060	0.029	0.13	< 0.0002	< 0.0040			< 0.0075	< 0.02	< 0.04		< 0.010
Qmp Column Leach	167	26	0.35	0.480	2.46	3.16	1.18		112	< 0.0050	0.36	< 0.003		0.0639	< 0.0020	0.0078	< 0.0060	14.300	< 0.06	< 0.0002	0.8730	0.008	< 0.010	0.0250	< 0.02	< 0.04	< 0.015	0.555
S-01		9.7	0.45	0.640	2.63	1.38	4.09	0.200	2.04	< 0.0050	0.27	< 0.025	< 0.005	0.0091		< 0.0020	< 0.0060	0.125	0.47	< 0.0002	0.0061			0.0125	< 0.02	< 0.04		0.017

Sample ID	TDS	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mb	Ni	Pb	Sb	Se	Tl	Zn
S-02																												
		12	0.33	< 0.100	1.35	1.00	3.21	0.140	2.76	< 0.0050	0.04	< 0.025	< 0.005	0.0041		< 0.0020	< 0.0060	0.193	<0.06	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		0.056
S-03																												
		4.7	0.54	< 0.100	3.65	1.74	2.76	0.090	2.57	< 0.0050	0.17	< 0.025	< 0.005	0.0066		< 0.0020	< 0.0060	0.061	0.39	< 0.0002	0.0193			0.0491	<0.02	<0.04		0.071
S-04																												
		9.6	0.34	0.110	0.62	0.44	0.82	0.120	3.77	< 0.0050	0.03	< 0.025	< 0.005	< 0.0020		< 0.0020	< 0.0060	0.023	<0.06	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
Tailings-022807																												
	13	8.8	0.36	1.250	0.62	0.23	2.57	0.040	6.95	< 0.0050	0.08	< 0.003		< 0.0020		< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040			< 0.0075	<0.02	<0.04		< 0.010
Tailings-05 June2007																												
	66	13	0.43	1.290	0.86	0.17	2.22		20	< 0.0050	0.08	< 0.003		0.0032	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	< 0.0040	0.075	< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
Tailings-May 2006																												
										< 2.0000		< 1.000		< 0.0000		< 0.5000	< 1.0000			< 0.0100				< 1.0000		<0.50		
TTTP-07-02, BU-01																												
	20	0.8	0.39	0.220	1.05	0.33	4.02		1.41	< 0.0050	0.28	< 0.003		< 0.0020	< 0.0020	< 0.0020	< 0.0060	0.021	0.19	< 0.0002	0.0056		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
TTTP-07-03																												
	11	6.4	< 0.20	0.120	0.77	0.19	<0.50		1.21	< 0.0050	0.09	< 0.003		< 0.0020	< 0.0020	< 0.0020	< 0.0060	0.021	<0.06	< 0.0002	< 0.0040	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
UAGH-Arkose-01																												
	38	3.3	0.34	0.210	1.67	0.92	6.00		0.84	< 0.0050	0.16	0.004		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.49	< 0.0002	0.0177	0.018	< 0.010	0.0203	<0.02	<0.04	< 0.015	0.012
UAGH-Gila-01																												
	54	8.1	0.46	0.270	0.72	0.55	7.16		1.9	< 0.0050	0.36	0.008		0.0054	< 0.0020	< 0.0020	< 0.0060	< 0.010	0.21	< 0.0002	0.0053	< 0.008	< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
UAGH-Glance-01																												
	48	10	0.37	0.200	0.50	0.55	3.80		1.07	< 0.0050	0.08	0.003		< 0.0020	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	< 0.0002	0.0064	0.011	< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
VABH0608-01																												
	27	0.8	0.93	0.370	1.96	0.19	9.13		0.97	< 0.0050	0.20	0.005		< 0.0020	< 0.0020	< 0.0020	< 0.0060	0.049	0.34	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010
VABH0609-01																												
	32	2.6	2.60	0.280	1.85	0.76	8.22		1.76	< 0.0050	0.23	0.003		0.0030	< 0.0020	< 0.0020	< 0.0060	0.032	0.20	< 0.0002	< 0.0040		< 0.010	< 0.0075	<0.02	<0.04	< 0.015	< 0.010

Sample ID	TDS	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mb	Ni	Pb	Sb	Se	Tl	Zn
Year 0-3 Tailings																												
		16	0.55	0.850	1.24	0.20	4.10		35	< 0.0050	0.08	< 0.020		0.0200	< 0.0020	< 0.0020	< 0.0060	< 0.010	<0.06	0.0007	< 0.0040	0.060	< 0.010	< 0.0075	<0.02	<0.04	< 0.020	< 0.010
Year 0-3 Tailings_6.18.																												
												< 0.004													<0.00		< 0.001	

TABLE A.5:
SUMMARY OF SPLP RADIONUCLIDE TESTING DATA

Table A.5: Summary of SPLP Radionuclide Testing Data

Sample ID	Gross Alpha	Gross Alpha Precision +/-	Adjusted Gross Alpha	Gross Beta	Gross Beta Precision +/-	Radium 226	Radium 228	Uranium
1461-01								< 0.0040
1461-02								< 0.0040
1506-02								< 0.0040
1530-01								< 0.0050
1530-01_6.18.09								
1538-02								< 0.0010
1561-01								< 0.0040
1561-01_6.18.09								
1561-02								< 0.0050
1561-03								< 0.0050
1596-03								< 0.0050
1596-03_6.18.09								
1916-02								

Sample ID	Gross Alpha	Gross Alpha Precision +/-	Adjusted Gross Alpha	Gross Beta	Gross Beta Precision +/-	Radium 226	Radium 228	Uranium
								< 0.0050
1926-01								
1926-02								
4-7 Yr. Composite								
A780-02								< 0.0020
A808-02								
A814-02								< 0.0040
A815-01								< 0.0040
A815-02								
A818-01								< 0.0050
A818-01_6.18.09								
A821-01								
A830-01								< 0.0003
A842-01								< 0.0050

Sample ID	Gross Alpha	Gross Alpha Precision +/-	Adjusted Gross Alpha	Gross Beta	Gross Beta Precision +/-	Radium 226	Radium 228	Uranium
A845-01								
A847-01								< 0.0040
A850-01								
A856-01								< 0.0040
A860-02								
A865-01								< 0.0040
A866-01								< 0.0040
A866-02								< 0.0050
A872-01								< 0.0040
A878-01								< 0.0040
Andesite Col. Leach								
AR2001-01	< 1.0		< 1.0	2.7	1.6	< 0.2	< 1.0	< 0.0010
AR2001-01_6.18.09								
AR2002-03								

Sample ID	Gross Alpha	Gross Alpha Precision +/-	Adjusted Gross Alpha	Gross Beta	Gross Beta Precision +/-	Radium 226	Radium 228	Uranium
								< 0.0050
AR2003-03								
	< 1.0		< 1.0	< 2.0		< 0.2	< 1.0	< 0.0010
AR2004-04								
	< 1.0		< 1.0	< 2.0		< 0.2	< 1.0	< 0.0010
AR2009-01								
	< 1.0		< 1.0	< 2.0		< 0.2	< 1.0	< 0.0010
AR2009-03								
	< 1.0		< 1.0	3.9	1.6	< 0.2	< 1.0	< 0.0010
AR2011-01								
AR2011-04								
								< 0.0040
AR2013-01								
	1.1	0.7	1.1	8.3	1.7	< 0.2	< 1.0	< 0.0010
AR2014-05								
								< 0.0040
AR2016-01								
AR2017-02								
AR2019-03								
								< 0.0040
AR2022-02								
								< 0.0010
AR2030-01								
								< 0.0040

Sample ID	Gross Alpha	Gross Alpha Precision +/-	Adjusted Gross Alpha	Gross Beta	Gross Beta Precision +/-	Radium 226	Radium 228	Uranium
AR2032-01								
AR2034-02								< 0.0050
AR2035-02								
AR2036-01								
AR2039-01								
AR2039-07								< 0.0050
AR2040-01								
AR2041-01								
AR2041-01_6.18.09								
AR2041-02								< 0.0040
AR2042-03								
AR2043-03								< 0.0050
AR2059-01								< 0.0020
AR2066-01								

Sample ID	Gross Alpha	Gross Alpha Precision +/-	Adjusted Gross Alpha	Gross Beta	Gross Beta Precision +/-	Radium 226	Radium 228	Uranium
								< 0.0020
AR2072-01								
								< 0.0020
Colina								
Composite-1								
Earp								
Epitaph								
Escabrosa								
Horquilla								
Leach-01								
Qmp Column Leach								
S-01								
	< 1.0		< 1.0	< 2.0		< 0.2	< 1.0	< 0.0010
S-02								
	< 1.0		< 1.0	< 2.0		< 0.2	< 1.0	< 0.0010
S-03								
	< 1.0		< 1.0	< 2.0		< 0.2	< 1.0	< 0.0010
S-04								
	< 1.0		< 1.0	< 2.0		< 0.2	< 1.0	< 0.0010

Sample ID	Gross Alpha	Gross Alpha Precision +/-	Adjusted Gross Alpha	Gross Beta	Gross Beta Precision +/-	Radium 226	Radium 228	Uranium
Tailings-022807								
Tailings-05 June2007								
Tailings-May 2006								
TTTP-07-02, BU-01								
TTTP-07-03								
UAGH-Arkose-01								
UAGH-Gila-01								
UAGH-Glance-01								
VABH0608-01								
VABH0609-01								
Year 0-3 Tailings								< 0.0020
Year 0-3 Tailings_6.18.09								

TABLE A.6:
SUMMARY OF MWMP TESTING DATA

Table A.6: Summary of MWMP Testing Data

Sample ID	Moisture at Saturation	MWMP Time (hr)	pH End	pH Lixivant	TDS	Weight (kg)	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn	Passing 200 Mesh (%)
1538-02																																		
		24	8.50	5.87	240	5.0	20	1.88	0.81	17.80	3.62	24.70		33.8	<0.0050	0.891	0.079		0.0311	<0.0020	< 0.0020	<0.0060	< 0.010	0.08	0.00368	0.010	0.230	<0.010	<0.0080	0.004	<0.04	<0.001	<0.010	0.0
1561-01_6.18.09																																		
		24	8.33	5.67		3.0											0.004													<0.003		<0.001		
4-7 Yr. Composite																																		
		24	8.20	5.39		5.0	53	6.27	6.49	11.60	13.8	33.90	< 0.500	264	<0.0050	< 0.080	< 0.025		0.0191		< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.008			<0.0080	<0.020	<0.04		<0.010	
Andesite Col. Leach																																		
		32	3.34	5.49	3890	5.3	526	6.97	6.38	9.81	187	10.30	0.122	2500	0.0170	71.400	0.004		0.0271	0.0291	0.3770	0.0400	53.100	1.09	<0.00020	31.100	0.009	0.734	0.0342	<0.020	0.13	<0.015	21.500	
AR2000-04																																		
	627	24	9.54	5.21		5.0	59	67.2	1.62	9.36	< 0.06	8.60	0.030	29.1	<0.0050	< 0.030	< 0.025	< 0.0010	0.0151		< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004			<0.0075	<0.020	<0.04		<0.010	12.4
AR2001-01																																		
	722	24	8.48	5.21		5.0	15	2.02	2.09	9.64	1.96	6.45	0.040	6.16	<0.0050	0.034	0.039	< 0.0010	0.0040		< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004			<0.0075	<0.020	<0.04		<0.010	23.2
AR2001-01_6.18.09																																		
		24	8.77	5.67		5.0											< 0.038													<0.003		<0.001		
AR2011-03																																		
	706	24	8.02	5.21		5.0	52	2.38	1.76	48.80	13.5	18.40	0.070	213	<0.0050	< 0.030	< 0.025	< 0.0010	0.0281		< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.033			<0.0075	<0.020	0.10		<0.010	15.6
AR2017-05																																		
		30	7.95	5.70	119	5.1	10	3.33	1.55	5.57	2.79	20.70		11.2	<0.0050	< 0.080	0.022		0.0076	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	0.32	<0.015	<0.010	
AR2017-07																																		
		30	7.46	5.70	202	5.1	32	6.48	1.13	9.62	6.75	15.80		91.3	<0.0050	< 0.080	0.006		0.0064	<0.0020	< 0.0020	<0.0060	0.037	<0.06	<0.00020	0.011		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2022-02																																		
		24	8.53	5.87	180	5.0	17	1.28	1.48	5.79	3.69	22.30		18.2	<0.0050	0.237	0.051		0.0102	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	0.066	<0.010	0.0310	0.004	<0.04	<0.001	<0.010	0.0
AR2025-03																																		
		28	7.41	5.70	103	5.0	13	3.58	0.32	3.50	1.8	16.50		39.5	<0.0050	< 0.080	0.009		0.0049	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	0.14	<0.015	<0.010	

Sample ID	Moisture at Saturation	MWMP Time (hr)	pH End	pH Lixivant	TDS	Weight (kg)	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn	Passing 200 Mesh (%)
AR2025-04																																		
		28	7.49	5.70	59	5.0	8.2	2.34	0.31	2.71	1.05	7.74		10.7	<0.0050	< 0.080	0.008		0.0067	<0.0020	< 0.0020	<0.0060	0.033	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2030-04																																		
		29	7.82	5.70	110	5.1	10	7.39	0.73	6.24	1.58	22.60		17.7	<0.0050	< 0.080	0.023		0.0047	<0.0020	< 0.0020	<0.0060	0.017	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2030-05																																		
		28	7.51	5.70	57	5.2	8.8	1.5	0.5	3.51	1.59	7.46		13	<0.0050	< 0.080	0.004		0.0426	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	0.04	<0.015	<0.010	
AR2036-03																																		
		28	7.28	5.70	51	5.0	8.2	2.8	0.35	1.38	1.37	5.71		9.29	<0.0050	< 0.080	0.005		0.0028	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2036-04																																		
		28	7.41	5.70	20	5.1	2.2	0.71	0.26	0.59	0.39	4.37		3.6	<0.0050	< 0.080	< 0.003		0.0034	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2038-04																																		
		28	7.46	5.70	163	5.1	20	5.33	0.84	4.12	3.9	21.80		59.9	<0.0050	< 0.080	0.031		0.0073	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.015		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2038-05																																		
		28	7.87	5.70	70	5.1	8.3	2.59	0.56	1.99	1.03	15.70		17.9	<0.0050	< 0.080	0.018		0.0030	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2038-06																																		
		28	7.82	5.70	73	5.1	9.8	2.91	0.48	2.66	1.83	10.80		15.1	<0.0050	< 0.080	0.016		0.0061	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	0.00020	< 0.004		<0.010	0.0874	<0.020	<0.04	<0.015	<0.010	
AR2039-04																																		
		29	7.63	5.70	155	5.1	13	3.92	1.22	4.79	1.58	26.50		33.6	<0.0050	< 0.080	0.064		0.0082	<0.0020	< 0.0020	<0.0060	0.016	<0.06	<0.00020	< 0.004	0.037	<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2039-05																																		
		32	8.05	5.70	285	5.2	23	14.4	1.39	3.08	4.38	46.50		87.9	<0.0050	< 0.080	0.071		0.0324	<0.0020	< 0.0020	<0.0060	0.012	<0.06	<0.00020	< 0.004	0.147	<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2039-06																																		
		29	7.79	5.70	194	5.1	19	5.18	0.85	6.55	3.93	32.60		76.1	<0.0050	< 0.080	0.011		0.0071	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2042-04																																		
		30	8.26	5.70	38	5.0	7.8	1.16	0.35	0.75	1.36	5.05		5.8	<0.0050	< 0.080	< 0.003		0.0035	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2042-05																																		
		28	7.42	5.70	35	5.0	8.7	0.88	0.17	0.83	0.88	5.29		6.34	<0.0050	< 0.080	< 0.003		0.0029	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
AR2042-06																																		

Sample ID	Moisture at Saturation	MWMP Time (hr)	pH End	pH Lixivant	TDS	Weight (kg)	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn	Passing 200 Mesh (%)
		30	8.03	5.70	138	5.1	17	4.86	1.3	3.92	4.44	18.80		49.7	0.0050	< 0.080	0.027		0.0047	0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004		<0.010	<0.0075	<0.020	0.18	<0.015	<0.010	
Colina																																		
		24	8.42	5.69		5.0	658	4.14	2.76	5.53	15.5	15.40	< 0.500	1560	0.0050	< 0.080	< 0.025		0.0346		< 0.0020	<0.0060	0.011	<0.06	<0.00020	< 0.004			<0.0080	<0.020	0.05		<0.010	
Composite-1																																		
	871	24	7.57	5.21		5.0	41	4.22	1.51	23.90	6.24	15.00	< 0.020	143	0.0050	< 0.030	< 0.025	< 0.0020	0.0270		< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.020			<0.0075	<0.020	0.05		<0.010	18.4
Earp																																		
		24	6.86	5.69		5.0	151	3.51	1.25	15.00	11.4	33.90	< 0.500	435	0.0050	< 0.080	< 0.025		0.0297		< 0.0020	<0.0060	0.010	<0.06	<0.00020	0.037			<0.0080	<0.020	<0.04		<0.010	
Epitaph																																		
		24	6.47	5.43		5.0	557	< 1	0.94	17.90	148	32.60	< 0.500	1960	0.0050	< 0.080	< 0.025		0.0266		< 0.0020	<0.0060	0.016	<0.06	<0.00020	0.099			<0.0080	<0.020	<0.04		<0.010	
Horquilla																																		
		24	7.82	5.50		5.0	29	3.56	1.05	4.97	0.535	19.30	< 0.500	91.1	0.0050	< 0.080	< 0.025		0.0080		< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004			<0.0080	<0.020	<0.04		<0.010	
Leach-01																																		
	777	24	8.23	5.21		5.0	20	28.9	1.44	15.00	2.64	16.90	< 0.020	26.4	0.0050	< 0.030	< 0.025	< 0.0010	0.0127		< 0.0020	<0.0060	0.010	<0.06	<0.00020	0.013			<0.0075	<0.020	0.04		<0.100	2.0
Qmp Column Leach																																		
		32	3.65	5.49	1250	5.2	172	2.8	1.57	3.07	32	6.21	0.058	772	0.0070	14.000	< 0.003		0.0422	0.0075	0.0849	0.0140	90.100	0.46	0.00038	6.780	< 0.008	0.141	0.0445	<0.020	<0.04	<0.015	4.950	
S-01																																		
	461	24	8.29	5.21		2.4	49	3.07	2.17	17.90	10.7	6.04	1.660	38.5	0.0050	< 0.030	< 0.025	< 0.0010	0.0490		< 0.0020	<0.0060	0.143	<0.06	<0.00020	0.014			<0.0075	<0.020	<0.04		<0.010	6.0
S-02																																		
	740	24	8.16	5.21		4.0	33	3.2	0.34	8.79	3.7	3.60	1.210	48.2	0.0050	< 0.030	< 0.025	< 0.0010	0.0123		< 0.0020	<0.0060	< 0.023	<0.06	0.00030	0.011			<0.0075	<0.020	<0.04		<0.012	3.6
Tailings-05 June2007																																		
		24	7.43	5.50	505	5.0	103	5.69	1.02	8.33	0.65	27.60	0.021	285	0.0050	< 0.080	< 0.003		0.0172	0.0020	< 0.0020	<0.0060	< 0.010	<0.06	0.00033	0.019	0.460	<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	50.4
TTTP-07-02, BU-01																																		
		27	7.51	5.58		5.0	2.4	0.44	0.36	1.63	0.81	2.16	0.284	3.26	0.0050	< 0.080	< 0.003		0.0053	0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.006		<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
TTTP-07-03																																		
		31	7.86	5.49	62	5.0	18	0.37	0.17	4.61	0.87	2.96	0.944	3.42	0.0050	< 0.080	0.003		0.0040	0.0020	< 0.0020	<0.0060	0.036	<0.06	<0.00020	< 0.004	< 0.008	<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	
UAGH-ARKOSE-01																																		
	540	24	7.98	5.50	180	5.0	28	1.22	0.93	22.60	7.84	5.93	0.013	18.7	0.0050	< 0.080	0.005		0.0194	0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.012	0.164	<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	8.0

Sample ID	Moisture at Saturation	MWMP Time (hr)	pH End	pH Lixivant	TDS	Weight (kg)	Ca	Cl	Fl	K	Mg	Na	NO2 + NO3 as N	SO4	Ag	Al	As	Au	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Tl	Zn	Passing 200 Mesh (%)
UAGH-GILA-01	924	24	8.05	5.50	133	5.0	31	1.39	0.58	3.72	2.08	7.41	0.201	22.1	<0.0050	< 0.080	0.005		0.0630	<0.0020	< 0.0020	<0.0600	< 0.010	<0.06	<0.00020	< 0.004	0.009	<0.010	<0.0075	<0.020	<0.04	<0.015	<0.010	12.0
UAGH-GLANCE-01	947	24	8.01	5.50	143	5.0	29	7.53	0.65	3.65	1.62	2.08	1.430	17.2	<0.0050	< 0.080	0.003		< 0.0020	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.009	0.067	<0.010	0.1120	<0.020	<0.04	<0.015	<0.010	19.6
Year 0-3 Tailings		24	8.51	5.88		5.0	150	5.18	1.11	11.30	1.91	37.10		441	<0.0050	< 0.080	< 0.003		0.0229	<0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.017	0.463	<0.010	<0.0080	<0.020	<0.04	<0.015	<0.010	
Year 0-3 Tailings_6.18.09		24	8.00	5.67		3.5											0.008													0.005		<0.001		

TABLE A.7:
SUMMARY OF HUMIDITY CELL INDICATOR PARAMETER DATA

Table A.7: Summary of Humidity Cell Indicator Parameter Data

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
A780-02																			
	0	0.941	4.06	335	0.90	0.06	2.35	2.41	1.387	1.387	316.0	181.87	181.87	64.0	36.83	36.83	0.00	0.00	0.00
	1	0.729	4.51	317	0.26	0.01	0.19	0.20	0.089	1.476	50.0	22.29	204.16	18.0	8.03	44.86	0.00	0.00	0.00
	2	0.749	4.61	316	0.17	0.04	0.01	0.05	0.023	1.499	10.0	4.58	208.74	10.0	4.58	49.44	0.00	0.00	0.00
	3	0.693	4.61	320	0.16	0.04	0.09	0.13	0.055	1.554	60.0	25.43	234.17	8.0	3.39	52.83	0.00	0.00	0.00
	4	0.738	4.59	320	0.16	0.03	0.01	0.04	0.018	1.572	25.3	11.42	245.59	7.0	3.16	55.99	1.00	0.45	0.45
	5	0.756	4.46	320	0.15	0.04	0.03	0.07	0.032	1.604	15.0	6.94	252.53	8.0	3.70	59.69	0.00	0.00	0.45
	6	0.724	4.45	324	0.15	0.09	0.03	0.12	0.053	1.657	19.7	8.72	261.25	8.0	3.54	63.23	0.00	0.00	0.45
	7	0.722	4.33	321	0.15	0.03	0.06	0.09	0.040	1.697	15.2	6.71	267.96	10.0	4.42	67.65	0.00	0.00	0.45
	8	0.749	4.21	316	0.15	0.13	0.01	0.14	0.064	1.761	16.3	7.47	275.43	13.0	5.95	73.61	0.00	0.00	0.45
	9	0.712	3.79	326	0.11	0.08	0.06	0.14	0.061	1.822	13.9	6.05	281.48	12.0	5.23	78.83	0.00	0.00	0.45
	10	0.733	4.01	322	0.15	0.01	0.20	0.21	0.094	1.916	18.4	8.25	289.73	10.0	4.48	83.31	0.00	0.00	0.45
	11	0.701	4.01	330	0.15	0.07	0.22	0.29	0.124	2.040	18.4	7.89	297.62	12.0	5.14	88.46	0.00	0.00	0.45
	12	0.778	4.00	322	0.15	0.21	0.13	0.34	0.162	2.202	6.7	3.19	300.81	12.0	5.71	94.17	0.00	0.00	0.45
	13	0.657	3.87	331	0.15	0.04	0.45	0.49	0.197	2.399	13.3	5.34	306.15	14.0	5.63	99.79	0.00	0.00	0.45
	14	0.549	3.74	352	0.15	0.25	0.17	0.42	0.141	2.540	13.7	4.60	310.75	12.0	4.03	103.82	0.00	0.00	0.45
	15	0.591	3.89	325	0.16	0.27	0.22	0.49	0.177	2.717	12.5	4.52	315.27	12.0	4.34	108.16	0.00	0.00	0.45
	16	0.666	3.98	327	0.15	0.36	0.40	0.76	0.310	3.027	16.4	6.68	321.95	16.0	6.52	114.68	0.00	0.00	0.45
	17	0.592	4.15	335	0.15	0.48	0.19	0.67	0.243	3.270	13.0	4.71	326.66	16.0	5.79	120.47	0.00	0.00	0.45
	18	0.740	3.79	341	0.15	0.70	0.26	0.96	0.434	3.704	11.9	5.39	332.05	16.0	7.24	127.71	0.00	0.00	0.45
	19	0.731	3.87	343	0.16	0.50	0.35	0.85	0.380	4.084	8.1	3.62	335.67	18.0	8.05	135.76	0.00	0.00	0.45
	20	0.712	3.73	350	0.16	0.58	0.82	1.40	0.610	4.694	14.0	6.10	341.77	18.0	7.84	143.60	0.00	0.00	0.45
	21	0.735	3.81	350	0.16	1.15	0.34	1.49	0.670	5.364	15.2	6.83	348.60	18.0	8.09	151.69	0.00	0.00	0.45
	22	0.764	3.52	353	0.16	1.12	0.66	1.78	0.832	6.196	15.2	7.10	355.70	20.0	9.35	161.04	0.00	0.00	0.45
	23	0.660	3.77	333	0.15	0.92	0.24	1.16	0.468	6.664	11.1	4.48	360.18	16.0	6.46	167.50	0.00	0.00	0.45
	24	0.758	3.63	337	0.16	0.95	0.63	1.58	0.733	7.397	16.2	7.51	367.69	18.0	8.35	175.84	0.00	0.00	0.45
	25	0.742	3.37	335	0.15	1.06	0.85	1.91	0.867	8.264	13.3	6.04	373.73	20.0	9.08	184.92	0.00	0.00	0.45
A780-03 Composite																			
	0	0.849	5.13	250	0.23	0.11	1.07	1.18	0.811	0.811	18.0	12.37	12.37	14.0	9.62	9.62	2.00	1.37	1.37
	1	0.705	6.60	286	0.19	0.00	0.00	0.00	0.000	0.811	18.5	10.56	22.93	4.0	2.28	11.91	2.00	1.14	2.51
	2	0.704	6.68	276	0.14	0.00	0.01	0.01	0.006	0.817	5.0	2.85	25.78	0.0	0.00	11.91	4.00	2.28	4.79
	3	0.707	6.70	278	0.12	0.00	0.03	0.03	0.017	0.834	5.0	2.86	28.64	1.0	0.57	12.48	2.00	1.14	5.93
	4	0.701	6.95	275	0.11	0.00	0.04	0.04	0.023	0.857	4.6	2.61	31.25	2.0	1.13	13.61	2.00	1.14	7.07

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
A780-03 Composite																			
	5	0.691	7.19	277	0.11	0.00	0.00	0.00	0.000	0.857	4.4	2.46	33.71	1.0	0.56	14.17	2.00	1.12	8.19
	6	0.685	7.33	280	0.11	0.02	0.00	0.02	0.011	0.868	2.1	1.16	34.87	2.0	1.11	15.28	1.00	0.55	8.74
	7	0.680	7.22	281	0.11	0.00	0.00	0.00	0.000	0.868	3.1	1.71	36.58	2.0	1.10	16.38	1.00	0.55	9.29
	8	0.663	6.82	277	0.11	0.01	0.00	0.01	0.005	0.873	2.3	1.23	37.81	4.0	2.15	18.53	1.00	0.54	9.83
	9	0.667	6.98	281	0.11	0.00	0.00	0.00	0.000	0.873	2.3	1.24	39.05	3.0	1.62	20.15	1.00	0.54	10.37
	10	0.685	7.14	273	0.11	0.00	0.00	0.00	0.000	0.873	3.9	2.16	41.21	4.0	2.22	22.37	1.00	0.55	10.92
	11	0.728	6.97	292	0.10	0.00	0.00	0.00	0.000	0.873	3.4	2.00	43.21	2.0	1.18	23.55	1.00	0.59	11.51
	12	0.730	6.58	295	0.10	0.00	0.00	0.00	0.000	0.873	2.7	1.60	44.81	2.0	1.18	24.73	1.00	0.59	12.10
	13	0.729	6.10	293	0.10	0.00	0.02	0.02	0.012	0.885	1.9	1.12	45.93	2.0	1.18	25.91	1.00	0.59	12.69
	14	0.719	6.26	306	0.10	0.00	0.00	0.00	0.000	0.885	2.5	1.46	47.39	3.0	1.75	27.66	1.00	0.58	13.27
	15	0.745	6.24	296	0.12	0.00	0.00	0.00	0.000	0.885	2.1	1.27	48.66	4.0	2.41	30.07	1.00	0.60	13.87
	16	0.735	6.28	293	0.10	0.00	0.00	0.00	0.000	0.885	2.3	1.37	50.03	4.0	2.38	32.45	2.00	1.19	15.06
	17	0.734	6.33	300	0.10	0.00	0.00	0.00	0.000	0.885	1.9	1.13	51.16	2.0	1.19	33.64	2.00	1.19	16.25
	18	0.744	6.30	303	0.09	0.00	0.00	0.00	0.000	0.885	2.3	1.39	52.55	2.0	1.21	34.85	2.00	1.20	17.45
	19	0.736	6.25	308	0.10	0.00	0.00	0.00	0.000	0.885	2.5	1.49	54.04	4.0	2.38	37.23	4.00	2.38	19.83
	20	0.747	6.37	313	0.10	0.00	0.00	0.00	0.000	0.885	3.5	2.12	56.16	4.0	2.42	39.65	1.00	0.60	20.43
	21	0.657	5.47	305	0.09	0.00	0.00	0.00	0.000	0.885	2.5	1.33	57.49	2.0	1.06	40.71	1.00	0.53	20.96
	22	0.635	5.11	322	0.10	0.01	0.00	0.01	0.005	0.890	1.0	0.51	58.00	4.0	2.06	42.77	1.00	0.51	21.47
	23	0.625	5.44	310	0.09	0.02	0.01	0.03	0.015	0.905	1.1	0.56	58.56	0.0	0.00	42.77	2.00	1.01	22.48
	24	0.691	5.23	298	0.09	0.00	0.00	0.00	0.000	0.905	1.3	0.73	59.29	2.0	1.12	43.89	2.00	1.12	23.60
	25	0.664	5.40	298	0.09	0.07	0.02	0.09	0.048	0.953	1.9	1.02	60.31	2.0	1.08	44.97	2.00	1.08	24.68
AR2000-02																			
	0	0.787	7.09	88	0.46	0.04	0.04	0.08	0.039	0.039	243.0	119.23	119.23	0.0	0.00	0.00	42.00	20.61	20.61
	1	0.718	7.14	74	0.24	0.00	0.03	0.03	0.013	0.052	93.0	41.63	160.86	0.0	0.00	0.00	36.00	16.12	36.73
	2	0.762	7.14	165	0.26	0.00	0.02	0.02	0.010	0.062	30.0	14.25	175.11	0.0	0.00	0.00	30.00	14.25	50.98
	3	0.700	7.17	170	0.17	0.00	0.02	0.02	0.009	0.071	22.7	9.91	185.02	0.0	0.00	0.00	28.00	12.22	63.20
	4	0.759	7.91	146	0.18	0.00	0.00	0.00	0.000	0.071	42.9	20.30	205.32	0.0	0.00	0.00	36.00	17.04	80.24
	5	0.709	7.70	149	0.19	0.00	0.01	0.01	0.004	0.075	24.5	10.83	216.15	0.0	0.00	0.00	40.00	17.68	97.92
	6	0.697	7.32	163	0.18	0.00	0.02	0.02	0.009	0.084	19.8	8.60	224.75	0.0	0.00	0.00	42.00	18.25	116.17
	7	0.690	7.69	167	0.18	0.00	0.01	0.01	0.004	0.088	24.9	10.71	235.46	0.0	0.00	0.00	40.00	17.21	133.38
	8	0.675	7.74	134	0.18	0.00	0.00	0.00	0.000	0.088	25.5	10.73	246.19	0.0	0.00	0.00	42.00	17.68	151.06
	9	0.703	7.51	136	0.18	0.00	0.01	0.01	0.004	0.092	25.4	11.13	257.32	0.0	0.00	0.00	40.00	17.53	168.59
	10	0.752	7.59	147	0.18	0.01	0.03	0.04	0.019	0.111	20.2	9.47	266.79	0.0	0.00	0.00	42.00	19.69	188.28
	11	0.711	7.56	131	0.18	0.00	0.00	0.00	0.000	0.111	18.6	8.25	275.04	0.0	0.00	0.00	40.00	17.73	206.01

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2000-02																			
	12	0.708	7.44	132	0.19	0.00	0.00	0.00	0.000	0.111	18.2	8.03	283.07	0.0	0.00	0.00	42.00	18.54	224.55
	13	0.762	7.87	105	0.18	0.00	0.01	0.01	0.005	0.116	14.6	6.94	290.01	0.0	0.00	0.00	40.00	19.00	243.55
	14	0.723	7.69	194	0.18	0.01	0.00	0.01	0.005	0.121	11.7	5.27	295.28	0.0	0.00	0.00	42.00	18.93	262.48
	15	0.773	7.85	93	0.18	0.00	0.01	0.01	0.005	0.126	10.2	4.92	300.20	0.0	0.00	0.00	38.00	18.31	280.79
	16	0.737	7.29	100	0.18	0.00	0.05	0.05	0.023	0.149	10.6	4.87	305.07	0.0	0.00	0.00	36.00	16.54	297.33
	17	0.706	7.39	100	0.18	0.00	0.01	0.01	0.004	0.153	19.4	8.54	313.61	0.0	0.00	0.00	36.00	15.85	313.18
	18	0.737	7.68	103	0.18	0.00	0.00	0.00	0.000	0.153	11.0	5.05	318.66	0.0	0.00	0.00	28.00	12.87	326.05
	19	0.671	7.49	101	0.18	0.00	0.01	0.01	0.004	0.157	17.5	7.32	325.98	0.0	0.00	0.00	36.00	15.06	341.11
	20	0.740	7.27	78	0.19	0.01	0.02	0.03	0.014	0.171	13.2	6.09	332.07	0.0	0.00	0.00	34.00	15.69	356.80
	21	0.730	7.65	70	0.18	0.00	0.01	0.01	0.005	0.176	8.3	3.78	335.85	0.0	0.00	0.00	32.00	14.56	371.36
	22	0.713	7.96	68	0.18	0.04	0.03	0.07	0.031	0.207	10.4	4.62	340.47	0.0	0.00	0.00	40.00	17.78	389.14
	23	0.740	7.99	41	0.18	0.00	0.01	0.01	0.005	0.212	8.1	3.74	344.21	0.0	0.00	0.00	40.00	18.46	407.60
	24	0.743	7.49	99	0.18	0.00	0.01	0.01	0.005	0.217	15.6	7.23	351.44	0.0	0.00	0.00	38.00	17.60	425.20
	25	0.738	7.65	53	0.18	0.00	0.04	0.04	0.018	0.235	10.5	4.83	356.27	0.0	0.00	0.00	42.00	19.33	444.53
	26	0.723	7.44	93	0.17	0.01	0.00	0.01	0.005	0.240	3.8	1.71	357.98	0.0	0.00	0.00	38.00	17.13	461.66
	27	0.720	7.76	88	0.18	0.00	0.00	0.00	0.000	0.240	11.8	5.30	363.28	0.0	0.00	0.00	34.00	15.26	476.92
	28	0.752	7.51	52	0.18	0.00	0.03	0.03	0.014	0.254	9.0	4.22	367.50	0.0	0.00	0.00	36.00	16.88	493.80
	29	0.703	7.28	60	0.18	0.00	0.01	0.01	0.004	0.258	6.3	2.76	370.26	0.0	0.00	0.00	30.00	13.15	506.95
	30	0.743	7.56	112	0.18	0.00	0.00	0.00	0.000	0.258	12.9	5.98	376.24	0.0	0.00	0.00	36.00	16.68	523.63
	31	0.732	7.71	121	0.18	0.00	0.01	0.01	0.005	0.263	6.3	2.88	379.12	0.0	0.00	0.00	38.00	17.34	540.97
	32	0.730	7.80	104	0.18	0.00	0.02	0.02	0.009	0.272	16.5	7.51	386.63	0.0	0.00	0.00	38.00	17.30	558.27
	33	0.749	7.67	91	0.18	0.00	0.00	0.00	0.000	0.272	14.1	6.58	393.21	0.0	0.00	0.00	42.00	19.61	577.88
	34	0.722	7.30	72	0.18	0.00	0.00	0.00	0.000	0.272	14.6	6.57	399.78	0.0	0.00	0.00	36.00	14.97	609.06
	35	0.667	7.28	68	0.18	0.00	0.01	0.01	0.004	0.276	18.9	7.86	407.64	0.0	0.00	0.00	36.00	14.97	609.06
AR2003-03																			
	0	0.718	7.33	91	0.36	0.01	0.01	0.02	0.009	0.009	199.2	93.38	93.38	2.0	0.94	0.94	22.00	10.31	10.31
	1	0.690	7.37	81	0.38	0.00	0.02	0.02	0.009	0.018	180.4	81.27	174.65	4.0	1.80	2.74	26.00	11.71	22.02
	2	0.735	6.96	172	0.36	0.02	0.02	0.04	0.019	0.037	80.0	38.39	213.04	0.0	0.00	2.74	26.00	12.48	34.50
	3	0.681	7.16	167	0.20	0.01	0.01	0.02	0.009	0.046	34.0	15.12	228.16	0.0	0.00	2.74	26.00	11.56	46.06
	4	0.757	8.11	150	0.19	0.00	0.00	0.00	0.000	0.046	54.1	26.74	254.90	0.0	0.00	2.74	30.00	14.83	60.89
	5	0.728	7.41	160	0.17	0.01	0.00	0.01	0.005	0.051	20.2	9.60	264.50	0.0	0.00	2.74	26.00	12.36	73.25
	6	0.683	7.83	148	0.17	0.01	0.03	0.04	0.018	0.069	18.9	8.43	272.93	0.0	0.00	2.74	28.00	12.49	85.74
	7	0.702	7.87	163	0.17	0.00	0.02	0.02	0.009	0.078	9.5	4.35	277.28	0.0	0.00	2.74	54.00	24.75	110.49
	8	0.721	7.73	144	0.17	0.00	0.01	0.01	0.005	0.083	8.5	4.00	281.28	0.0	0.00	2.74	58.00	27.30	137.79

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2003-03																			
	9	0.737	7.61	132	0.17	0.01	0.01	0.02	0.010	0.093	7.5	3.61	284.89	0.0	0.00	2.74	54.00	25.98	163.77
	10	0.736	7.25	144	0.17	0.00	0.02	0.02	0.010	0.103	7.0	3.36	288.25	0.0	0.00	2.74	54.00	25.95	189.72
	11	0.701	7.41	126	0.17	0.00	0.03	0.03	0.014	0.117	6.2	2.84	291.09	0.0	0.00	2.74	50.00	22.88	212.60
	12	0.680	7.61	123	0.17	0.00	0.01	0.01	0.004	0.121	5.8	2.57	293.66	0.0	0.00	2.74	40.00	17.76	230.36
	13	0.751	7.78	110	0.17	0.00	0.03	0.03	0.015	0.136	7.6	3.73	297.39	0.0	0.00	2.74	42.00	20.59	250.95
	14	0.721	7.61	195	0.18	0.01	0.00	0.01	0.005	0.141	10.8	5.08	302.47	0.0	0.00	2.74	44.00	20.71	271.66
	15	0.741	7.68	102	0.18	0.00	0.01	0.01	0.005	0.146	10.7	5.18	307.65	0.0	0.00	2.74	44.00	21.29	292.95
	16	0.735	7.40	93	0.18	0.02	0.02	0.04	0.019	0.165	8.5	4.08	311.73	0.0	0.00	2.74	44.00	21.11	314.06
	17	0.701	7.44	101	0.18	0.00	0.00	0.00	0.000	0.165	13.4	6.13	317.86	0.0	0.00	2.74	40.00	18.31	332.37
	18	0.745	7.34	104	0.17	0.00	0.00	0.00	0.000	0.165	7.8	3.79	321.65	0.0	0.00	2.74	38.00	18.47	350.84
	19	0.670	7.20	109	0.17	0.00	0.02	0.02	0.009	0.174	16.0	7.00	328.65	0.0	0.00	2.74	38.00	16.62	367.46
	20	0.685	7.18	105	0.18	0.01	0.02	0.03	0.013	0.187	13.0	5.81	334.46	0.0	0.00	2.74	40.00	17.89	385.35
	21	0.744	7.55	97	0.17	0.00	0.00	0.00	0.000	0.187	9.3	4.52	338.98	0.0	0.00	2.74	38.00	18.46	403.82
	22	0.692	7.62	90	0.17	0.02	0.03	0.05	0.023	0.210	7.2	3.25	342.23	0.0	0.00	2.74	34.00	15.36	419.18
	23	0.695	7.86	61	0.17	0.00	0.01	0.01	0.005	0.215	13.5	6.13	348.36	0.0	0.00	2.74	34.00	15.43	434.61
	24	0.698	7.47	101	0.17	0.00	0.00	0.00	0.000	0.215	19.1	8.70	357.06	0.0	0.00	2.74	30.00	13.67	448.28
	25	0.700	7.46	74	0.17	0.00	0.02	0.02	0.009	0.224	10.2	4.66	361.72	0.0	0.00	2.74	30.00	13.71	461.99
	26	0.637	7.73	73	0.17	0.00	0.01	0.01	0.004	0.228	9.3	3.87	365.59	0.0	0.00	2.74	36.00	14.97	476.96
	27	0.728	7.71	105	0.17	0.00	0.01	0.01	0.005	0.233	10.1	4.80	370.39	0.0	0.00	2.74	28.00	13.31	490.27
	28	0.713	7.28	76	0.17	0.00	0.03	0.03	0.014	0.247	10.6	4.93	375.32	0.0	0.00	2.74	30.00	13.96	504.23
	29	0.701	7.58	47	0.17	0.00	0.03	0.03	0.014	0.261	8.0	3.66	378.98	0.0	0.00	2.74	28.00	12.81	517.04
	30	0.683	7.54	120	0.17	0.00	0.00	0.00	0.000	0.261	12.6	5.62	384.60	0.0	0.00	2.74	30.00	13.38	530.42
	31	0.692	7.41	136	0.17	0.00	0.03	0.03	0.014	0.275	12.1	5.47	390.07	0.0	0.00	2.74	32.00	14.46	544.88
	32	0.714	7.75	107	0.17	0.00	0.01	0.01	0.005	0.280	19.0	8.86	398.93	0.0	0.00	2.74	32.00	14.92	559.80
	33	0.658	7.62	99	0.16	0.00	0.02	0.02	0.009	0.289	14.8	6.36	405.29	0.0	0.00	2.74	24.00	10.31	570.11
	34	0.655	7.56	58	0.17	0.01	0.04	0.05	0.021	0.310	12.9	5.52	410.81	0.0	0.00	2.74	24.00	10.26	580.37
	35	0.597	7.69	44	0.17	0.01	0.02	0.03	0.012	0.332	16.2	6.31	417.12	0.0	0.00	2.74	34.00	13.25	593.62
AR2005-02																			
	0	0.713	7.59	98	1.22	0.00	0.02	0.02	0.009	0.009	781.0	367.66	367.66	0.0	0.00	0.00	48.00	22.60	22.60
	1	0.756	7.38	82	0.20	0.00	0.01	0.01	0.005	0.014	41.0	20.46	388.12	0.0	0.00	0.00	70.00	34.94	57.54
	2	0.749	7.25	156	0.20	0.00	0.01	0.01	0.005	0.019	13.5	6.68	394.80	0.0	0.00	0.00	58.00	28.68	86.22
	3	0.760	7.47	166	0.18	0.01	0.02	0.03	0.015	0.034	15.4	7.73	402.53	0.0	0.00	0.00	64.00	32.11	118.33
	4	0.743	8.00	153	0.18	0.03	0.01	0.04	0.020	0.054	25.2	12.36	414.89	0.0	0.00	0.00	76.00	37.28	155.61
	5	0.735	7.62	165	0.19	0.00	0.00	0.00	0.000	0.054	25.9	12.57	427.46	0.0	0.00	0.00	60.00	29.12	184.73

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2005-02																			
	6	0.695	7.64	167	0.19	0.00	0.02	0.02	0.009	0.063	28.9	13.26	440.72	0.0	0.00	0.00	52.00	23.86	208.59
	7	0.735	7.69	168	0.19	0.00	0.01	0.01	0.005	0.068	30.7	14.90	455.62	0.0	0.00	0.00	52.00	25.23	233.82
	8	0.759	7.66	158	0.19	0.00	0.00	0.00	0.000	0.068	23.7	11.88	467.50	0.0	0.00	0.00	50.00	25.06	258.88
	9	0.713	7.66	138	0.19	0.00	0.00	0.00	0.000	0.068	25.6	12.05	479.55	0.0	0.00	0.00	48.00	22.60	281.48
	10	0.746	7.24	149	0.19	0.00	0.00	0.00	0.000	0.068	24.8	12.21	491.76	0.0	0.00	0.00	50.00	24.63	306.11
	11	0.682	7.45	122	0.19	0.00	0.01	0.01	0.005	0.073	17.9	8.06	499.82	0.0	0.00	0.00	44.00	19.81	325.92
	12	0.720	7.71	127	0.18	0.00	0.02	0.02	0.010	0.083	21.9	10.41	510.23	0.0	0.00	0.00	44.00	20.92	346.84
	13	0.775	7.84	113	0.19	0.00	0.01	0.01	0.005	0.088	18.4	9.42	519.65	0.0	0.00	0.00	46.00	23.54	370.38
	14	0.748	7.50	202	0.19	0.00	0.00	0.00	0.000	0.088	23.5	11.61	531.26	0.0	0.00	0.00	40.00	19.75	390.13
	15	0.740	7.61	109	0.18	0.00	0.01	0.01	0.005	0.093	21.6	10.55	541.81	0.0	0.00	0.00	40.00	19.54	409.67
	16	0.726	7.45	98	0.18	0.00	0.05	0.05	0.024	0.117	16.0	7.67	549.48	0.0	0.00	0.00	42.00	20.13	429.80
	17	0.716	7.49	103	0.18	0.00	0.04	0.04	0.019	0.136	18.6	8.79	558.27	0.0	0.00	0.00	40.00	18.91	448.71
	18	0.744	7.61	103	0.18	0.00	0.03	0.03	0.015	0.151	14.6	7.17	565.44	0.0	0.00	0.00	40.00	19.65	468.36
	19	0.733	7.50	115	0.17	0.00	0.00	0.00	0.000	0.151	15.2	7.36	572.80	0.0	0.00	0.00	40.00	19.36	487.72
	20	0.711	7.26	110	0.18	0.00	0.00	0.00	0.000	0.151	15.8	7.42	580.22	0.0	0.00	0.00	40.00	18.78	506.50
	21	0.679	7.52	108	0.18	0.00	0.00	0.00	0.000	0.151	12.4	5.56	585.78	0.0	0.00	0.00	40.00	17.93	524.43
	22	0.712	7.84	90	0.18	0.00	0.02	0.02	0.009	0.160	18.0	8.46	594.24	0.0	0.00	0.00	38.00	17.86	542.29
	23	0.737	7.93	59	0.18	0.00	0.01	0.01	0.005	0.165	22.1	10.75	604.99	0.0	0.00	0.00	42.00	20.44	562.73
	24	0.666	7.57	105	0.18	0.00	0.01	0.01	0.004	0.169	24.4	10.73	615.72	0.0	0.00	0.00	34.00	14.95	577.68
	25	0.667	7.45	84	0.18	0.00	0.00	0.00	0.000	0.169	19.0	8.37	624.09	0.0	0.00	0.00	36.00	15.85	593.53
	26	0.699	7.64	103	0.18	0.00	0.01	0.01	0.005	0.174	11.2	5.17	629.26	0.0	0.00	0.00	34.00	15.69	609.22
	27	0.719	7.62	122	0.18	0.00	0.02	0.02	0.009	0.183	20.0	9.49	638.75	0.0	0.00	0.00	34.00	16.14	625.36
	28	0.720	7.35	86	0.18	0.00	0.00	0.00	0.000	0.183	12.3	5.85	644.60	0.0	0.00	0.00	30.00	14.26	639.62
	29	0.707	7.48	66	0.19	0.00	0.01	0.01	0.005	0.188	15.0	7.00	651.60	0.0	0.00	0.00	32.00	14.94	654.56
	30	0.731	7.68	118	0.19	0.00	0.00	0.00	0.000	0.188	22.5	10.86	662.46	0.0	0.00	0.00	34.00	16.41	670.97
	31	0.705	7.46	126	0.18	0.00	0.00	0.00	0.000	0.188	18.8	8.75	671.21	0.0	0.00	0.00	30.00	13.96	684.93
	32	0.719	7.77	101	0.18	0.00	0.00	0.00	0.000	0.188	34.8	16.52	687.73	0.0	0.00	0.00	30.00	14.24	699.17
	33	0.683	7.64	115	0.18	0.00	0.01	0.01	0.005	0.193	27.0	12.18	699.91	0.0	0.00	0.00	26.00	11.72	710.89
	34	0.667	7.57	71	0.18	0.00	0.00	0.00	0.000	0.193	33.6	14.80	714.71	0.0	0.00	0.00	28.00	12.33	723.22
	35	0.675	7.55	57	0.18	0.00	0.00	0.00	0.000	0.193	29.5	13.15	727.86	0.0	0.00	0.00	32.00	14.26	737.48
AR2009-03																			
	0	0.745	7.60	123	0.94	0.04	0.03	0.07	0.034	0.034	456.0	222.97	222.97	0.0	0.00	0.00	114.00	55.74	55.74
	1	0.737	7.33	97	0.32	0.00	0.00	0.00	0.000	0.034	109.0	52.73	275.70	0.0	0.00	0.00	64.00	30.96	86.70
	2	0.729	7.21	222	0.30	0.00	0.00	0.00	0.000	0.034	74.1	35.45	311.15	0.0	0.00	0.00	64.00	30.62	117.32

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2009-03																			
	3	0.738	7.39	193	0.24	0.00	0.00	0.00	0.000	0.034	58.3	28.24	339.39	0.0	0.00	0.00	62.00	30.03	147.35
	4	0.722	7.87	160	0.22	0.00	0.00	0.00	0.000	0.034	56.5	26.77	366.16	0.0	0.00	0.00	60.00	28.43	175.78
	5	0.757	7.63	166	0.20	0.00	0.00	0.00	0.000	0.034	27.1	13.46	379.62	0.0	0.00	0.00	54.00	26.83	202.61
	6	0.722	7.59	173	0.22	0.00	0.01	0.01	0.005	0.039	43.2	20.47	400.09	0.0	0.00	0.00	54.00	25.59	228.20
	7	0.760	7.63	174	0.22	0.00	0.01	0.01	0.005	0.044	48.4	24.14	424.23	0.0	0.00	0.00	54.00	26.94	255.14
	8	0.740	7.68	150	0.21	0.00	0.00	0.00	0.000	0.044	45.1	21.90	446.13	0.0	0.00	0.00	46.00	22.34	277.48
	9	0.730	7.58	148	0.23	0.00	0.01	0.01	0.005	0.049	49.4	23.67	469.80	0.0	0.00	0.00	50.00	23.96	301.44
	10	0.730	7.31	150	0.21	0.00	0.01	0.01	0.005	0.054	40.3	19.31	489.11	0.0	0.00	0.00	50.00	23.96	325.40
	11	0.691	7.36	128	0.22	0.00	0.00	0.00	0.000	0.054	44.6	20.23	509.34	0.0	0.00	0.00	56.00	25.40	350.80
	12	0.715	7.45	134	0.20	0.00	0.00	0.00	0.000	0.054	33.4	15.67	525.01	0.0	0.00	0.00	54.00	25.34	376.14
	13	0.747	7.55	111	0.21	0.00	0.01	0.01	0.005	0.059	37.8	18.53	543.54	0.0	0.00	0.00	54.00	26.48	402.62
	14	0.730	7.41	207	0.22	0.00	0.00	0.00	0.000	0.059	36.2	17.34	560.88	0.0	0.00	0.00	52.00	24.91	427.53
	15	0.738	7.55	118	0.21	0.00	0.01	0.01	0.005	0.064	32.4	15.69	576.57	0.0	0.00	0.00	52.00	25.19	452.72
	16	0.729	7.37	103	0.21	0.00	0.03	0.03	0.014	0.078	22.9	10.96	587.53	0.0	0.00	0.00	50.00	23.92	476.64
	17	0.739	7.54	109	0.19	0.00	0.01	0.01	0.005	0.083	32.7	15.86	603.39	0.0	0.00	0.00	50.00	24.25	500.89
	18	0.714	7.47	109	0.20	0.01	0.00	0.01	0.005	0.088	20.7	9.70	613.09	0.0	0.00	0.00	52.00	24.37	525.26
	19	0.715	7.44	113	0.19	0.00	0.00	0.00	0.000	0.088	24.0	11.26	624.35	0.0	0.00	0.00	48.00	22.53	547.79
	20	0.715	7.24	116	0.20	0.01	0.00	0.01	0.005	0.093	23.4	10.98	635.33	0.0	0.00	0.00	54.00	25.34	573.13
	21	0.748	7.51	115	0.20	0.00	0.00	0.00	0.000	0.093	23.2	11.39	646.72	0.0	0.00	0.00	46.00	22.58	595.71
	22	0.702	7.57	106	0.20	0.00	0.00	0.00	0.000	0.093	25.4	11.70	658.42	0.0	0.00	0.00	48.00	22.12	617.83
	23	0.747	7.75	74	0.20	0.00	0.01	0.01	0.005	0.098	15.1	7.40	665.82	0.0	0.00	0.00	50.00	24.51	642.34
	24	0.727	7.38	115	0.19	0.00	0.00	0.00	0.000	0.098	28.3	13.50	679.32	0.0	0.00	0.00	46.00	21.95	664.29
	25	0.732	7.43	93	0.20	0.00	0.02	0.02	0.010	0.108	27.5	13.21	692.53	0.0	0.00	0.00	48.00	23.06	687.35
	26	0.704	7.48	85	0.19	0.00	0.00	0.00	0.000	0.108	11.7	5.41	697.94	0.0	0.00	0.00	44.00	20.33	707.68
	27	0.708	7.77	124	0.20	0.00	0.00	0.00	0.000	0.108	16.6	7.71	705.65	0.0	0.00	0.00	42.00	19.52	727.20
	28	0.723	7.53	87	0.20	0.00	0.00	0.00	0.000	0.108	21.3	10.11	715.76	0.0	0.00	0.00	42.00	19.93	747.13
	29	0.725	7.47	74	0.20	0.00	0.02	0.02	0.010	0.118	20.9	9.95	725.71	0.0	0.00	0.00	40.00	19.03	766.16
	30	0.712	7.41	125	0.20	0.00	0.00	0.00	0.000	0.118	23.0	10.75	736.46	0.0	0.00	0.00	42.00	19.63	785.79
	31	0.735	7.51	132	0.19	0.00	0.01	0.01	0.005	0.123	21.3	10.28	746.74	0.0	0.00	0.00	44.00	21.23	807.02
	32	0.714	7.73	109	0.19	0.00	0.00	0.00	0.000	0.123	39.5	18.51	765.25	0.0	0.00	0.00	40.00	18.75	825.77
	33	0.725	7.54	135	0.20	0.00	0.01	0.01	0.005	0.128	33.3	15.85	781.10	0.0	0.00	0.00	40.00	19.03	844.80
	34	0.711	7.41	90	0.19	0.00	0.00	0.00	0.000	0.128	31.2	14.56	795.66	0.0	0.00	0.00	38.00	17.73	862.53
	35	0.704	7.29	75	0.19	0.00	0.00	0.00	0.000	0.128	30.3	14.00	809.66	0.0	0.00	0.00	42.00	19.41	881.94
AR2009-04																			

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2009-04																			
	0	0.700	7.70	98	0.43	0.00	0.03	0.03	0.014	0.014	116.0	53.14	53.14	0.0	0.00	0.00	54.00	24.74	24.74
	1	0.748	7.44	94	0.21	0.01	0.02	0.03	0.015	0.029	14.0	6.85	59.99	0.0	0.00	0.00	68.00	33.29	58.03
	2	0.755	7.37	198	0.22	0.00	0.02	0.02	0.010	0.039	15.2	7.51	67.50	0.0	0.00	0.00	58.00	28.66	86.69
	3	0.708	7.55	175	0.17	0.01	0.01	0.02	0.009	0.048	12.4	5.75	73.25	0.0	0.00	0.00	50.00	23.17	109.86
	4	0.751	8.15	152	0.17	0.00	0.00	0.00	0.000	0.048	15.8	7.77	81.02	0.0	0.00	0.00	50.00	24.57	134.43
	5	0.757	7.96	159	0.18	0.00	0.01	0.01	0.005	0.053	12.1	5.99	87.01	0.0	0.00	0.00	52.00	25.76	160.19
	6	0.697	7.68	171	0.18	0.00	0.01	0.01	0.005	0.058	13.3	6.07	93.08	0.0	0.00	0.00	52.00	23.72	183.91
	7	0.758	7.77	176	0.18	0.00	0.01	0.01	0.005	0.063	16.0	7.94	101.02	0.0	0.00	0.00	58.00	28.77	212.68
	8	0.720	7.62	155	0.18	0.00	0.00	0.00	0.000	0.063	14.9	7.02	108.04	0.0	0.00	0.00	54.00	25.44	238.12
	9	0.731	7.79	146	0.18	0.00	0.01	0.01	0.005	0.068	15.3	7.32	115.36	0.0	0.00	0.00	50.00	23.92	262.04
	10	0.711	7.40	150	0.18	0.00	0.00	0.00	0.000	0.068	15.3	7.12	122.48	0.0	0.00	0.00	54.00	25.13	287.17
	11	0.727	7.29	120	0.17	0.01	0.00	0.01	0.005	0.073	13.3	6.33	128.81	0.0	0.00	0.00	44.00	20.93	308.10
	12	0.736	7.62	133	0.17	0.00	0.00	0.00	0.000	0.073	16.3	7.85	136.66	0.0	0.00	0.00	42.00	20.23	328.33
	13	0.729	7.67	109	0.18	0.00	0.01	0.01	0.005	0.078	16.1	7.68	144.34	0.0	0.00	0.00	46.00	21.94	350.27
	14	0.694	7.58	203	0.18	0.00	0.00	0.00	0.000	0.078	14.1	6.40	150.74	0.0	0.00	0.00	42.00	19.07	369.34
	15	0.697	7.62	119	0.19	0.00	0.01	0.01	0.005	0.083	20.1	9.17	159.91	0.0	0.00	0.00	44.00	20.07	389.41
	16	0.715	7.49	101	0.18	0.00	0.02	0.02	0.009	0.092	12.8	5.99	165.90	0.0	0.00	0.00	44.00	20.59	410.00
	17	0.739	7.54	109	0.19	0.00	0.05	0.05	0.024	0.116	14.6	7.06	172.96	0.0	0.00	0.00	44.00	21.28	431.28
	18	0.703	7.50	113	0.19	0.00	0.04	0.04	0.018	0.134	16.8	7.73	180.69	0.0	0.00	0.00	42.00	19.32	450.60
	19	0.752	7.59	112	0.18	0.00	0.00	0.00	0.000	0.134	15.0	7.38	188.07	0.0	0.00	0.00	42.00	20.67	471.27
	20	0.706	7.32	117	0.18	0.01	0.02	0.03	0.014	0.148	13.8	6.38	194.45	0.0	0.00	0.00	34.00	15.71	486.98
	21	0.705	7.59	118	0.19	0.00	0.00	0.00	0.000	0.148	15.8	7.29	201.74	0.0	0.00	0.00	40.00	18.45	505.43
	22	0.737	7.82	107	0.19	0.00	0.00	0.00	0.000	0.148	17.6	8.49	210.23	0.0	0.00	0.00	46.00	22.19	527.62
	23	0.746	7.87	75	0.18	0.00	0.01	0.01	0.005	0.153	12.8	6.25	216.48	0.0	0.00	0.00	44.00	21.48	549.10
	24	0.706	7.47	114	0.17	0.00	0.01	0.01	0.005	0.158	17.6	8.13	224.61	0.0	0.00	0.00	38.00	17.56	566.66
	25	0.680	7.45	100	0.18	0.00	0.01	0.01	0.004	0.162	13.3	5.92	230.53	0.0	0.00	0.00	38.00	16.91	583.57
	26	0.736	7.73	87	0.17	0.00	0.00	0.00	0.000	0.162	3.2	1.54	232.07	0.0	0.00	0.00	34.00	16.38	599.95
	27	0.727	7.82	127	0.17	0.00	0.02	0.02	0.010	0.172	5.7	2.71	234.78	0.0	0.00	0.00	36.00	17.13	617.08
	28	0.669	7.47	96	0.18	0.00	0.01	0.01	0.004	0.176	9.6	4.20	238.98	0.0	0.00	0.00	36.00	15.76	632.84
	29	0.753	7.63	68	0.17	0.00	0.01	0.01	0.005	0.181	7.4	3.65	242.63	0.0	0.00	0.00	32.00	15.77	648.61
	30	0.720	7.63	116	0.17	0.00	0.01	0.01	0.005	0.186	13.3	6.27	248.90	0.0	0.00	0.00	34.00	16.02	664.63
	31	0.708	7.59	118	0.18	0.00	0.00	0.00	0.000	0.186	9.4	4.36	253.26	0.0	0.00	0.00	36.00	16.68	681.31
	32	0.706	7.94	100	0.17	0.00	0.01	0.01	0.005	0.191	11.6	5.36	258.62	0.0	0.00	0.00	32.00	14.78	696.09
	33	0.677	7.71	124	0.17	0.00	0.00	0.00	0.000	0.191	18.1	8.02	266.64	0.0	0.00	0.00	30.00	13.29	709.38

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2009-04																			
	34	0.686	7.54	93	0.17	0.00	0.01	0.01	0.004	0.195	12.3	5.52	272.16	0.0	0.00	0.00	34.00	15.26	724.64
	35	0.691	7.57	65	0.17	0.00	0.00	0.00	0.000	0.195	9.2	4.16	276.32	0.0	0.00	0.00	34.00	15.37	740.01
AR2010-02																			
	0	0.787	7.74	110	0.67	0.01	0.00	0.01	0.005	0.005	316.0	163.21	163.21	0.0	0.00	0.00	60.00	30.99	30.99
	1	0.643	7.48	93	0.20	0.00	0.03	0.03	0.013	0.018	20.0	8.44	171.65	0.0	0.00	0.00	60.00	25.32	56.31
	2	0.787	7.38	204	0.22	0.00	0.03	0.03	0.015	0.033	10.6	5.47	177.12	0.0	0.00	0.00	52.00	26.86	83.17
	3	0.700	7.40	198	0.18	0.00	0.01	0.01	0.005	0.038	11.2	5.15	182.27	0.0	0.00	0.00	60.00	27.56	110.73
	4	0.765	8.09	160	0.17	0.01	0.01	0.02	0.010	0.048	12.0	6.02	188.29	0.0	0.00	0.00	50.00	25.10	135.83
	5	0.715	7.70	168	0.18	0.00	0.00	0.00	0.000	0.048	9.8	4.60	192.89	0.0	0.00	0.00	56.00	26.28	162.11
	6	0.682	7.67	175	0.17	0.00	0.03	0.03	0.013	0.061	9.2	4.12	197.01	0.0	0.00	0.00	50.00	22.38	184.49
	7	0.742	7.71	179	0.17	0.00	0.02	0.02	0.010	0.071	11.3	5.50	202.51	0.0	0.00	0.00	48.00	23.37	207.86
	8	0.723	7.73	157	0.17	0.00	0.01	0.01	0.005	0.076	12.4	5.88	208.39	0.0	0.00	0.00	44.00	20.88	228.74
	9	0.759	7.87	151	0.18	0.00	0.02	0.02	0.010	0.086	15.1	7.52	215.91	0.0	0.00	0.00	48.00	23.91	252.65
	10	0.714	7.42	155	0.18	0.00	0.00	0.00	0.000	0.086	11.9	5.58	221.49	0.0	0.00	0.00	52.00	24.37	277.02
	11	0.727	7.37	131	0.17	0.00	0.03	0.03	0.014	0.100	13.1	6.25	227.74	0.0	0.00	0.00	50.00	23.85	300.87
	12	0.747	7.67	134	0.17	0.00	0.01	0.01	0.005	0.105	9.9	4.85	232.59	0.0	0.00	0.00	48.00	23.53	324.40
	13	0.723	7.73	112	0.18	0.01	0.03	0.04	0.019	0.124	9.9	4.70	237.29	0.0	0.00	0.00	46.00	21.83	346.23
	14	0.758	7.47	205	0.18	0.00	0.01	0.01	0.005	0.129	14.3	7.11	244.40	0.0	0.00	0.00	46.00	22.88	369.11
	15	0.705	7.54	120	0.18	0.00	0.00	0.00	0.000	0.129	13.0	6.01	250.41	0.0	0.00	0.00	46.00	21.28	390.39
	16	0.717	7.40	104	0.18	0.00	0.03	0.03	0.014	0.143	4.9	2.31	252.72	0.0	0.00	0.00	44.00	20.70	411.09
	17	0.756	7.42	114	0.18	0.01	0.00	0.01	0.005	0.148	9.1	4.51	257.23	0.0	0.00	0.00	46.00	22.82	433.91
	18	0.690	7.60	112	0.17	0.00	0.01	0.01	0.005	0.153	6.5	2.95	260.18	0.0	0.00	0.00	38.00	17.22	451.13
	19	0.695	7.44	104	0.17	0.00	0.01	0.01	0.005	0.158	3.9	1.78	261.96	0.0	0.00	0.00	42.00	19.16	470.29
	20	0.769	7.48	116	0.17	0.00	0.03	0.03	0.015	0.173	7.3	3.68	265.64	0.0	0.00	0.00	40.00	20.19	490.48
	21	0.692	7.43	123	0.17	0.00	0.02	0.02	0.009	0.182	6.7	3.04	268.67	0.0	0.00	0.00	44.00	19.98	510.45
	22	0.726	7.88	105	0.17	0.00	0.00	0.00	0.000	0.182	9.1	4.34	273.01	0.0	0.00	0.00	38.00	18.10	528.55
	23	0.739	8.05	71	0.17	0.00	0.01	0.01	0.005	0.187	6.5	3.15	276.16	0.0	0.00	0.00	40.00	19.40	547.95
	24	0.719	7.46	116	0.17	0.00	0.00	0.00	0.000	0.187	9.8	4.62	280.78	0.0	0.00	0.00	38.00	17.93	565.88
	25	0.713	7.49	100	0.17	0.00	0.02	0.02	0.009	0.196	8.3	3.88	284.66	0.0	0.00	0.00	38.00	17.78	583.66
	26	0.675	7.67	103	0.17	0.00	0.00	0.00	0.000	0.196	4.9	2.17	286.83	0.0	0.00	0.00	34.00	15.06	598.72
	27	0.762	7.98	123	0.17	0.00	0.00	0.00	0.000	0.196	7.4	3.70	290.53	0.0	0.00	0.00	34.00	17.00	615.72
	28	0.726	7.49	105	0.17	0.01	0.01	0.02	0.010	0.206	4.3	2.05	292.58	0.0	0.00	0.00	32.00	15.25	630.97
	29	0.728	7.71	70	0.17	0.00	0.00	0.00	0.000	0.206	6.6	3.15	295.73	0.0	0.00	0.00	34.00	16.24	647.21
	30	0.731	7.72	109	0.17	0.00	0.00	0.00	0.000	0.206	11.7	5.61	301.34	0.0	0.00	0.00	34.00	16.31	663.52

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2010-02																			
	31	0.720	7.66	129	0.17	0.00	0.02	0.02	0.009	0.215	5.5	2.60	303.94	0.0	0.00	0.00	36.00	17.01	680.53
	32	0.759	7.99	100	0.17	0.00	0.01	0.01	0.005	0.220	11.6	5.78	309.72	0.0	0.00	0.00	34.00	16.94	697.47
	33	0.697	7.56	135	0.17	0.01	0.00	0.01	0.005	0.225	12.4	5.67	315.39	0.0	0.00	0.00	32.00	14.64	712.11
	34	0.681	7.45	95	0.17	0.00	0.00	0.00	0.000	0.225	12.1	5.41	320.80	0.0	0.00	0.00	34.00	15.19	727.30
	35	0.714	7.48	74	0.17	0.00	0.00	0.00	0.000	0.225	9.2	4.31	325.11	0.0	0.00	0.00	38.00	17.81	745.11
AR2010-03																			
	0	0.661	7.88	104	0.30	0.01	0.02	0.03	0.013	0.013	79.0	34.28	34.28	0.0	0.00	0.00	54.00	23.43	23.43
	1	0.689	7.58	95	0.22	0.00	0.00	0.00	0.000	0.013	61.0	27.59	61.87	0.0	0.00	0.00	32.00	14.47	37.90
	2	0.737	7.31	210	0.22	0.00	0.00	0.00	0.000	0.013	62.0	29.99	91.86	0.0	0.00	0.00	32.00	15.48	53.38
	3	0.679	7.75	192	0.19	0.00	0.01	0.01	0.004	0.017	30.0	13.37	105.23	0.0	0.00	0.00	28.00	12.48	65.86
	4	0.741	8.10	167	0.18	0.00	0.01	0.01	0.005	0.022	44.4	21.60	126.83	0.0	0.00	0.00	32.00	15.56	81.42
	5	0.734	7.73	170	0.18	0.00	0.01	0.01	0.005	0.027	30.5	14.69	141.52	0.0	0.00	0.00	32.00	15.42	96.84
	6	0.642	8.17	163	0.17	0.00	0.02	0.02	0.008	0.035	25.7	10.83	152.35	0.0	0.00	0.00	28.00	11.80	108.64
	7	0.684	8.02	173	0.17	0.00	0.00	0.00	0.000	0.035	31.0	13.92	166.27	0.0	0.00	0.00	28.00	12.57	121.21
	8	0.730	7.79	162	0.18	0.00	0.00	0.00	0.000	0.035	27.7	13.27	179.54	0.0	0.00	0.00	30.00	14.37	135.58
	9	0.733	7.91	149	0.18	0.00	0.00	0.00	0.000	0.035	30.6	14.72	194.26	0.0	0.00	0.00	28.00	13.47	149.05
	10	0.695	7.77	143	0.17	0.00	0.02	0.02	0.009	0.044	17.8	8.12	202.38	0.0	0.00	0.00	26.00	11.86	160.91
	11	0.697	7.74	118	0.16	0.00	0.01	0.01	0.005	0.049	20.5	9.38	211.76	0.0	0.00	0.00	26.00	11.89	172.80
	12	0.668	7.97	128	0.17	0.00	0.01	0.01	0.004	0.053	21.7	9.51	221.27	0.0	0.00	0.00	26.00	11.40	184.20
	13	0.724	7.67	113	0.18	0.00	0.00	0.00	0.000	0.053	19.3	9.17	230.44	0.0	0.00	0.00	34.00	16.16	200.36
	14	0.703	7.74	200	0.17	0.00	0.00	0.00	0.000	0.053	14.9	6.88	237.32	0.0	0.00	0.00	28.00	12.92	213.28
	15	0.706	7.82	118	0.19	0.01	0.01	0.02	0.009	0.062	26.5	12.28	249.60	0.0	0.00	0.00	52.00	24.10	237.38
	16	0.723	7.52	105	0.18	0.00	0.02	0.02	0.009	0.071	10.0	4.75	254.35	0.0	0.00	0.00	42.00	19.93	257.31
	17	0.714	7.58	112	0.17	0.00	0.09	0.09	0.042	0.113	10.1	4.73	259.08	0.0	0.00	0.00	42.00	19.68	276.99
	18	0.732	7.53	108	0.17	0.00	0.00	0.00	0.000	0.113	6.2	2.98	262.06	0.0	0.00	0.00	44.00	21.14	298.13
	19	0.703	7.60	117	0.16	0.00	0.00	0.00	0.000	0.113	4.5	2.08	264.14	0.0	0.00	0.00	30.00	13.84	311.97
	20	0.674	7.49	118	0.17	0.01	0.01	0.02	0.009	0.122	8.4	3.72	267.86	0.0	0.00	0.00	34.00	15.04	327.01
	21	0.742	7.58	122	0.17	0.00	0.02	0.02	0.010	0.132	12.1	5.89	273.75	0.0	0.00	0.00	34.00	16.56	343.57
	22	0.698	7.74	113	0.17	0.00	0.01	0.01	0.005	0.137	11.9	5.45	279.20	0.0	0.00	0.00	32.00	14.66	358.23
	23	0.703	7.79	83	0.18	0.00	0.01	0.01	0.005	0.142	11.1	5.12	284.32	0.0	0.00	0.00	40.00	18.46	376.69
	24	0.769	7.42	118	0.18	0.00	0.01	0.01	0.005	0.147	14.6	7.37	291.69	0.0	0.00	0.00	40.00	20.19	396.88
	25	0.693	7.46	103	0.17	0.00	0.29	0.29	0.132	0.279	13.3	6.05	297.74	0.0	0.00	0.00	26.00	11.83	408.71
	26	0.697	7.68	96	0.18	0.00	0.00	0.00	0.000	0.279	7.9	3.61	301.35	0.0	0.00	0.00	44.00	20.13	428.84
	27	0.765	7.95	127	0.18	0.00	0.00	0.00	0.000	0.279	10.7	5.37	306.72	0.0	0.00	0.00	34.00	17.07	445.91

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2010-03																			
	28	0.746	7.47	110	0.17	0.00	0.01	0.01	0.005	0.284	6.9	3.38	310.10	0.0	0.00	0.00	38.00	18.61	464.52
	29	0.700	7.54	90	0.17	0.00	0.03	0.03	0.014	0.298	7.4	3.40	313.50	0.0	0.00	0.00	34.00	15.62	480.14
	30	0.737	7.56	114	0.17	0.00	0.01	0.01	0.005	0.303	9.9	4.79	318.29	0.0	0.00	0.00	36.00	17.42	497.56
	31	0.710	7.46	125	0.18	0.00	0.01	0.01	0.005	0.308	9.3	4.33	322.62	0.0	0.00	0.00	40.00	18.64	516.20
	32	0.731	7.79	115	0.17	0.00	0.00	0.00	0.000	0.308	11.4	5.47	328.09	0.0	0.00	0.00	34.00	16.31	532.51
	33	0.713	7.60	135	0.17	0.00	0.00	0.00	0.000	0.308	12.3	5.76	333.85	0.0	0.00	0.00	30.00	14.04	546.55
	34	0.719	7.40	102	0.17	0.00	0.00	0.00	0.000	0.308	8.9	4.20	338.05	0.0	0.00	0.00	34.00	16.05	562.50
	35	0.673	7.50	77	0.17	0.00	0.00	0.00	0.000	0.308	9.3	4.11	342.16	0.0	0.00	0.00	38.00	16.79	579.39
AR2011-03																			
	0	0.774	7.84	109	0.90	0.02	0.01	0.03	0.015	0.015	418.0	212.25	212.25	0.0	0.00	0.00	96.00	48.75	48.75
	1	0.708	7.55	99	0.32	0.00	0.01	0.01	0.005	0.020	107.0	49.70	261.95	0.0	0.00	0.00	76.00	35.30	84.05
	2	0.737	7.35	215	0.32	0.00	0.01	0.01	0.005	0.025	13.0	6.29	268.24	0.0	0.00	0.00	62.00	29.98	114.03
	3	0.755	7.59	190	0.24	0.01	0.00	0.01	0.005	0.030	65.4	32.39	300.63	0.0	0.00	0.00	60.00	29.72	143.75
	4	0.744	8.00	173	0.23	0.00	0.00	0.00	0.000	0.030	68.5	33.43	334.06	0.0	0.00	0.00	50.00	24.40	168.15
	5	0.729	7.71	172	0.23	0.00	0.00	0.00	0.000	0.030	56.1	26.83	360.89	0.0	0.00	0.00	54.00	25.83	193.98
	6	0.681	7.90	173	0.21	0.00	0.01	0.01	0.004	0.034	46.1	20.60	381.49	0.0	0.00	0.00	46.00	20.55	214.53
	7	0.746	7.84	179	0.21	0.00	0.00	0.00	0.000	0.034	50.1	24.52	406.01	0.0	0.00	0.00	50.00	24.47	239.00
	8	0.730	7.70	169	0.22	0.00	0.00	0.00	0.000	0.034	44.6	21.36	427.37	0.0	0.00	0.00	46.00	22.03	261.03
	9	0.747	7.93	152	0.20	0.00	0.00	0.00	0.000	0.034	36.3	17.79	445.16	0.0	0.00	0.00	42.00	20.58	281.61
	10	0.720	7.62	149	0.20	0.00	0.02	0.02	0.009	0.043	38.5	18.19	463.35	0.0	0.00	0.00	46.00	21.73	303.34
	11	0.744	7.59	127	0.19	0.00	0.08	0.08	0.039	0.082	32.9	16.06	479.41	0.0	0.00	0.00	42.00	20.50	323.84
	12	0.737	7.68	135	0.19	0.00	0.00	0.00	0.000	0.082	30.7	14.84	494.25	0.0	0.00	0.00	40.00	19.34	343.18
	13	0.727	7.65	114	0.19	0.00	0.01	0.01	0.005	0.087	27.7	13.21	507.46	0.0	0.00	0.00	40.00	19.08	362.26
	14	0.723	7.60	205	0.20	0.01	0.00	0.01	0.005	0.092	28.1	13.33	520.79	0.0	0.00	0.00	42.00	19.92	382.18
	15	0.742	7.71	124	0.20	0.00	0.00	0.00	0.000	0.092	31.0	15.09	535.88	0.0	0.00	0.00	44.00	21.42	403.60
	16	0.719	7.51	112	0.19	0.00	0.03	0.03	0.014	0.106	15.9	7.50	543.38	0.0	0.00	0.00	38.00	17.92	421.52
	17	0.721	7.58	121	0.19	0.00	0.02	0.02	0.009	0.115	25.6	12.11	555.49	0.0	0.00	0.00	42.00	19.87	441.39
	18	0.717	7.56	121	0.18	0.00	0.04	0.04	0.019	0.134	18.1	8.52	564.01	0.0	0.00	0.00	42.00	19.76	461.15
	19	0.726	7.51	125	0.18	0.00	0.00	0.00	0.000	0.134	13.7	6.53	570.54	0.0	0.00	0.00	38.00	18.10	479.25
	20	0.732	7.41	122	0.18	0.00	0.03	0.03	0.014	0.148	21.0	10.08	580.62	0.0	0.00	0.00	34.00	16.33	495.58
	21	0.688	7.57	127	0.19	0.00	0.01	0.01	0.005	0.153	25.1	11.33	591.94	0.0	0.00	0.00	36.00	16.25	511.83
	22	0.713	7.75	115	0.18	0.00	0.00	0.00	0.000	0.153	27.0	12.63	604.57	0.0	0.00	0.00	36.00	16.84	528.67
	23	0.738	7.80	93	0.19	0.00	0.01	0.01	0.005	0.158	23.6	11.43	616.00	0.0	0.00	0.00	44.00	21.30	549.97
	24	0.698	7.52	119	0.18	0.00	0.01	0.01	0.005	0.163	21.2	9.71	625.71	0.0	0.00	0.00	34.00	15.57	565.54

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2011-03																			
	25	0.723	7.49	105	0.18	0.00	0.01	0.01	0.005	0.168	23.7	11.24	636.95	0.0	0.00	0.00	34.00	16.13	581.67
	26	0.709	7.63	100	0.18	0.00	0.00	0.00	0.000	0.168	8.7	4.05	641.00	0.0	0.00	0.00	36.00	16.74	598.41
	27	0.718	7.76	136	0.18	0.00	0.00	0.00	0.000	0.168	16.7	7.87	648.87	0.0	0.00	0.00	30.00	14.13	612.54
	28	0.717	7.41	116	0.18	0.00	0.01	0.01	0.005	0.173	20.6	9.69	658.56	0.0	0.00	0.00	32.00	15.05	627.59
	29	0.728	7.61	100	0.19	0.00	0.01	0.01	0.005	0.178	15.8	7.55	666.11	0.0	0.00	0.00	32.00	15.28	642.87
	30	0.729	7.44	124	0.19	0.00	0.01	0.01	0.005	0.183	22.1	10.57	676.68	0.0	0.00	0.00	36.00	17.22	660.09
	31	0.699	7.55	137	0.18	0.00	0.00	0.00	0.000	0.183	15.4	7.06	683.74	0.0	0.00	0.00	32.00	14.67	674.76
	32	0.680	7.98	112	0.17	0.01	0.01	0.02	0.009	0.192	20.0	8.92	692.66	0.0	0.00	0.00	28.00	12.49	687.25
	33	0.658	7.73	134	0.17	0.00	0.01	0.01	0.004	0.196	25.4	10.96	703.62	0.0	0.00	0.00	26.00	11.22	698.47
	34	0.679	7.51	99	0.17	0.00	0.00	0.00	0.000	0.196	24.8	11.05	714.67	0.0	0.00	0.00	26.00	11.58	710.05
	35	0.654	7.63	74	0.18	0.00	0.00	0.00	0.000	0.196	28.3	12.14	726.81	0.0	0.00	0.00	34.00	14.59	724.64
AR2013-01																			
	0	0.736	7.68	162	3.18	0.02	0.02	0.04	0.019	0.019	1880.0	912.06	912.06	0.0	0.00	0.00	66.00	32.02	32.02
	1	0.732	7.33	163	0.49	0.02	0.00	0.02	0.010	0.029	180.0	86.85	998.91	0.0	0.00	0.00	94.00	45.35	77.37
	2	0.614	7.41	180	0.27	0.00	0.01	0.01	0.004	0.033	38.0	15.38	1014.29	0.0	0.00	0.00	66.00	26.71	104.08
	3	0.708	7.55	189	0.20	0.00	1.00	0.01	0.005	0.038	23.3	10.87	1025.16	0.0	0.00	0.00	74.00	34.53	138.61
	4	0.753	8.10	171	0.18	0.00	0.01	0.01	0.005	0.043	26.1	12.95	1038.11	0.0	0.00	0.00	56.00	27.80	166.41
	5	0.743	7.69	176	0.22	0.00	0.00	0.00	0.000	0.043	39.5	19.35	1057.46	0.0	0.00	0.00	52.00	25.47	191.88
	6	0.753	7.70	181	0.25	0.00	0.00	0.00	0.000	0.043	64.9	32.21	1089.67	0.0	0.00	0.00	48.00	23.82	215.70
	7	0.737	7.71	186	0.27	0.00	0.00	0.00	0.000	0.043	86.6	42.07	1131.74	0.0	0.00	0.00	52.00	25.26	240.96
	8	0.711	7.63	206	0.24	0.00	0.00	0.00	0.000	0.043	67.6	31.68	1163.42	0.0	0.00	0.00	44.00	20.62	261.58
	9	0.743	7.79	157	0.23	0.00	0.00	0.00	0.000	0.043	57.5	28.16	1191.58	0.0	0.00	0.00	50.00	24.49	286.07
	10	0.752	7.54	154	0.21	0.00	0.00	0.00	0.000	0.043	47.6	23.59	1215.17	0.0	0.00	0.00	48.00	23.79	309.86
	11	0.739	7.60	130	0.20	0.00	0.01	0.01	0.005	0.048	38.8	18.90	1234.07	0.0	0.00	0.00	44.00	21.43	331.29
	12	0.726	7.81	136	0.18	0.00	0.02	0.02	0.010	0.058	30.1	14.40	1248.47	0.0	0.00	0.00	36.00	17.23	348.52
	13	0.723	7.73	114	0.19	0.00	0.00	0.00	0.000	0.058	28.2	13.44	1261.91	0.0	0.00	0.00	34.00	16.20	364.72
	14	0.737	7.64	206	0.20	0.00	0.00	0.00	0.000	0.058	38.5	18.70	1280.61	0.0	0.00	0.00	38.00	18.46	383.18
	15	0.744	7.67	128	0.21	0.01	0.00	0.01	0.005	0.063	43.6	21.38	1301.99	0.0	0.00	0.00	38.00	18.64	401.82
	16	0.730	7.53	115	0.21	0.00	0.01	0.01	0.005	0.068	32.2	15.49	1317.48	0.0	0.00	0.00	38.00	18.28	420.10
	17	0.724	7.61	123	0.20	0.00	0.05	0.05	0.024	0.092	28.8	13.74	1331.22	0.0	0.00	0.00	36.00	17.18	437.28
	18	0.732	7.46	127	0.22	0.00	0.07	0.07	0.034	0.126	35.8	17.28	1348.50	0.0	0.00	0.00	42.00	20.27	457.55
	19	0.741	7.45	130	0.21	0.00	0.00	0.00	0.000	0.126	36.6	17.88	1366.38	0.0	0.00	0.00	46.00	22.47	480.02
	20	0.724	7.26	129	0.22	0.00	0.02	0.02	0.010	0.136	32.8	15.65	1382.03	0.0	0.00	0.00	44.00	21.00	501.02
	21	0.748	7.63	132	0.21	0.00	0.01	0.01	0.005	0.141	26.9	13.26	1395.28	0.0	0.00	0.00	48.00	23.67	524.68

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2013-01																			
	22	0.732	7.68	120	0.20	0.00	0.01	0.01	0.005	0.146	27.3	13.17	1408.45	0.0	0.00	0.00	46.00	22.19	546.87
	23	0.684	7.70	97	0.20	0.00	0.01	0.01	0.005	0.151	23.2	10.46	1418.91	0.0	0.00	0.00	46.00	20.74	567.61
	24	0.648	7.39	125	0.21	0.00	0.00	0.00	0.000	0.151	35.8	15.29	1434.20	0.0	0.00	0.00	50.00	21.36	588.97
	25	0.726	7.29	116	0.20	0.00	0.00	0.00	0.000	0.151	25.5	12.20	1446.40	0.0	0.00	0.00	48.00	22.97	611.94
	26	0.700	7.26	103	0.21	0.00	0.00	0.00	0.000	0.151	12.9	5.95	1452.35	0.0	0.00	0.00	70.00	32.30	644.24
	27	0.740	7.50	152	0.19	0.00	0.01	0.01	0.005	0.156	19.6	9.56	1461.91	0.0	0.00	0.00	42.00	20.49	664.73
	28	0.743	7.51	118	0.20	0.00	0.00	0.00	0.000	0.156	19.7	9.65	1471.56	0.0	0.00	0.00	44.00	21.55	686.28
	29	0.722	7.36	121	0.22	0.00	0.00	0.00	0.000	0.156	25.5	12.14	1483.70	0.0	0.00	0.00	42.00	19.99	706.27
	30	0.742	7.25	139	0.22	0.00	0.01	0.01	0.005	0.161	34.7	16.97	1500.67	0.0	0.00	0.00	44.00	21.52	727.79
	31	0.726	7.26	151	0.23	0.00	0.00	0.00	0.000	0.161	21.0	10.05	1510.72	0.0	0.00	0.00	50.00	23.93	751.72
	32	0.728	7.62	137	0.20	0.01	0.00	0.01	0.005	0.166	29.8	14.30	1525.02	0.0	0.00	0.00	42.00	20.15	771.87
	33	0.715	7.44	159	0.22	0.00	0.00	0.00	0.000	0.166	43.2	20.36	1545.38	0.0	0.00	0.00	46.00	21.68	793.55
	34	0.729	7.30	117	0.21	0.00	0.01	0.01	0.000	0.171	35.2	16.91	1562.29	0.0	0.00	0.00	46.00	22.10	815.65
	35	0.732	7.24	114	0.20	0.00	0.00	0.00	0.000	0.171	30.8	14.86	1577.15	0.0	0.00	0.00	46.00	22.19	837.84
AR2013-02																			
	0	0.822	7.79	121	1.26	0.04	0.03	0.07	0.038	0.038	573.0	308.41	308.41	0.0	0.00	0.00	54.00	29.06	29.06
	1	0.632	7.71	103	0.59	0.01	0.01	0.02	0.008	0.046	319.0	132.01	440.42	0.0	0.00	0.00	144.00	59.59	88.65
	2	0.756	7.75	183	0.56	0.02	0.01	0.03	0.015	0.061	35.0	17.33	457.75	0.0	0.00	0.00	58.00	28.71	117.36
	3	0.743	7.86	177	0.27	0.02	0.01	0.03	0.015	0.076	36.0	17.51	475.26	0.0	0.00	0.00	74.00	36.00	153.36
	4	0.722	8.11	170	0.29	0.01	0.01	0.02	0.009	0.085	82.3	38.91	514.17	0.0	0.00	0.00	68.00	32.15	185.51
	5	0.723	8.11	161	0.23	0.00	0.00	0.00	0.000	0.085	35.2	16.66	530.83	0.0	0.00	0.00	58.00	27.46	212.97
	6	0.718	7.85	176	0.28	0.00	0.00	0.00	0.000	0.085	68.3	32.11	562.94	0.0	0.00	0.00	66.00	31.03	244.00
	7	0.767	8.11	170	0.27	0.00	0.00	0.00	0.000	0.085	58.1	29.18	592.12	0.0	0.00	0.00	66.00	33.15	277.15
	8	0.717	7.90	208	0.28	0.00	0.00	0.00	0.000	0.085	63.1	29.62	621.74	0.0	0.00	0.00	62.00	29.11	306.26
	9	0.769	8.10	143	0.24	0.00	0.00	0.00	0.000	0.085	38.1	19.18	640.92	0.0	0.00	0.00	64.00	32.23	338.49
	10	0.726	8.00	142	0.22	0.00	0.01	0.01	0.005	0.090	28.0	13.31	654.23	0.0	0.00	0.00	52.00	24.72	363.21
	11	0.746	8.02	115	0.20	0.00	0.02	0.02	0.010	0.100	32.0	15.63	669.86	0.0	0.00	0.00	42.00	20.52	383.73
	12	0.744	7.96	132	0.21	0.00	0.00	0.00	0.000	0.100	48.9	23.82	693.68	0.0	0.00	0.00	50.00	24.36	408.09
	13	0.735	8.16	105	0.22	0.00	0.00	0.00	0.000	0.100	31.1	14.97	708.65	0.0	0.00	0.00	50.00	24.06	432.15
	14	0.740	7.86	198	0.21	0.01	0.00	0.01	0.005	0.105	26.9	13.03	721.68	0.0	0.00	0.00	38.00	18.41	450.56
	15	0.747	7.91	124	0.23	0.00	0.01	0.01	0.005	0.110	45.4	22.21	743.89	0.0	0.00	0.00	50.00	24.46	475.02
	16	0.735	7.90	106	0.22	0.01	0.03	0.04	0.019	0.129	33.6	16.17	760.06	0.0	0.00	0.00	44.00	21.18	496.20
	17	0.696	7.82	121	0.25	0.01	0.02	0.03	0.014	0.143	47.9	21.83	781.89	0.0	0.00	0.00	48.00	21.88	518.08
	18	0.732	7.73	110	0.25	0.00	0.03	0.03	0.014	0.157	41.4	19.83	801.72	0.0	0.00	0.00	50.00	23.95	542.03

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2013-02																			
	19	0.727	7.82	119	0.22	0.00	0.00	0.00	0.000	0.157	33.3	15.85	817.57	0.0	0.00	0.00	52.00	24.75	566.78
	20	0.755	7.72	120	0.23	0.00	0.00	0.00	0.000	0.157	33.5	16.56	834.13	0.0	0.00	0.00	52.00	25.71	592.49
	21	0.707	7.76	149	0.25	0.00	0.02	0.02	0.009	0.166	58.8	27.22	861.36	0.0	0.00	0.00	20.00	9.26	601.77
	22	0.651	7.75	118	0.29	0.00	0.01	0.01	0.004	0.170	71.8	30.61	891.97	0.0	0.00	0.00	62.00	26.43	628.20
	23	0.644	7.69	101	0.35	0.00	0.01	0.01	0.004	0.174	165.6	69.83	961.80	0.0	0.00	0.00	70.00	29.52	657.72
	24	0.736	7.40	124	0.30	0.00	0.00	0.00	0.000	0.174	46.4	22.36	984.16	0.0	0.00	0.00	66.00	31.81	689.53
	25	0.739	7.42	114	0.26	0.00	0.00	0.00	0.000	0.174	41.1	19.89	1004.05	0.0	0.00	0.00	64.00	30.97	720.50
	26	0.716	7.51	90	0.26	0.00	0.00	0.00	0.000	0.174	27.9	13.08	1017.13	0.0	0.00	0.00	60.00	28.13	748.63
	27	0.722	7.62	153	0.25	0.00	0.00	0.00	0.000	0.174	35.3	16.69	1033.82	0.0	0.00	0.00	60.00	28.37	777.00
	28	0.747	7.43	126	0.27	0.00	0.00	0.00	0.000	0.174	32.0	15.65	1049.47	0.0	0.00	0.00	60.00	29.35	806.35
	29	0.723	7.35	125	0.27	0.00	0.02	0.02	0.009	0.183	33.2	15.72	1065.19	0.0	0.00	0.00	58.00	27.46	833.81
	30	0.748	7.48	136	0.25	0.00	0.00	0.00	0.000	0.183	39.4	19.30	1084.49	0.0	0.00	0.00	56.00	27.43	861.24
	31	0.734	7.36	146	0.25	0.00	0.00	0.00	0.000	0.183	27.1	13.02	1097.51	0.0	0.00	0.00	54.00	25.95	887.19
	32	0.743	7.74	139	0.24	0.00	0.00	0.00	0.000	0.183	44.3	21.55	1119.06	0.0	0.00	0.00	54.00	26.27	913.46
	33	0.711	7.50	157	0.24	0.00	0.01	0.01	0.005	0.188	42.5	19.79	1138.85	0.0	0.00	0.00	54.00	25.14	938.60
	34	0.721	7.36	125	0.23	0.00	0.00	0.00	0.000	0.188	46.1	21.76	1160.61	0.0	0.00	0.00	44.00	20.77	959.37
	35	0.736	7.31	214	0.24	0.00	0.00	0.00	0.000	0.188	38.0	18.31	1178.92	0.0	0.00	0.00	58.00	27.95	987.32
AR2013-03																			
	0	0.728	7.96	69	0.85	0.02	0.04	0.06	0.029	0.029	421.0	200.95	200.95	0.0	0.00	0.00	104.00	49.64	49.64
	1	0.720	7.62	104	0.26	0.00	0.00	0.00	0.000	0.029	40.0	18.88	219.83	0.0	0.00	0.00	86.00	40.60	90.24
	2	0.758	7.40	200	0.24	0.00	0.00	0.00	0.000	0.029	34.5	17.15	236.98	0.0	0.00	0.00	90.00	44.73	134.97
	3	0.763	7.61	190	0.19	0.00	0.01	0.01	0.005	0.034	23.2	11.61	248.59	0.0	0.00	0.00	86.00	43.02	177.99
	4	0.722	8.03	173	0.20	0.00	0.01	0.01	0.005	0.039	33.4	15.81	264.40	0.0	0.00	0.00	66.00	31.24	209.23
	5	0.721	7.79	171	0.20	0.00	0.00	0.00	0.000	0.039	23.3	11.01	275.41	0.0	0.00	0.00	66.00	31.20	240.43
	6	0.730	7.81	176	0.19	0.00	0.00	0.00	0.000	0.039	22.5	10.77	286.18	0.0	0.00	0.00	72.00	34.46	274.89
	7	0.755	7.87	178	0.19	0.00	0.00	0.00	0.000	0.039	24.5	12.13	298.31	0.0	0.00	0.00	58.00	28.71	303.60
	8	0.743	7.79	167	0.19	0.00	0.00	0.00	0.000	0.039	22.2	10.81	309.12	0.0	0.00	0.00	56.00	27.28	330.88
	9	0.723	7.88	150	0.19	0.00	0.01	0.01	0.005	0.044	24.8	11.76	320.88	0.0	0.00	0.00	56.00	26.55	357.43
	10	0.733	7.67	154	0.19	0.00	0.00	0.00	0.000	0.044	23.7	11.39	332.27	0.0	0.00	0.00	50.00	24.03	381.46
	11	0.733	7.67	126	0.19	0.00	0.01	0.01	0.005	0.049	22.8	10.96	343.23	0.0	0.00	0.00	52.00	24.99	406.45
	12	0.755	7.66	138	0.18	0.00	0.00	0.00	0.000	0.049	19.1	9.45	352.68	0.0	0.00	0.00	52.00	25.74	432.19
	13	0.733	7.70	114	0.19	0.00	0.02	0.02	0.010	0.059	18.4	8.84	361.52	0.0	0.00	0.00	48.00	23.07	455.26
	14	0.744	7.58	202	0.20	0.00	0.00	0.00	0.000	0.059	23.3	11.37	372.89	0.0	0.00	0.00	48.00	23.41	478.67
	15	0.754	7.63	129	0.20	0.00	0.01	0.01	0.005	0.064	18.4	9.10	381.99	0.0	0.00	0.00	48.00	23.73	502.40

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2013-03																			
	16	0.742	7.48	113	0.19	0.00	0.01	0.01	0.005	0.069	11.9	5.79	387.78	0.0	0.00	0.00	40.00	19.46	521.86
	17	0.737	7.51	125	0.19	0.00	0.07	0.07	0.034	0.103	24.5	11.84	399.62	0.0	0.00	0.00	42.00	20.30	542.16
	18	0.737	7.62	112	0.19	0.00	0.02	0.02	0.010	0.113	17.1	8.26	407.88	0.0	0.00	0.00	40.00	19.33	561.49
	19	0.737	7.52	115	0.18	0.00	0.01	0.01	0.005	0.118	17.5	8.46	416.34	0.0	0.00	0.00	44.00	21.26	582.75
	20	0.710	7.44	125	0.19	0.01	0.00	0.01	0.005	0.123	15.4	7.17	423.51	0.0	0.00	0.00	44.00	20.48	603.23
	21	0.731	7.65	127	0.19	0.00	0.00	0.00	0.000	0.123	16.1	7.72	431.23	0.0	0.00	0.00	38.00	18.21	621.44
	22	0.718	7.83	115	0.18	0.00	0.00	0.00	0.000	0.123	18.5	8.71	439.94	0.0	0.00	0.00	40.00	18.83	640.27
	23	0.737	7.93	92	0.18	0.00	0.01	0.01	0.005	0.128	22.6	10.92	450.86	0.0	0.00	0.00	44.00	21.26	661.53
	24	0.721	7.47	120	0.18	0.00	0.00	0.00	0.000	0.128	21.5	10.16	461.02	0.0	0.00	0.00	36.00	17.02	678.55
	25	0.718	7.59	108	0.18	0.00	0.01	0.01	0.005	0.133	16.4	7.72	468.74	0.0	0.00	0.00	32.00	15.06	693.61
	26	0.695	7.71	86	0.17	0.00	0.00	0.00	0.000	0.133	7.6	3.46	472.20	0.0	0.00	0.00	36.00	16.40	710.01
	27	0.727	7.86	144	0.18	0.00	0.01	0.01	0.005	0.138	16.8	8.01	480.21	0.0	0.00	0.00	38.00	18.11	728.12
	28	0.728	7.65	159	0.17	0.00	0.02	0.02	0.010	0.148	7.3	3.48	483.69	0.0	0.00	0.00	30.00	14.32	742.44
	29	0.703	7.58	112	0.19	0.00	0.01	0.01	0.005	0.153	16.5	7.61	491.30	0.0	0.00	0.00	36.00	16.59	759.03
	30	0.735	7.62	125	0.18	0.01	0.00	0.01	0.005	0.158	21.7	10.46	501.76	0.0	0.00	0.00	36.00	17.35	776.38
	31	0.718	7.66	129	0.19	0.00	0.00	0.00	0.000	0.158	15.7	7.39	509.15	0.0	0.00	0.00	40.00	18.83	795.21
	32	0.717	7.92	137	0.17	0.00	0.00	0.00	0.000	0.158	19.0	8.93	518.08	0.0	0.00	0.00	36.00	16.92	812.13
	33	0.706	7.65	143	0.18	0.00	0.01	0.01	0.005	0.163	23.3	10.79	528.87	0.0	0.00	0.00	36.00	16.66	828.79
	34	0.710	7.54	109	0.17	0.00	0.00	0.00	0.000	0.163	15.2	7.08	535.95	0.0	0.00	0.00	30.00	13.97	842.76
	35	0.707	7.58	103	0.16	0.00	0.00	0.00	0.000	0.163	15.4	7.14	543.09	0.0	0.00	0.00	32.00	14.83	857.59
AR2014-02																			
	0	0.797	7.67	166	0.72	0.02	0.02	0.04	0.021	0.021	317.0	165.62	165.62	0.0	0.00	0.00	68.00	35.53	35.53
	1	0.597	7.94	87	0.16	0.00	0.03	0.03	0.012	0.033	12.3	4.81	170.43	0.0	0.00	0.00	32.00	12.52	48.05
	2	0.721	7.61	186	0.14	0.00	0.00	0.00	0.000	0.033	83.9	39.65	210.08	0.0	0.00	0.00	32.00	15.12	63.17
	3	0.685	7.86	187	0.23	0.01	0.00	0.01	0.004	0.037	87.0	39.07	249.15	0.0	0.00	0.00	28.00	12.57	75.74
	4	0.735	7.99	169	0.27	0.00	0.00	0.00	0.000	0.037	120.6	58.11	307.26	0.0	0.00	0.00	24.00	11.56	87.30
	5	0.722	7.75	178	0.27	0.00	0.00	0.00	0.000	0.037	78.8	37.30	344.56	0.0	0.00	0.00	26.00	12.31	99.61
	6	0.616	8.02	177	0.24	0.00	0.00	0.00	0.000	0.037	95.5	38.56	383.12	0.0	0.00	0.00	28.00	11.31	110.92
	7	0.668	7.86	186	0.34	0.00	0.00	0.00	0.000	0.037	153.6	67.26	450.38	0.0	0.00	0.00	32.00	14.01	124.93
	8	0.738	7.84	170	0.30	0.00	0.00	0.00	0.000	0.037	80.0	38.70	489.08	0.0	0.00	0.00	32.00	15.48	140.41
	9	0.737	7.92	155	0.24	0.00	0.00	0.00	0.000	0.037	68.2	32.95	522.03	0.0	0.00	0.00	28.00	13.53	153.94
	10	0.689	7.83	155	0.22	0.00	0.00	0.00	0.000	0.037	43.7	19.74	541.77	0.0	0.00	0.00	26.00	11.74	165.68
	11	0.703	7.73	124	0.22	0.00	0.00	0.00	0.000	0.037	63.1	29.08	570.85	0.0	0.00	0.00	28.00	12.90	178.58
	12	0.682	7.72	143	0.24	0.00	0.01	0.01	0.004	0.041	92.2	41.22	612.07	0.0	0.00	0.00	30.00	13.41	191.99

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2014-02																			
	13	0.732	7.67	119	0.23	0.00	0.00	0.00	0.000	0.041	59.8	28.69	640.76	0.0	0.00	0.00	30.00	14.40	206.39
	14	0.690	7.64	200	0.22	0.00	0.00	0.00	0.000	0.041	54.9	24.83	665.59	0.0	0.00	0.00	28.00	12.66	219.05
	15	0.691	7.71	133	0.23	0.00	0.00	0.00	0.000	0.041	53.2	24.10	689.69	0.0	0.00	0.00	26.00	11.78	230.83
	16	0.701	7.57	117	0.22	0.00	0.00	0.00	0.000	0.041	41.0	18.84	708.53	0.0	0.00	0.00	28.00	12.87	243.70
	17	0.698	7.54	125	0.21	0.00	0.01	0.01	0.005	0.046	48.5	22.19	730.72	0.0	0.00	0.00	30.00	13.73	257.43
	18	0.686	7.80	108	0.17	0.00	0.03	0.03	0.013	0.059	23.2	10.44	741.16	0.0	0.00	0.00	32.00	14.40	271.83
	19	0.667	7.83	111	0.17	0.00	0.01	0.01	0.004	0.063	32.7	14.30	755.46	0.0	0.00	0.00	22.00	9.62	281.45
	20	0.687	7.48	129	0.18	0.00	0.01	0.01	0.005	0.068	61.0	27.47	782.93	0.0	0.00	0.00	28.00	12.61	294.06
	21	0.664	7.79	127	0.21	0.00	0.01	0.01	0.004	0.072	64.8	28.21	811.13	0.0	0.00	0.00	26.00	11.32	305.37
	22	0.704	7.87	117	0.20	0.00	0.01	0.01	0.005	0.077	45.2	20.86	831.99	0.0	0.00	0.00	26.00	12.00	317.37
	23	0.741	7.75	102	0.20	0.00	0.00	0.00	0.000	0.077	46.5	22.59	854.58	0.0	0.00	0.00	30.00	14.57	331.94
	24	0.620	7.73	117	0.20	0.01	0.00	0.01	0.004	0.081	47.5	19.31	873.89	0.0	0.00	0.00	32.00	13.01	344.95
	25	0.668	7.70	109	0.20	0.00	0.01	0.01	0.004	0.085	46.2	20.23	894.12	0.0	0.00	0.00	36.00	15.76	360.71
	26	0.629	8.06	104	0.17	0.00	0.00	0.00	0.000	0.085	9.8	4.04	898.16	0.0	0.00	0.00	34.00	14.02	374.73
	27	0.668	7.77	146	0.19	0.00	0.02	0.02	0.009	0.094	47.2	20.67	918.83	0.0	0.00	0.00	34.00	14.89	389.62
	28	0.705	7.72	153	0.19	0.00	0.02	0.02	0.009	0.103	30.2	13.96	932.79	0.0	0.00	0.00	26.00	12.02	401.64
	29	0.701	7.68	110	0.21	0.00	0.02	0.02	0.009	0.112	39.7	18.24	951.03	0.0	0.00	0.00	22.00	10.11	411.75
	30	0.700	7.71	117	0.18	0.01	0.01	0.02	0.009	0.121	29.0	13.31	964.34	0.0	0.00	0.00	24.00	11.01	422.76
	31	0.658	7.77	122	0.21	0.00	0.02	0.02	0.009	0.130	43.9	18.94	983.28	0.0	0.00	0.00	28.00	12.08	434.84
	32	0.677	7.96	144	0.21	0.00	0.00	0.00	0.000	0.130	56.6	25.12	1008.40	0.0	0.00	0.00	26.00	11.54	446.38
	33	0.616	8.04	131	0.19	0.00	0.02	0.02	0.008	0.138	40.9	16.52	1024.92	0.0	0.00	0.00	30.00	12.11	458.49
	34	0.602	7.67	116	0.23	0.00	0.01	0.01	0.004	0.142	61.7	24.35	1049.27	0.0	0.00	0.00	30.00	11.84	470.33
	35	0.625	7.69	105	0.21	0.00	0.01	0.01	0.004	0.146	49.2	20.16	1069.43	0.0	0.00	0.00	48.00	19.67	490.00
AR2014-03																			
	0	0.723	7.99	91	1.22	0.01	0.02	0.03	0.014	0.014	528.0	250.92	250.92	0.0	0.00	0.00	112.00	53.22	53.22
	1	0.757	7.73	97	0.23	0.02	0.00	0.02	0.010	0.024	25.0	12.44	263.36	0.0	0.00	0.00	74.00	36.82	90.04
	2	0.774	7.54	196	0.24	0.00	0.02	0.02	0.010	0.034	21.2	10.79	274.15	0.0	0.00	0.00	62.00	31.54	121.58
	3	0.742	7.74	181	0.20	0.00	0.05	0.05	0.024	0.058	18.3	8.93	283.08	0.0	0.00	0.00	74.00	36.09	157.67
	4	0.707	8.06	165	0.19	0.00	0.01	0.01	0.005	0.063	23.9	11.11	294.19	0.0	0.00	0.00	58.00	26.95	184.62
	5	0.741	7.80	174	0.19	0.00	0.00	0.00	0.000	0.063	19.1	9.30	303.49	0.0	0.00	0.00	58.00	28.25	212.87
	6	0.728	7.80	182	0.19	0.00	0.00	0.00	0.000	0.063	21.4	10.24	313.73	0.0	0.00	0.00	44.00	21.05	233.92
	7	0.751	7.88	184	0.20	0.00	0.00	0.00	0.000	0.063	20.5	10.12	323.85	0.0	0.00	0.00	64.00	31.59	265.51
	8	0.733	7.80	169	0.20	0.00	0.00	0.00	0.000	0.063	21.0	10.12	333.97	0.0	0.00	0.00	60.00	28.91	294.42
	9	0.728	7.95	154	0.19	0.00	0.00	0.00	0.000	0.063	19.3	9.24	343.21	0.0	0.00	0.00	58.00	27.75	322.17

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2014-03																			
	10	0.769	7.74	157	0.18	0.00	0.00	0.00	0.000	0.063	15.7	7.94	351.15	0.0	0.00	0.00	56.00	28.31	350.48
	11	0.726	7.75	123	0.18	0.00	0.02	0.02	0.010	0.073	14.5	6.92	358.07	0.0	0.00	0.00	52.00	24.81	375.29
	12	0.749	7.70	139	0.19	0.00	0.01	0.01	0.005	0.078	19.1	9.40	367.47	0.0	0.00	0.00	54.00	26.58	401.87
	13	0.766	7.89	115	0.19	0.00	0.01	0.01	0.005	0.083	12.7	6.39	373.86	0.0	0.00	0.00	54.00	27.19	429.06
	14	0.731	7.66	198	0.19	0.00	0.00	0.00	0.000	0.083	15.6	7.50	381.36	0.0	0.00	0.00	46.00	22.10	451.16
	15	0.760	7.91	126	0.19	0.00	0.00	0.00	0.000	0.083	18.5	9.24	390.60	0.0	0.00	0.00	50.00	24.98	476.14
	16	0.743	7.67	112	0.18	0.00	0.02	0.02	0.010	0.093	8.5	4.15	394.75	0.0	0.00	0.00	42.00	20.51	496.65
	17	0.745	7.69	124	0.18	0.00	0.03	0.03	0.015	0.108	16.5	8.08	402.83	0.0	0.00	0.00	40.00	19.59	516.24
	18	0.725	7.73	120	0.18	0.00	0.00	0.00	0.000	0.108	13.3	6.34	409.17	0.0	0.00	0.00	38.00	18.10	534.34
	19	0.752	7.73	130	0.17	0.00	0.00	0.00	0.000	0.108	11.7	5.78	414.95	0.0	0.00	0.00	42.00	20.76	555.10
	20	0.737	7.54	128	0.17	0.01	0.01	0.02	0.010	0.118	10.9	5.28	420.23	0.0	0.00	0.00	42.00	20.35	575.45
	21	0.725	7.72	130	0.19	0.00	0.01	0.01	0.005	0.123	17.8	8.48	428.71	0.0	0.00	0.00	46.00	21.92	597.38
	22	0.729	7.89	116	0.18	0.00	0.00	0.00	0.000	0.123	13.2	6.32	435.03	0.0	0.00	0.00	48.00	23.00	620.38
	23	0.751	7.99	94	0.19	0.00	0.01	0.01	0.005	0.128	15.1	7.45	442.48	0.0	0.00	0.00	46.00	22.71	643.09
	24	0.748	7.65	119	0.18	0.00	0.00	0.00	0.000	0.128	14.3	7.03	449.51	0.0	0.00	0.00	44.00	21.63	664.72
	25	0.739	7.61	119	0.18	0.00	0.00	0.00	0.000	0.128	12.5	6.07	455.58	0.0	0.00	0.00	42.00	20.40	685.12
	26	0.716	7.68	119	0.19	0.00	0.00	0.00	0.000	0.128	5.0	2.35	457.93	0.0	0.00	0.00	48.00	22.59	707.71
	27	0.740	8.01	142	0.18	0.00	0.02	0.02	0.010	0.138	11.2	5.45	463.38	0.0	0.00	0.00	40.00	19.46	727.17
	28	0.740	7.56	161	0.19	0.00	0.01	0.01	0.005	0.143	9.2	4.47	467.85	0.0	0.00	0.00	48.00	23.35	750.52
	29	0.753	7.72	114	0.19	0.00	0.01	0.01	0.005	0.148	7.6	3.76	471.61	0.0	0.00	0.00	42.00	20.79	771.31
	30	0.720	7.59	126	0.19	0.00	0.01	0.01	0.005	0.153	15.7	7.43	479.04	0.0	0.00	0.00	40.00	18.93	790.24
	31	0.747	7.51	141	0.18	0.00	0.01	0.01	0.005	0.158	10.6	5.20	484.24	0.0	0.00	0.00	40.00	19.64	809.88
	32	0.756	7.72	152	0.18	0.00	0.00	0.00	0.000	0.158	17.5	8.70	492.94	0.0	0.00	0.00	40.00	19.88	829.76
	33	0.722	7.61	150	0.17	0.00	0.00	0.00	0.000	0.158	21.5	10.20	503.14	0.0	0.00	0.00	40.00	18.98	848.74
	34	0.704	7.45	120	0.17	0.00	0.00	0.00	0.000	0.158	17.2	7.96	511.10	0.0	0.00	0.00	42.00	19.43	868.17
	35	0.707	7.51	112	0.18	0.00	0.00	0.00	0.000	0.158	20.4	9.48	520.58	0.0	0.00	0.00	52.00	24.16	892.33
AR2014-05																			
	0	0.702	7.91	120	0.46	0.02	0.02	0.04	0.018	0.018	159.0	73.33	73.33	0.0	0.00	0.00	40.00	18.45	18.45
	1	0.678	7.61	107	0.26	0.00	0.04	0.04	0.018	0.036	81.0	36.08	109.41	0.0	0.00	0.00	36.00	16.04	34.49
	2	0.737	7.42	194	0.26	0.00	0.00	0.00	0.000	0.036	4.0	1.94	111.35	0.0	0.00	0.00	44.00	21.30	55.79
	3	0.713	7.61	189	0.16	0.00	0.01	0.01	0.005	0.041	5.3	2.48	113.83	0.0	0.00	0.00	46.00	21.55	77.34
	4	0.747	8.01	167	0.16	0.00	0.00	0.00	0.000	0.041	6.1	2.99	116.82	0.0	0.00	0.00	44.00	21.59	98.93
	5	0.732	7.72	176	0.16	0.00	0.00	0.00	0.000	0.041	4.1	1.97	118.79	0.0	0.00	0.00	42.00	20.20	119.13
	6	0.671	7.82	180	0.16	0.00	0.00	0.00	0.000	0.041	4.3	1.90	120.69	0.0	0.00	0.00	40.00	17.63	136.76

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
AR2014-05																			
	7	0.709	7.82	185	0.16	0.00	0.00	0.00	0.000	0.041	4.7	2.19	122.88	0.0	0.00	0.00	44.00	20.50	157.26
	8	0.725	7.70	177	0.17	0.00	0.02	0.02	0.010	0.051	4.7	2.24	125.12	0.0	0.00	0.00	42.00	20.01	177.27
	9	0.741	7.84	160	0.16	0.00	0.01	0.01	0.005	0.056	3.8	1.85	126.97	0.0	0.00	0.00	40.00	19.47	196.74
	10	0.713	7.87	162	0.17	0.00	0.00	0.00	0.000	0.056	5.3	2.48	129.45	0.0	0.00	0.00	44.00	20.61	217.35
	11	0.727	7.64	129	0.16	0.00	0.01	0.01	0.005	0.061	5.1	2.44	131.89	0.0	0.00	0.00	36.00	17.19	234.54
	12	0.683	7.69	140	0.16	0.00	0.00	0.00	0.000	0.061	5.7	2.56	134.45	0.0	0.00	0.00	38.00	17.05	251.59
	13	0.727	7.74	118	0.17	0.00	0.03	0.03	0.014	0.075	4.7	2.24	136.69	0.0	0.00	0.00	40.00	19.11	270.70
	14	0.711	7.53	199	0.17	0.00	0.01	0.01	0.005	0.080	6.8	3.18	139.87	0.0	0.00	0.00	42.00	19.62	290.32
	15	0.701	7.71	129	0.17	0.00	0.00	0.00	0.000	0.080	7.5	3.45	143.32	0.0	0.00	0.00	44.00	20.26	310.58
	16	0.720	7.46	117	0.17	0.00	0.01	0.01	0.005	0.085	9.5	4.49	147.81	0.0	0.00	0.00	40.00	18.92	329.50
	17	0.721	7.49	127	0.17	0.00	0.00	0.00	0.000	0.085	6.9	3.27	151.08	0.0	0.00	0.00	40.00	18.95	348.45
	18	0.713	7.54	122	0.17	0.00	0.00	0.00	0.000	0.085	5.6	2.62	153.70	0.0	0.00	0.00	40.00	18.72	367.17
	19	0.686	7.47	125	0.15	0.00	0.00	0.00	0.000	0.085	5.2	2.34	156.04	0.0	0.00	0.00	38.00	17.13	384.30
	20	0.728	7.40	132	0.16	0.00	0.01	0.01	0.005	0.090	5.3	2.53	158.57	0.0	0.00	0.00	36.00	17.22	401.52
	21	0.736	7.75	134	0.17	0.02	0.00	0.02	0.010	0.100	5.8	2.80	161.37	0.0	0.00	0.00	44.00	21.28	422.82
	22	0.709	7.81	118	0.17	0.00	0.01	0.01	0.005	0.105	4.5	2.10	163.47	0.0	0.00	0.00	36.00	16.77	439.59
	23	0.733	8.20	85	0.16	0.00	0.02	0.02	0.010	0.115	4.3	2.07	165.54	0.0	0.00	0.00	36.00	17.34	456.93
	24	0.632	7.71	124	0.16	0.00	0.00	0.00	0.000	0.115	8.6	3.57	169.11	0.0	0.00	0.00	34.00	14.12	471.05
	25	0.654	7.60	137	0.17	0.00	0.03	0.03	0.013	0.128	8.0	3.44	172.55	0.0	0.00	0.00	36.00	15.47	486.52
	26	0.635	7.57	136	0.17	0.00	0.00	0.00	0.000	0.128	3.6	1.50	174.05	0.0	0.00	0.00	36.00	15.02	501.54
	27	0.690	7.71	150	0.17	0.00	0.00	0.00	0.000	0.128	5.6	2.54	176.59	0.0	0.00	0.00	40.00	18.13	519.67
	28	0.730	7.42	163	0.18	0.00	0.02	0.02	0.010	0.138	4.8	2.30	178.89	0.0	0.00	0.00	42.00	20.14	539.81
	29	0.701	7.63	107	0.17	0.00	0.02	0.02	0.009	0.147	2.7	1.24	180.13	0.0	0.00	0.00	32.00	14.74	554.55
	30	0.723	7.48	123	0.17	0.00	0.00	0.00	0.000	0.147	8.2	3.90	184.03	0.0	0.00	0.00	36.00	17.10	571.65
	31	0.672	7.59	137	0.17	0.00	0.01	0.01	0.004	0.151	6.0	2.65	186.68	0.0	0.00	0.00	38.00	16.78	588.43
	32	0.681	7.82	147	0.17	0.00	0.00	0.00	0.000	0.151	6.7	3.00	189.68	0.0	0.00	0.00	36.00	16.11	604.54
	33	0.639	7.67	144	0.17	0.00	0.00	0.00	0.000	0.151	8.9	3.74	193.42	0.0	0.00	0.00	34.00	14.27	618.81
	34	0.622	7.50	117	0.17	0.00	0.01	0.01	0.004	0.155	9.0	3.68	197.10	0.0	0.00	0.00	38.00	15.53	634.34
	35	0.616	7.62	108	0.17	0.00	0.01	0.01	0.004	0.159	7.8	3.16	200.26	0.0	0.00	0.00	34.00	13.76	648.10
Tailings-022807																			
	0	0.789	8.15	213	0.23	0.01	0.01	0.02	0.010	0.010	59.4	29.38	29.38	0.0	0.00	0.00	56.00	27.70	27.70
	1	0.631	7.73	229	0.30	0.00	0.08	0.08	0.032	0.042	84.1	33.27	62.65	0.0	0.00	0.00	34.00	13.45	41.15
	2	0.642	7.77	87	0.26	0.00	0.04	0.04	0.016	0.058	50.4	20.29	82.94	0.0	0.00	0.00	40.00	16.10	57.25
	3	0.642	7.71	212	0.19	0.02	0.04	0.06	0.024	0.082	26.8	10.79	93.73	0.0	0.00	0.00	38.00	15.30	72.55

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
Tailings-022807																			
	4	0.645	7.55	222	0.18	0.00	0.04	0.04	0.016	0.098	15.3	6.19	99.92	0.0	0.00	0.00	44.00	17.79	90.34
	5	0.700	7.62	103	0.17	0.00	0.03	0.03	0.013	0.111	6.8	2.98	102.90	0.0	0.00	0.00	52.00	22.82	113.16
	6	0.741	7.52	118	0.17	0.00	0.03	0.03	0.014	0.125	8.5	3.95	106.85	0.0	0.00	0.00	36.00	16.72	129.88
	7	0.734	8.06	58	0.16	0.00	0.02	0.02	0.009	0.134	5.0	2.30	109.15	0.0	0.00	0.00	28.00	12.89	142.77
	8	0.733	8.02	85	0.16	0.00	0.03	0.03	0.014	0.148	6.2	2.85	112.00	0.0	0.00	0.00	32.00	14.71	157.48
	9	0.730	7.96	178	0.16	0.00	0.04	0.04	0.018	0.166	5.3	2.43	114.43	0.0	0.00	0.00	32.00	14.65	172.13
	10	0.667	7.65	81	0.17	0.00	0.01	0.01	0.004	0.170	5.9	2.47	116.90	0.0	0.00	0.00	34.00	14.22	186.35
	11	0.727	7.78	55	0.16	0.00	0.15	0.15	0.068	0.238	6.1	2.78	119.68	0.0	0.00	0.00	32.00	14.59	200.94
	12	0.740	8.15	85	0.18	0.00	0.06	0.06	0.028	0.266	7.0	3.25	122.93	0.0	0.00	0.00	34.00	15.77	216.71
	13	0.713	8.51	55	0.17	0.00	0.01	0.01	0.004	0.270	4.1	1.83	124.76	0.0	0.00	0.00	32.00	14.30	231.01
	14	0.772	8.22	124	0.17	0.00	0.07	0.07	0.034	0.304	7.0	3.39	128.15	0.0	0.00	0.00	36.00	17.42	248.43
	15	0.752	8.33	55	0.17	0.01	0.00	0.01	0.005	0.309	8.3	3.91	132.06	0.0	0.00	0.00	38.00	17.92	266.35
	16	0.681	8.10	31	0.18	0.00	0.01	0.01	0.004	0.313	6.7	2.86	134.92	0.0	0.00	0.00	40.00	17.08	283.43
	17	0.794	8.45	66	0.17	0.00	0.04	0.04	0.020	0.333	7.1	3.53	138.45	0.0	0.00	0.00	42.00	20.91	304.34
	18	0.722	7.95	157	0.17	0.00	0.01	0.01	0.005	0.338	7.8	3.53	141.98	0.0	0.00	0.00	40.00	18.11	322.45
	19	0.734	7.76	106	0.17	0.00	0.00	0.00	0.000	0.338	8.2	3.77	145.75	0.0	0.00	0.00	38.00	17.49	339.94
	20	0.696	7.79	126	0.17	0.00	0.03	0.03	0.013	0.351	8.4	3.76	149.42	0.0	0.00	0.00	42.00	18.33	358.27
Year 0-3 Tailings																			
	0	0.775	8.33	186	2.28	0.04	0.11	0.15	0.082	0.082	758.0	415.63	415.63	0.0	0.00	0.00	96.00	52.64	52.64
	1	0.779	8.57	183	0.88	0.06	0.03	0.09	0.050	0.132	22.5	12.40	428.03	0.0	0.00	0.00	110.00	60.63	113.27
	2	0.721	8.69	162	0.22	0.00	0.01	0.01	0.005	0.137	42.0	21.42	449.45	0.0	0.00	0.00	100.00	51.01	164.28
	3	0.708	8.69	160	0.21	0.00	0.03	0.03	0.015	0.152	25.5	12.77	462.22	0.0	0.00	0.00	94.00	47.09	211.37
	4	0.744	8.75	169	0.20	0.00	0.03	0.03	0.016	0.168	16.2	8.53	470.75	0.0	0.00	0.00	50.00	26.32	237.69
	5	0.786	8.79	172	0.18	0.00	0.40	0.40	0.222	0.390	6.3	3.50	474.25	0.0	0.00	0.00	58.00	32.25	269.94
	6	0.675	8.73	175	0.17	0.00	0.04	0.04	0.019	0.409	6.3	3.01	477.26	0.0	0.00	0.00	40.00	19.10	289.04
	7	0.660	8.52	204	0.18	0.00	0.03	0.03	0.014	0.423	6.3	2.94	480.20	0.0	0.00	0.00	48.00	22.41	311.45
	8	0.659	8.40	212	0.18	0.18	0.50	0.68	0.317	0.740	6.6	3.08	483.28	0.0	0.00	0.00	52.00	24.25	335.70
	9	0.680	8.48	212	0.19	0.00	0.04	0.04	0.019	0.759	8.1	3.90	487.18	0.0	0.00	0.00	112.00	53.88	389.58
	10	0.745	8.48	210	0.18	0.00	0.03	0.03	0.016	0.775	11.1	5.85	493.03	0.0	0.00	0.00	80.00	42.17	431.75
	11	0.741	8.50	210	0.18	0.00	0.05	0.05	0.026	0.801	9.1	4.77	497.80	0.0	0.00	0.00	58.00	30.41	462.16
	12	0.753	8.46	240	0.18	0.00	0.03	0.03	0.016	0.817	6.7	3.57	501.37	0.0	0.00	0.00	60.00	31.97	494.13
	13	0.686	8.55	229	0.17	0.00	0.00	0.00	0.000	0.817	3.5	1.70	503.07	0.0	0.00	0.00	50.00	24.27	518.40
	14	0.741	8.60	210	0.17	0.00	0.03	0.03	0.016	0.833	3.7	1.94	505.01	0.0	0.00	0.00	48.00	25.16	543.56
	15	0.739	8.61	215	0.17	0.01	0.03	0.04	0.021	0.854	5.1	2.67	507.68	0.0	0.00	0.00	52.00	27.19	570.75

Sample ID	Week	Volume (L)	Effluent pH	Redox (mV)	Conductivity (mS/cm)	Fe 2+ (mg/l)	Fe3+ (mg/l)	Total Fe (mg/l)	Total Fe (mg/kg)	Cumulative Total Fe (mg/kg)	Sulfate (mg/l)	Sulfate (mg/kg)	Cumulate Sulfate (mg/kg)	Acidity (mg/l)	Acidity (mg/kg)	Cumulative Acidity (mg/kg)	Alkalinity (mg/l)	Alkalinity (mg/kg)	Cumulative Alkalinity (mg/kg)
Year 0-3 Tailings																			
	16	0.770	8.74	220	0.16	0.00	0.00	0.00	0.000	0.854	3.4	1.85	509.53	0.0	0.00	0.00	38.00	20.70	591.45
	17	0.686	8.63	210	0.16	0.00	0.00	0.00	0.000	0.854	2.6	1.26	510.79	0.0	0.00	0.00	38.00	18.44	609.89
	18	0.610	8.79	197	0.16	0.00	0.03	0.03	0.013	0.867	3.9	1.68	512.47	0.0	0.00	0.00	28.00	12.08	621.97
	19	0.722	8.81	190	0.17	0.00	0.01	0.01	0.005	0.872	4.5	2.30	514.77	0.0	0.00	0.00	48.00	24.52	646.49
	20	0.734	8.76	181	0.16	0.00	0.01	0.01	0.005	0.877	5.0	2.60	517.37	0.0	0.00	0.00	50.00	25.97	672.46

TABLE A.8:
SUMMARY OF METALS ANALYSIS FOR HUMIDITY CELLS

Table A.8: Summary of Metals Analysis for Humidity Cells

Sample ID	Week	TDS	Ca	Cl	Fl	K	Mg	Na	SO4	Ag	Al	As	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Ni	Pb	Sb	Se	Tl	Zn
A780-02																										
	0	315	72.1	10.00	1.8	41.6	17	9.67	373	< 0.0050	2.550	< 0.0030	0.0329	0.0035	0.0512	<0.0060	10.500	0.91	<0.00020	18.000	0.531	< 0.0075	< 0.0030	<0.04	< 0.0010	5.3100
	5																									
	10																									
	15																									
	20	38	1.55	0.37	0.96	2.29	0.152	0.5	22.2	< 0.0050	0.945	< 0.0030	0.0290	0.0022	< 0.0020	<0.0060	1.370	0.99	<0.00020	0.325	0.020	< 0.0075	< 0.0030	<0.04	< 0.0010	0.1840
	25	10	1.3	0.36	0.5	1.6	0.087	0.5	18.6	< 0.0050	0.858	< 0.0030	0.0186	< 0.0020	< 0.0020	<0.0060	0.831	2.01	<0.00020	0.213	0.015	< 0.0075	< 0.0030	<0.04	< 0.0010	0.0768
A780-03 Comp																										
	0	150	14.9	32.60	0.57	12.6	2.73	5.08	42.9	< 0.0050	0.124	0.0041	0.0454	< 0.0020	0.0184	<0.0060	3.220	1.17	<0.00020	0.591	0.039	< 0.0075	< 0.0030	<0.04	< 0.0010	1.1200
	5																									
	10																									
	15																									
	20	24	1.11	0.31	0.1	0.5	0.2	0.5	9.75	< 0.0050	< 0.080	< 0.0030	0.0979	< 0.0020	< 0.0020	<0.0060	0.258	<0.06	<0.00020	0.322	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0010	0.1180
	25	10	0.81	< 0.20	0.1	0.5	0.113	0.5	5.48	< 0.0050	< 0.080	< 0.0030	0.0287	< 0.0020	< 0.0020	<0.0060	0.283	<0.06	<0.00020	0.224	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0010	0.0723
AR2000-02																										
	0	375	72.2	6.24	1.01	6.22	5.52	15.7	191	< 0.0050	< 0.080	0.0070	0.0066	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.017	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0020	< 0.0100
	5	98	16.3	0.33	0.74	2.3	1.71	8.81	49.3	< 0.0050	< 0.080	< 0.0100	<0.0020	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.006	< 0.010	< 0.0075	< 0.0060	<0.04	< 0.0020	< 0.0020
	10	98	14.7	< 0.20	1.21	2.62	1.81	8.9	34.8	< 0.0050	< 0.080	< 0.0100	0.0024	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	< 0.0060	<0.04	< 0.0020	< 0.0020
	15	72	11.7	< 0.20	1.29	2.3	1.7	7.61	23.2	< 0.0050	< 0.080	< 0.0030	0.0155	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0040	<0.04	< 0.0020	< 0.0100
	20	81	13.9	< 0.20	1.09	2.15	1.99	6.85	27.8	< 0.0050	< 0.080	0.0045	0.0221	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	0.0040	<0.04	< 0.0020	< 0.0100
	25	69	9.35	1.16	1.61	1.69	1.28	6.34	20.5	< 0.0050	< 0.080	0.0059	0.0051	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0034	<0.04	< 0.0020	< 0.0100
	30	92	12.9	0.64	1.33	1.99	1.67	7.7	21.4	< 0.0050	< 0.080	0.0040	0.0068	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0035	<0.04	< 0.0010	< 0.0100
	35		9.75	< 0.20	1.29	1.87	1.48	7.03	19.4	< 0.0050	< 0.080	0.0040	<0.0020	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0020	<0.04	< 0.0008	< 0.0040
AR2003-03																										
	0	293	52.3	1.68	0.5	10.6	6.7	7.02	149	< 0.0050	< 0.080	0.0060	0.0124	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.294	< 0.010	< 0.0075	< 0.0030	0.08	< 0.0020	< 0.0100
	5	153	26.3	0.76	0.40	6.13	4.1	7.87	94.6	< 0.0050	< 0.080	< 0.0100	0.0046	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.058	< 0.010	< 0.0075	0.0116	<0.04	< 0.0020	< 0.0020
	10	81	8.73	< 0.20	0.85	7.48	1.78	8.82	16.1	< 0.0050	< 0.080	< 0.0100	0.0036	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.013	< 0.010	< 0.0075	0.0263	<0.04	< 0.0020	< 0.0020
	15	56	7.91	< 0.20	0.62	6.64	1.93	6.63	13.9	< 0.0050	< 0.080	0.0091	0.0129	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	0.0211	<0.04	< 0.0020	< 0.0100
	20	75	10.8	< 0.20	0.54	6.3	2.29	6.34	21.2	< 0.0050	< 0.080	0.0096	0.0252	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.006	< 0.010	< 0.0075	0.0144	<0.04	< 0.0020	< 0.0100
	25	65	7.79	1.86	0.71	3.81	1.56	5.03	24.1	< 0.0050	< 0.080	0.0086	0.0049	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	0.0099	<0.04	< 0.0020	< 0.0100

Sample ID	Week	TDS	Ca	Cl	Fl	K	Mg	Na	SO4	Ag	Al	As	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Ni	Pb	Sb	Se	Tl	Zn
AR2003-03																										
	30	73	10.7	0.70	0.58	4.12	1.89	6.87	20.3	< 0.0050	< 0.080	0.0088	0.0040	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	0.0108	<0.04	< 0.0010	< 0.0100
	35		7.85	< 0.20	0.47	3.34	1.54	6.11	16.3	< 0.0050	< 0.080	0.0092	0.0029	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0083	<0.04	< 0.0008	< 0.0040
AR2005-02																										
	0	1470	244	8.77	0.99	31	45.4	43.1	695	< 0.0050	< 0.080	0.0190	0.0204	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.101	< 0.010	< 0.0075	0.0093	0.42	< 0.0020	< 0.0100
	5	71	9.36	0.23	0.53	8.3	2.47	8.72	29.1	< 0.0050	< 0.080	< 0.0100	0.0030	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	0.0250	0.06	< 0.0020	< 0.0020
	10	104	13.7	< 0.20	0.46	8.38	3.13	7.21	36.4	< 0.0050	< 0.080	< 0.0100	0.0042	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.008	< 0.010	< 0.0075	0.0260	0.04	< 0.0020	< 0.0020
	15	77	12.6	< 0.20	0.47	5.94	2.86	6.74	32.3	< 0.0050	< 0.080	0.0036	0.0126	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.006	< 0.010	< 0.0075	0.0188	<0.04	< 0.0020	< 0.0100
	20	85	13	< 0.20	0.43	4.34	2.53	6.33	29.5	< 0.0050	< 0.080	0.0038	0.0200	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.004	< 0.010	< 0.0075	0.0136	<0.04	< 0.0020	< 0.0100
	25	85	13.2	1.79	0.73	3.64	2.35	6.49	35.7	< 0.0050	< 0.080	0.0040	0.0049	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0108	<0.04	< 0.0020	< 0.0100
	30	85	15.2	0.78	0.56	3.23	2.29	7.2	32.7	< 0.0050	< 0.080	< 0.0030	0.0032	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0096	<0.04	< 0.0010	< 0.0100
	35		13.5	< 0.20	0.44	2.51	1.92	6.11	34.1	< 0.0050	< 0.080	0.0066	0.0024	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0072	<0.04	< 0.0008	< 0.0040
AR2009-03																										
	0	824	136	6.69	3.34	26.3	25.3	50.4	438	< 0.0050	< 0.080	0.0090	0.0357	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.025	< 0.010	< 0.0075	0.0087	<0.04	< 0.0020	< 0.0100
	5	139	16.9	0.27	1.19	11	4.78	14.7	69.5	< 0.0050	< 0.080	0.0119	0.0052	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	0.0239	<0.04	< 0.0020	< 0.0020
	10	138	18.9	< 0.20	0.66	8.91	4.75	7.6	56.8	< 0.0050	< 0.080	< 0.0100	0.0072	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	0.0228	<0.04	< 0.0020	< 0.0020
	15	99	17.7	< 0.20	0.68	7.07	4.89	6.34	47.5	< 0.0050	< 0.080	0.0074	0.0255	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	0.0208	<0.04	< 0.0020	< 0.0100
	20	113	17.5	< 0.20	0.62	5.87	4.54	5.86	41.8	< 0.0050	< 0.080	0.0077	0.0201	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0179	<0.04	< 0.0020	< 0.0100
	25	91	15.2	1.84	0.75	5.02	3.91	5.25	39.2	< 0.0050	< 0.080	0.0071	0.0102	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.004	< 0.010	< 0.0075	0.0116	<0.04	< 0.0020	< 0.0100
	30	112	17.7	0.75	0.62	5.12	4.25	6.52	37.7	< 0.0050	< 0.080	0.0058	0.0073	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0115	<0.04	< 0.0010	< 0.0100
	35		15.1	< 0.20	0.54	4.01	3.42	5.84	35.8	< 0.0050	< 0.080	0.0092	0.0058	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.004	< 0.010	< 0.0075	0.0090	<0.04	< 0.0008	< 0.0040
AR2009-04																										
	0	590	83.7	5.46	2.68	17.1	16.1	27.8	257	< 0.0050	< 0.080	0.0080	0.0101	< 0.0020	< 0.0020	<0.0060	0.011	<0.06	<0.00020	0.008	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0020	< 0.0100
	5	71	7.87	< 0.20	1.17	8.48	2.36	9.27	24.6	< 0.0050	< 0.080	< 0.0100	<0.0020	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	< 0.0060	<0.04	< 0.0020	< 0.0020
	10	97	11.3	< 0.20	0.69	10.8	3.12	5.75	23.8	< 0.0050	< 0.080	< 0.0100	0.0035	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0067	<0.04	< 0.0020	< 0.0020
	15	69	10.3	< 0.20	0.51	8.84	3.05	5.13	25.5	< 0.0050	< 0.080	< 0.0030	0.0141	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0061	<0.04	< 0.0020	< 0.0100
	20	90	11.6	< 0.20	0.42	8.21	3.18	4.76	28.9	< 0.0050	< 0.080	0.0048	0.0085	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0067	<0.04	< 0.0020	< 0.0100
	25	80	10.6	2.03	0.63	7.09	2.77	4.94	29.3	< 0.0050	< 0.080	0.0041	0.0063	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0057	<0.04	< 0.0020	< 0.0100
	30	76	10.3	0.75	0.51	6.56	2.55	5.78	21.7	< 0.0050	< 0.080	0.0037	0.0033	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0041	<0.04	< 0.0010	< 0.0100
	35		7.88	< 0.20	0.44	5.38	1.98	5.01	19.4	< 0.0050	< 0.080	0.0088	0.0025	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0030	<0.04	< 0.0008	< 0.0040
AR2010-02																										

Sample ID	Week	TDS	Ca	Cl	Fl	K	Mg	Na	SO4	Ag	Al	As	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Ni	Pb	Sb	Se	Tl	Zn
AR2010-02																										
	0	577	89.1	2.76	1.3	19.9	15.2	24.4	124	< 0.0050	< 0.080	0.0090	0.0132	< 0.0020	< 0.0020	<0.0060	0.021	<0.06	<0.00020	0.022	< 0.010	< 0.0075	0.0061	0.08	< 0.0020	< 0.0100
	5	56	7.54	< 0.20	0.95	9.7	2.3	8.61	19.5	< 0.0050	< 0.080	< 0.0100	0.0021	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0199	<0.04	< 0.0020	< 0.0020
	10	89	9.88	< 0.20	0.53	9.2	2.47	6.55	19.6	< 0.0050	< 0.080	< 0.0100	0.0028	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0218	<0.04	< 0.0020	< 0.0020
	15	70	9.31	< 0.20	0.52	7.55	2.63	6.3	19.3	< 0.0050	< 0.080	0.0096	0.0336	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0172	<0.04	< 0.0020	0.0105
	20	74	9.25	< 0.20	0.43	6.18	2.4	5.9	16.3	< 0.0050	< 0.080	0.0081	0.0173	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0144	<0.04	< 0.0020	< 0.0100
	25	64	7.92	1.71	0.66	5.01	1.9	5.95	17.2	< 0.0050	< 0.080	0.0081	0.0089	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0112	<0.04	< 0.0020	< 0.0100
	30	69	8.76	0.71	0.6	4.87	1.93	7.35	16.3	< 0.0050	< 0.080	0.0075	0.0023	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0100	<0.04	< 0.0010	< 0.0100
	35		7.67	< 0.20	0.47	3.78	1.6	6.02	15.1	< 0.0050	< 0.080	0.0107	0.0023	< 0.0002	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0091	<0.04	< 0.0008	< 0.0040
AR2010-03																										
	0	223	31.7	3.71	2.08	7.51	4.55	14.9	88.6	< 0.0050	< 0.080	0.0070	0.0051	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.034	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0020	0.7570
	5	95	15.4	0.43	0.68	3.56	3.05	9.21	59.5	< 0.0050	< 0.080	< 0.0100	0.0033	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.015	< 0.010	< 0.0075	< 0.0060	<0.04	< 0.0020	< 0.0020
	10	78	11.4	< 0.20	0.55	2.98	2.33	7.25	36.2	< 0.0050	< 0.080	< 0.0100	0.0033	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.010	< 0.010	< 0.0075	< 0.0060	<0.04	< 0.0020	< 0.0020
	15	69	11	< 0.20	0.72	2.92	2.52	6.9	28.9	< 0.0050	< 0.080	0.0051	0.0274	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0020	< 0.0100
	20	65	9.37	< 0.20	0.60	2.87	2.2	5.95	17.6	< 0.0050	< 0.080	0.0060	0.0235	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.004	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0020	< 0.0100
	25	68	9.84	1.85	0.87	2.83	2.41	5.74	23.1	< 0.0050	< 0.080	0.0075	0.0098	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0020	< 0.0100
	30	76	11.1	0.75	0.73	3.15	2.79	6.8	20.5	< 0.0050	< 0.080	0.0080	0.0039	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0010	< 0.0100
	35		7.98	< 0.20	0.52	2.21	1.99	5.21	16.2	< 0.0050	< 0.080	0.0089	0.0043	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	< 0.0008	<0.04	< 0.0008	< 0.0040
AR2011-03																										
	0	777	95	3.93	2.38	41	30.7	26.6	347	< 0.0050	< 0.080	0.0070	0.0241	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.024	< 0.010	< 0.0075	0.0079	0.05	< 0.0020	< 0.0100
	5	141	15.1	0.23	0.81	16.1	6.37	8.26	74.3	< 0.0050	< 0.080	< 0.0100	0.0057	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.008	< 0.010	< 0.0075	0.0279	<0.04	< 0.0020	< 0.0020
	10	124	14.7	< 0.20	0.49	11.8	5.29	5.37	54.9	< 0.0050	< 0.080	< 0.0100	0.0072	< 0.0020	< 0.0020	<0.0060	< 0.010	0.12	<0.00020	0.012	< 0.010	< 0.0075	0.0207	<0.04	< 0.0020	0.0034
	15	99	13.4	< 0.20	0.45	8.58	4.69	4.84	40.8	< 0.0050	< 0.080	0.0035	0.0160	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.011	< 0.010	< 0.0075	0.0169	<0.04	< 0.0020	< 0.0100
	20	92	12.6	< 0.20	0.38	6.32	3.73	4.18	33.9	< 0.0050	< 0.080	0.0055	0.0197	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.011	< 0.010	< 0.0075	0.0128	<0.04	< 0.0020	< 0.0100
	25	83	12.5	1.70	0.61	5.88	3.46	4.24	35.5	< 0.0050	< 0.080	0.0047	0.0077	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.009	< 0.010	< 0.0075	0.0112	<0.04	< 0.0020	< 0.0100
	30	90	13.2	0.71	0.48	5.93	3.59	5.41	30.6	< 0.0050	< 0.080	0.0045	0.0049	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	0.0097	<0.04	< 0.0010	0.0365
	35		10.4	< 0.20	0.34	4.4	2.6	4.19	27.3	< 0.0050	< 0.080	0.0062	0.0034	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	0.0058	<0.04	< 0.0008	< 0.0040
AR2013-01																										
	0	3560	432	14.80	2.85	187	193	60.4	1530	< 0.0050	< 0.080	0.0090	0.0398	< 0.0020	< 0.0020	<0.0060	0.014	<0.06	<0.00020	0.411	< 0.010	< 0.0075	0.0119	<0.04	< 0.0020	< 0.0100
	5	177	21.5	0.40	1.41	24.6	6.13	7.35	81.4	< 0.0050	< 0.080	< 0.0100	0.0072	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.012	< 0.010	< 0.0075	0.0183	<0.04	0.0029	0.0025
	10	156	22.6	< 0.20	0.65	15.2	4.93	4.62	72.7	< 0.0050	< 0.080	< 0.0100	0.0075	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.019	< 0.010	< 0.0075	0.0144	<0.04	< 0.0020	0.0021
	15	100	17.7	< 0.20	0.49	9.24	3.45	3.42	47.6	< 0.0050	< 0.080	0.0044	0.0238	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.018	< 0.010	< 0.0075	0.0100	<0.04	< 0.0020	0.0107

Sample ID	Week	TDS	Ca	Cl	Fl	K	Mg	Na	SO4	Ag	Al	As	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Ni	Pb	Sb	Se	Tl	Zn
AR2013-01																										
	20	125	19.9	< 0.20	0.57	9.67	3.53	4.11	52.3	< 0.0050	< 0.080	0.0039	0.0308	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.015	< 0.010	< 0.0075	0.0147	<0.04	< 0.0020	< 0.0100
	25	109	17.1	1.82	1.03	9.88	3.04	4.15	42.2	< 0.0050	< 0.080	0.0051	0.0127	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.014	< 0.010	< 0.0075	0.0140	<0.04	< 0.0020	< 0.0100
	30	115	21.2	0.73	0.76	10.3	3.4	4.63	41.6	< 0.0050	< 0.080	0.0050	0.0067	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.032	< 0.010	< 0.0075	0.0119	<0.04	0.0011	< 0.0100
	35		17.8	< 0.20	0.75	9.36	2.97	4.5	41.8	< 0.0050	< 0.080	0.0078	0.0057	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.015	< 0.010	< 0.0075	0.0105	<0.04	< 0.0008	< 0.0040
AR2013-02																										
	0	1090	112	7.12	1.73	99.2	30.8	75.4	524	< 0.0050	< 0.080	0.0230	0.1360	< 0.0020	< 0.0020	<0.0060	0.020	<0.06	<0.00020	0.071	< 0.010	< 0.0075	0.0032	0.49	< 0.0020	< 0.0100
	5	238	14.7	0.45	0.98	51.3	5.58	17.9	110	< 0.0050	< 0.080	0.0223	0.0180	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0198	0.07	< 0.0020	< 0.0020
	10	157	9.71	< 0.20	0.67	36.3	3.91	9.73	59.8	< 0.0050	< 0.080	0.0213	0.0164	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	0.0188	0.06	< 0.0020	< 0.0020
	15	120	10.4	< 0.20	0.53	25.2	3.52	7.7	50.9	< 0.0050	< 0.080	0.0092	0.0453	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.004	< 0.010	< 0.0075	0.0125	<0.04	< 0.0020	0.0141
	20	133	11.5	< 0.20	0.55	24.8	3.7	7.75	54	< 0.0050	< 0.080	0.0162	0.0233	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0141	<0.04	< 0.0020	< 0.0100
	25	145	13.1	1.66	0.96	29.2	4.09	7.78	53.2	< 0.0050	< 0.080	0.0196	0.0244	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.004	< 0.010	< 0.0075	0.0169	<0.04	< 0.0020	< 0.0100
	30	157	14.5	0.76	0.76	32.2	4.65	8.83	53.3	< 0.0050	< 0.080	0.0194	0.0181	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0139	<0.04	< 0.0010	< 0.0100
	35		12.1	< 0.20	0.64	25.8	3.67	7.57	47.7	< 0.0050	< 0.080	0.0211	0.0178	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0121	<0.04	< 0.0008	< 0.0040
AR2013-03																										
	0	742	111	5.49	3.35	29.7	28.8	28.1	394	< 0.0050	< 0.080	0.0470	0.0241	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.028	< 0.010	< 0.0075	0.0091	1.03	< 0.0020	< 0.0100
	5	106	11.7	0.22	1.04	12.3	4.41	8.64	44.4	< 0.0050	< 0.080	0.0244	0.0044	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.008	< 0.010	< 0.0075	0.0234	0.24	< 0.0020	< 0.0020
	10	105	10.8	< 0.20	0.54	10.5	4.01	6.22	33.8	< 0.0050	< 0.080	0.0207	0.0042	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.010	< 0.010	< 0.0075	0.0217	0.28	< 0.0020	< 0.0020
	15	97	12.5	< 0.20	0.53	7.71	4.14	5.88	33.7	< 0.0050	< 0.080	0.0175	0.0323	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.009	< 0.010	< 0.0075	0.0187	0.27	< 0.0020	< 0.0100
	20	88	13.8	< 0.20	0.04	5.11	3.39	4.84	33.6	< 0.0050	< 0.080	0.0177	0.0187	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.013	< 0.010	< 0.0075	0.0145	0.19	< 0.0020	< 0.0100
	25	85	11.7	1.76	0.73	5.07	3.1	5.93	32.9	< 0.0050	< 0.080	0.0175	0.0072	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.008	< 0.010	< 0.0075	0.0141	0.21	< 0.0020	< 0.0100
	30	87	11.7	0.70	0.59	4.67	2.95	6.68	26.4	< 0.0050	< 0.080	0.0148	0.0041	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.008	< 0.010	< 0.0075	0.0116	0.13	< 0.0010	< 0.0100
	35		9.55	< 0.20	0.48	3.8	2.33	5.89	23.5	< 0.0050	< 0.080	0.0129	0.0330	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007	< 0.010	< 0.0075	0.0087	0.12	< 0.0008	< 0.0040
AR2014-02																										
	0	584	70.6	7.87	2.35	26.6	27.7	26.8	274	< 0.0050	< 0.080	0.0060	0.0292	< 0.0020	< 0.0020	<0.0060	0.011	<0.06	<0.00020	0.033	< 0.010	< 0.0075	0.0075	<0.04	< 0.0020	< 0.0100
	5	140	19.3	0.36	0.74	7.44	6.98	7.49	86.3	< 0.0050	< 0.080	< 0.0100	0.0076	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.026	< 0.010	< 0.0075	0.0091	<0.04	< 0.0020	< 0.0020
	10	168	22.7	< 0.20	0.84	7.9	8.14	7.6	97	< 0.0050	< 0.080	< 0.0100	0.0106	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.028	< 0.010	< 0.0075	0.0098	<0.04	< 0.0020	< 0.0020
	15	138	22.3	< 0.20	0.8	5.56	7.53	5.43	78.8	< 0.0050	< 0.080	< 0.0030	0.0474	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.024	< 0.010	< 0.0075	0.0120	<0.04	< 0.0020	0.0166
	20	99	17.1	< 0.20	0.53	3.63	5.68	4.41	55.5	< 0.0050	< 0.080	< 0.0030	0.0274	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.023	< 0.010	< 0.0075	0.0090	<0.04	< 0.0020	< 0.0100
	25	108	17.9	1.86	0.78	3.31	5.64	4.46	58.4	< 0.0050	< 0.080	< 0.0030	0.0128	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.020	< 0.010	< 0.0075	0.0094	<0.04	< 0.0020	< 0.0100
	30	110	18	0.72	0.57	2.82	5.08	4.46	49.9	< 0.0050	< 0.080	0.0034	0.0071	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.031	< 0.010	< 0.0075	0.0079	<0.04	< 0.0010	< 0.0100
	35		17.9	< 0.20	0.55	2.76	5.18	5.14	58.7	< 0.0050	< 0.080	0.0068	0.0063	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.018	< 0.010	< 0.0075	0.0075	<0.04	< 0.0008	< 0.0040

Sample ID	Week	TDS	Ca	Cl	Fl	K	Mg	Na	SO4	Ag	Al	As	Ba	Be	Cd	Cr	Cu	Fe	Hg	Mn	Ni	Pb	Sb	Se	Tl	Zn
AR2014-03																										
	0	1070	122	6.57	2.55	55.5	42.3	67	476	< 0.0050	< 0.080	0.0220	0.0341	< 0.0020	< 0.0020	<0.0060	0.025	<0.06	<0.00020	0.021	< 0.010	< 0.0075	0.0113	0.49	< 0.0020	< 0.0100
	5	94	6.54	< 0.20	0.76	15.4	3.76	9.68	32.6	< 0.0050	< 0.080	< 0.0100	0.0066	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0298	0.05	< 0.0020	< 0.0020
	10	107	9.57	< 0.20	0.59	13.3	4.43	6.78	29.7	< 0.0050	< 0.080	< 0.0100	0.0096	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.006	< 0.010	< 0.0075	0.0306	0.04	< 0.0020	< 0.0020
	15	92	10.5	< 0.20	0.50	9.14	4.14	5.83	27.5	< 0.0050	< 0.080	< 0.0030	0.0415	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	0.0121	<0.04	< 0.0020	0.0161
	20	80	10	< 0.20	0.41	6.62	3.38	5.55	25.1	< 0.0050	< 0.080	0.0046	0.0226	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0138	<0.04	< 0.0020	< 0.0100
	25	78	8.05	1.82	0.74	3.19	1.06	5.32	27.9	< 0.0050	< 0.080	< 0.0030	0.0061	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0020	< 0.0100
	30	96	12	0.74	0.64	6.59	3.41	6.31	26.5	< 0.0050	< 0.080	0.0055	0.0106	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.004	< 0.010	< 0.0075	0.0134	<0.04	< 0.0010	< 0.0100
	35		9.76	< 0.20	0.52	5.52	2.88	6.01	25.4	< 0.0050	< 0.080	0.0085	0.0085	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	0.0094	<0.04	< 0.0008	< 0.0040
AR2014-05																										
	0	394	63.4	2.54	1.51	9.41	2.45	27.1	200	< 0.0050	< 0.080	0.0070	0.0068	< 0.0020	< 0.0020	<0.0060	0.018	<0.06	<0.00020	0.011	< 0.010	< 0.0075	< 0.0030	0.04	< 0.0020	< 0.0100
	5	77	10.5	< 0.20	1.06	4.48	0.78	12.2	27	< 0.0050	< 0.080	< 0.0100	0.0027	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	< 0.0060	<0.04	< 0.0020	< 0.0020
	10	66	7.73	< 0.20	0.92	4.44	0.8	7.95	9.47	< 0.0050	< 0.080	< 0.0100	0.0026	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	< 0.0060	<0.04	< 0.0020	< 0.0020
	15	53	8.68	< 0.20	0.99	4	1.07	6.1	10.8	< 0.0050	< 0.080	0.0038	0.0319	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0036	<0.04	< 0.0020	0.0109
	20	64	10.4	< 0.20	0.85	3.71	1.23	5.48	12.8	< 0.0050	< 0.080	0.0039	0.0340	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0020	< 0.0100
	25	55	10.4	1.91	1.08	6.68	3.42	5.52	13.2	< 0.0050	< 0.080	0.0056	0.0111	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.006	< 0.010	< 0.0075	0.0141	<0.04	< 0.0020	< 0.0100
	30	75	11.2	0.70	1	3.46	1.25	5.73	12.4	< 0.0050	< 0.080	0.0037	0.0034	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	< 0.0030	<0.04	< 0.0010	< 0.0100
	35		8.5	< 0.20	0.84	3.16	1.13	5.34	12.3	< 0.0050	< 0.080	0.0072	0.0023	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0021	<0.04	< 0.0008	< 0.0040
Tailings-022807																										
	0	162	26.9	4.07	0.81	3.99	1.45	15.6	74.3	< 0.0050	< 0.080	< 0.0100	0.0409	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	< 0.0060	<0.04	< 0.0020	0.0162
	5	137	22.8	1.50	1.09	3.24	1.49	10.3	50.5	< 0.0050	< 0.080	0.0071	0.0176	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.017	< 0.010	< 0.0075	0.0035	<0.04	< 0.0020	< 0.0100
	10	83	14.4	1.43	1.17	1.57	0.75	2.7	14.4	< 0.0050	< 0.080	0.0095	0.0113	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.005	< 0.010	< 0.0075	0.0057	<0.04	< 0.0020	< 0.0100
	15	99	10.7	0.20	1.34	1.08	0.6	6.32	13.7	< 0.0050	< 0.080	0.0087	0.0067	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0058	<0.04	< 0.0010	< 0.0100
	20	112	11.8	< 0.20	1.65	1.03	0.75	7.58	15.3	< 0.0050	<.080	0.0153	0.0094	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	< 0.004	< 0.010	< 0.0075	0.0056	<0.04	< 0.0010	< 0.0100
Year 0-3 Tailing																										
	0	1700	335	15.20	1.68	25.4	6.92	106	1060	< 0.0050	< 0.080	0.0167	0.0167	< 0.0020	< 0.0020	<0.0060	0.012	<0.06	<0.00020	0.045		< 0.0075	0.0092	0.15	< 0.0010	< 0.0100
	5																									
	10																									
	15																									
	20	121	13.5	< 0.20	2.05	1.18	0.546	0.5	6.99	< 0.0050	< 0.080	0.0094	0.0510	< 0.0020	< 0.0020	<0.0060	< 0.010	<0.06	<0.00020	0.007		< 0.0075	0.0035	<0.04	< 0.0010	< 0.0100

TABLE A.9:
SUMMARY OF METALS ANALYSIS FROM ON-SITE COLUMN TESTS

Table A.9: Summary of Metals Analysis from On-Site Column Tests

Sample ID	Week	Cl	Fl	SO4	TDS	Al	Ca	Fe	Mg	K	Na	Zn	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Mn	Ni	Se	Ag	Tl	Hg
AR2010-03																										
	1	< 2.5	<0.50	12	37	0.10	8.2	<0.10	< 1.0	< 2.0	< 2.0	< 0.050	< 0.0020	< 0.0030	0.0021	< 0.0005	< 0.0020	< 0.0050	0.0039	< 0.0020	0.0131	< 0.0050	< 0.0020	< 0.0010	< 0.0005	< 0.0002
	3	< 2.5	<0.50	17	150	0.10	10	<0.10	1.2	< 2.0	< 2.0	< 0.050	< 0.0020	< 0.0030	< 0.0020	< 0.0005	< 0.0020	< 0.0050	0.0046	< 0.0020	0.0172	< 0.0050	< 0.0020	0.0022	< 0.0005	< 0.0002
	5	< 2.5	<0.50	14	30	0.10	16	<0.10	2.1	< 2.0	2.3	< 0.050	< 0.0020	< 0.0030	0.0031	< 0.0005	< 0.0020	< 0.0050	0.0040	< 0.0020	0.0287	< 0.0050	< 0.0020	< 0.0010	< 0.0005	< 0.0010
	7	< 2.5	<0.50	14	40	0.10	18	<0.10	1.8	< 2.0	< 2.0	< 0.050	< 0.0020	< 0.0030	0.0040	< 0.0005	< 0.0020	< 0.0050	< 0.0100	< 0.0020	0.0290	< 0.0050	< 0.0020	< 0.0010	< 0.0005	< 0.0010
	9	< 2.5	0.67	170	100	0.10	14	<0.10	1.4	< 2.0	2.7	< 0.050	< 0.0020	< 0.0030	< 0.0100	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0210	< 0.0100	< 0.0250	< 0.0050	< 0.0005	< 0.0002
	11	56.0	0.76	110	320	0.10	21	<0.10	2.7	6.5	100.0	< 0.050	< 0.0200	< 0.0300	< 0.0100	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0130	< 0.0100	< 0.0250	< 0.0050	< 0.0050	< 0.0010
	13	< 2.5	<0.50	9.2	200	1.00	85	<1.00	<10.0	<20.0	<20.0	< 0.500	< 0.0200	< 0.0750	< 0.1000	< 0.0100	< 0.0150	< 0.1000	< 0.1000	< 0.1000	< 0.1000	< 0.1000	< 0.2500	< 0.0500	< 0.0125	< 0.0002
	15	< 2.5	<0.50	18	20	0.10	15	<0.10	1.3	2.1	3.8	< 0.050	< 0.0100	< 0.0150	< 0.0100	0.0036	0.0042	< 0.0100	0.0140	< 0.0100	0.0510	< 0.0100	< 0.0250	< 0.0050	< 0.0025	< 0.0002
	17	3.0	<0.50	16	62	0.10	12	<0.10	1.6	2.1	4.0	< 0.050	< 0.0250	< 0.0100	< 0.0100	< 0.0010	< 0.0030	< 0.0100	0.0100	< 0.0100	0.0190	< 0.0100	< 0.0250	< 0.0050	< 0.0500	< 0.0002
	19					0.46	16	<0.10	1.9	3.6	3.8	< 0.050	< 0.0250	< 0.0100	< 0.0100	< 0.0010	< 0.0030	< 0.0100	0.0220	0.0410	0.0190	< 0.0100	< 0.0250	< 0.0050	< 0.0500	< 0.0002
	22	< 2.5	<0.50	29	91	0.10	20	<0.10	2.3	2.5	3.7	< 0.050	< 0.0250	< 0.0100	< 0.0100	< 0.0010	< 0.0030	< 0.0100	0.0150	< 0.0100	0.0440	< 0.0100	< 0.0250	< 0.0050	< 0.0500	< 0.0002
AR2011-03																										
	1	2.5	0.65	170	340	0.10	47	<0.10	14.0	17.0	9.0	< 0.050	< 0.0020	< 0.0030	0.0128	< 0.0005	< 0.0020	< 0.0050	0.0074	< 0.0020	0.0407	< 0.0050	0.0170	< 0.0010	< 0.0005	< 0.0002
	3	2.5	0.60	62	160	0.10	22	<0.10	6.2	10.0	4.1	< 0.050	< 0.0020	< 0.0030	0.0064	< 0.0005	< 0.0020	< 0.0050	< 0.0020	< 0.0020	0.0282	< 0.0050	0.0077	< 0.0010	< 0.0005	< 0.0002
	5	< 2.5	0.50	88	50	0.10	34	<0.10	9.5	11.0	4.3	< 0.050	< 0.0020	< 0.0030	0.0082	< 0.0005	< 0.0020	< 0.0050	0.0034	< 0.0020	0.0362	< 0.0050	0.0120	< 0.0010	< 0.0005	< 0.0010
	7	< 2.5	0.54	110	40	0.10	43	<0.10	10.0	12.0	4.3	< 0.050	< 0.0020	< 0.0030	0.0130	< 0.0005	< 0.0020	< 0.0050	< 0.0100	< 0.0020	0.0793	< 0.0050	0.0179	< 0.0010	< 0.0005	< 0.0010
	9	< 2.5	0.63	150	510	0.10	58	<0.10	15.0	19.0	8.6	< 0.050	< 0.0020	< 0.0030	0.0200	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0990	< 0.0100	0.0290	< 0.0050	< 0.0005	< 0.0002
	11	55.0	0.85	210	480	0.10	47	<0.10	11.0	21.0	100.0	< 0.050	< 0.0200	< 0.0300	0.0190	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0450	< 0.0100	0.0300	< 0.0050	< 0.0050	< 0.0010
	13	6.0	0.56	120	270	1.00	34	<1.00	21.0	25.0	32.0	< 0.500	< 0.0200	< 0.0750	< 0.1000	< 0.0100	< 0.0150	< 0.1000	< 0.1000	< 0.1000	0.2100	< 0.1000	< 0.2500	< 0.0500	< 0.0125	< 0.0002
	15	6.2	0.61	160	240	0.10	53	<0.10	13.0	16.0	14.0	< 0.050	< 0.0100	< 0.0150	0.0180	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0660	< 0.0100	0.0380	< 0.0050	< 0.0025	< 0.0002
	17	5.9	0.66	170	310	0.10	54	<0.10	12.0	16.0	11.0	< 0.050	< 0.0250	< 0.0100	0.0180	< 0.0010	< 0.0030	< 0.0100	< 0.0100	0.0320	0.0460	< 0.0100	0.0390	< 0.0050	< 0.0500	< 0.0002
	19					0.51	79	<0.10	15.0	23.0	12.0	< 0.050	< 0.0250	< 0.0100	0.0280	< 0.0010	< 0.0030	< 0.0100	0.0510	< 0.0100	0.1500	< 0.0100	0.0380	< 0.0050	< 0.0500	< 0.0010
	22	4.0	0.59	270	480	0.10	87	<0.10	17.0	23.0	13.0	< 0.050	< 0.0250	< 0.0100	0.0330	< 0.0010	< 0.0030	< 0.0100	0.0240	< 0.0100	0.0980	< 0.0100	0.0540	< 0.0050	< 0.0500	< 0.0002
AR2014-02																										
	1	3.5	1.30	190	430	0.10	65	<0.10	25.0	19.0	16.0	< 0.050	0.0042	< 0.0030	0.0247	< 0.0005	< 0.0020	< 0.0050	0.0101	< 0.0020	0.0659	< 0.0050	0.0189	< 0.0010	< 0.0005	< 0.0002
	3	< 2.5	0.93	83	260	0.10	30	<0.10	11.0	8.1	6.8	< 0.050	0.0029	< 0.0030	0.0110	< 0.0005	< 0.0020	< 0.0050	0.0062	< 0.0020	0.0311	< 0.0050	0.0105	< 0.0010	< 0.0005	< 0.0002
	5	< 2.5	0.67	79	50	0.10	31	<0.10	11.0	7.0	4.6	< 0.050	0.0025	< 0.0030	0.0109	< 0.0005	< 0.0020	< 0.0050	0.0090	< 0.0020	0.0420	< 0.0050	0.0118	< 0.0010	< 0.0005	< 0.0010
	7	< 2.5	0.93	120	40	0.10	41	<0.10	14.0	8.8	5.8	< 0.050	0.0043	< 0.0030	0.0172	< 0.0005	< 0.0020	< 0.0050	< 0.0100	< 0.0020	0.0511	< 0.0050	0.0188	< 0.0010	< 0.0005	< 0.0010
	9	4.0	0.86	130	650	0.10	46	<0.10	15.0	10.0	10.0	< 0.050	0.0051	< 0.0030	0.0210	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0830	< 0.0100	< 0.0250	< 0.0050	< 0.0005	< 0.0002

Sample ID	Week	Cl	Fl	SO4	TDS	Al	Ca	Fe	Mg	K	Na	Zn	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Mn	Ni	Se	Ag	Tl	Hg
AR2014-02																										
	11	59.0	1.50	520	700	0.10	110	< 0.10	34.0	22.0	86.0	< 0.050	< 0.0200	< 0.0300	0.0570	< 0.0010	< 0.0030	< 0.0100	0.0480	< 0.0100	0.0140	< 0.0100	0.0420	< 0.0050	< 0.0050	< 0.0010
	13	14.0	1.20	270	600	1.00	170	< 1.00	55.0	27.0	83.0	< 0.250	< 0.0200	< 0.0750	< 0.1000	< 0.0100	< 0.0150	< 0.1000	< 0.1000	< 0.1000	0.3000	< 0.0500	< 0.1300	< 0.0500	< 0.0125	< 0.0002
	15	3.4	1.20	330		0.10	92	< 0.10	28.0	17.0	26.0	< 0.050	< 0.0100	< 0.0150	0.0450	< 0.0010	< 0.0030	< 0.0100	0.0140	< 0.0100	0.1500	< 0.0100	0.0620	< 0.0050	< 0.0025	< 0.0002
	17	5.7	0.69	180		0.10	55	< 0.10	13.0	17.0	12.0	< 0.050	< 0.0250	< 0.0100	0.0190	< 0.0010	< 0.0030	< 0.0100	0.0100	< 0.0100	0.0550	< 0.0100	0.0460	< 0.0050	< 0.0500	< 0.0002
	19																									
	22	3.3	1.60	470	780	0.10	130	< 0.10	40.0	26.0	25.0	< 0.050	< 0.0250	< 0.0100	0.0780	< 0.0010	< 0.0030	< 0.0100	0.0340	< 0.0100	0.2200	< 0.0100	0.0930	< 0.0050	< 0.0500	< 0.0002
Composite-1																										
	1	< 2.5	< 0.50	7.3	130	0.10	7.7	< 0.10	< 1.0	2.9	2.3	< 0.050	< 0.0020	< 0.0030	0.0045	< 0.0005	< 0.0020	< 0.0050	0.0041	< 0.0020	0.0103	< 0.0050	< 0.0020	< 0.0010	< 0.0005	< 0.0002
	3	< 2.5	< 0.50	34	180	0.10	17	< 0.10	2.1	3.2	2.8	< 0.050	< 0.0020	< 0.0030	0.0048	< 0.0005	< 0.0020	< 0.0050	0.0025	< 0.0020	0.0167	< 0.0050	0.0080	< 0.0010	< 0.0005	< 0.0002
	5	< 2.5	< 0.50	5.2	50	0.10	7.6	< 0.10	< 1.0	2.3	< 2.0	< 0.050	< 0.0020	0.0031	0.0035	< 0.0005	< 0.0020	< 0.0050	0.0035	< 0.0020	0.0110	< 0.0050	< 0.0020	< 0.0010	< 0.0005	< 0.0010
	7	< 5.0	< 1.00	7.2	100	0.10	9.7	< 0.10	1.2	2.7	< 2.0	< 0.050	< 0.0020	0.0038	0.0054	< 0.0005	< 0.0020	< 0.0050	< 0.0100	< 0.0020	0.0077	< 0.0050	< 0.0020	< 0.0010	< 0.0005	< 0.0010
	9	< 2.5	< 0.50	12	230	0.10	11	< 0.10	1.2	3.2	4.1	< 0.050	< 0.0020	< 0.0030	< 0.0100	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0140	< 0.0100	< 0.0250	< 0.0050	< 0.0005	< 0.0002
	11	54.0	0.64	110	220	0.10	14	< 0.10	1.7	8.5	100.0	< 0.050	< 0.0200	< 0.0300	0.0160	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0110	< 0.0100	< 0.0250	< 0.0050	< 0.0050	< 0.0010
	13	4.0	< 0.50	22	290	1.00	31	< 1.00	< 10.0	< 20.0	< 20.0	< 0.250	< 0.0200	< 0.0750	< 0.1000	< 0.0100	< 0.0150	< 0.1000	< 0.1000	< 0.1000	< 0.1000	< 0.0500	< 0.1300	< 0.0500	< 0.0125	< 0.0010
	15	2.6	< 0.50	24	44	0.10	16	< 0.10	1.3	4.1	3.4	< 0.050	< 0.0100	< 0.0150	0.0140	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0240	< 0.0100	< 0.0250	< 0.0050	< 0.0025	< 0.0002
	17	4.0	< 0.50	36	130	0.10	17	< 0.10	1.7	4.6	3.5	< 0.050	< 0.0250	< 0.0100	0.0150	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0130	< 0.0100	< 0.0250	< 0.0050	< 0.0500	< 0.0002
	19	7.6	< 0.50	79	320	0.10	32	< 0.10	3.3	11.0	8.1	< 0.050	< 0.0250	0.0120	0.0340	< 0.0010	< 0.0030	< 0.0100	0.0450	< 0.0100	0.0400	< 0.0100	< 0.0250	< 0.0050	< 0.0500	< 0.0002
	22	3.5	< 0.50	32	100	0.11	19	< 0.10	1.6	4.7	3.7	< 0.050	< 0.0250	< 0.0100	0.0180	< 0.0010	< 0.0030	< 0.0100	0.0190	< 0.0100	0.0310	< 0.0100	< 0.0250	< 0.0050	< 0.0500	< 0.0002
Composite-2																										
	1	< 2.5	< 0.50	92	210	0.10	34	< 0.10	4.6	5.1	7.2	< 0.050	< 0.0020	< 0.0030	0.0069	< 0.0005	< 0.0020	< 0.0050	0.0108	< 0.0020	0.0212	< 0.0050	0.0237	< 0.0010	< 0.0005	< 0.0002
	3	< 2.5	< 0.50	40	180	0.10	20	< 0.10	2.6	3.9	3.4	< 0.050	< 0.0020	< 0.0030	0.0036	< 0.0005	< 0.0020	< 0.0050	0.0027	< 0.0020	0.0166	< 0.0050	0.0097	< 0.0010	< 0.0005	0.0008
	5	< 2.5	< 0.50	22	69	0.10	14	< 0.10	1.7	2.5	2.1	< 0.050	< 0.0020	< 0.0030	0.0023	< 0.0005	< 0.0020	< 0.0050	0.0023	< 0.0020	0.0180	< 0.0050	0.0056	< 0.0010	< 0.0005	< 0.0010
	7	< 2.5	< 0.50	36	40	0.10	19	< 0.10	2.0	2.8	< 2.0	< 0.050	< 0.0020	< 0.0030	0.0037	< 0.0005	< 0.0020	< 0.0050	< 0.0100	< 0.0020	0.0184	< 0.0050	0.0069	< 0.0010	< 0.0005	< 0.0010
	9	< 2.5	< 0.50	47	640	0.10	21	< 0.10	2.1	3.0	4.6	0.058	< 0.0020	< 0.0030	< 0.0100	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0250	< 0.0100	< 0.0250	< 0.0050	< 0.0005	< 0.0002
	11	54.0	0.70	200	570	0.10	53	< 0.10	5.2	11.0	110.0	< 0.050	< 0.0200	< 0.0300	0.0150	< 0.0010	< 0.0030	< 0.0100	0.0140	< 0.0100	0.0310	< 0.0100	< 0.0250	< 0.0050	< 0.0050	< 0.0010
	13	3.8	< 0.50	77	320	1.00	70	< 1.00	< 10.0	< 20.0	22.0	< 0.250	< 0.0200	< 0.0750	< 0.1000	< 0.0100	< 0.0150	< 0.1000	< 0.1000	< 0.1000	< 0.1000	< 0.0500	< 0.1300	< 0.0500	< 0.0125	< 0.0002
	15	3.8	< 0.50	120	180	0.10	50	< 0.10	4.2	5.2	7.3	< 0.050	< 0.0100	< 0.0150	< 0.0100	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0680	< 0.0100	< 0.0250	< 0.0050	< 0.0025	< 0.0002
	17	3.7	< 0.50	85	170	0.10	35	< 0.10	3.3	4.8	6.7	< 0.050	< 0.0250	< 0.0100	< 0.0100	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0230	< 0.0100	< 0.0250	< 0.0050	< 0.0500	< 0.0002
	19				490	0.31	97	< 0.10	10.0	17.0	18.0	< 0.050	< 0.0250	< 0.0100	0.0270	< 0.0010	< 0.0030	< 0.0100	0.0200	< 0.0100	0.0410	< 0.0100	0.0310	< 0.0050	< 0.0500	< 0.0002
	22	3.0	< 0.50	95	180	0.10	40	< 0.10	3.2	4.6	5.2	< 0.050	< 0.0250	< 0.0100	< 0.0100	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0430	< 0.0100	< 0.0250	< 0.0050	< 0.0500	< 0.0002

Sample ID	Week	Cl	Fl	SO4	TDS	Al	Ca	Fe	Mg	K	Na	Zn	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Mn	Ni	Se	Ag	Tl	Hg
Composite-3																										
	1	3.7	0.55	370	640	0.10	100	0.11	24.0	40.0	21.0	< 0.050	< 0.0020	0.0089	0.0328	< 0.0005	< 0.0020	< 0.0050	0.0047	< 0.0020	0.0600	< 0.0050	0.1490	< 0.0010	< 0.0005	0.0004
	3	< 2.5	0.59	200		6.30	92	7.50	22.0	32.0	13.0	0.089	< 0.0100	0.0163	0.1710	< 0.0025	< 0.0100	0.0519	0.2930	0.0641	1.1700	0.0426	0.0950	< 0.0050	< 0.0025	< 0.0002
	5	< 2.5	< 0.50	77	2100	0.10	29	< 0.10	5.9	14.0	4.0	< 0.050	< 0.0020	0.0031	0.0188	< 0.0005	< 0.0020	< 0.0050	0.0032	< 0.0020	0.0240	< 0.0050	0.0306	< 0.0010	< 0.0005	< 0.0010
	7	< 5.0	< 1.00	67	700	0.10	23	< 0.10	4.0	13.0	2.9	< 0.050	< 0.0020	< 0.0030	0.0180	< 0.0005	< 0.0020	< 0.0050	< 0.0100	< 0.0020	0.0193	< 0.0050	0.0275	< 0.0010	< 0.0005	< 0.0010
	9	< 2.5	< 0.50	130	640	0.10	44	< 0.10	7.6	18.0	8.3	< 0.050	< 0.0020	0.0044	0.0280	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0500	< 0.0100	0.0540	< 0.0050	< 0.0005	< 0.0002
	11	54.0	0.68	310	640	0.10	78	< 0.10	11.0	32.0	94.0	< 0.050	< 0.0200	< 0.0300	0.0410	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0590	< 0.0100	0.0650	< 0.0050	< 0.0050	< 0.0010
	13	5.5	< 0.50	130	500	1.00	87	< 1.00	14.0	33.0	31.0	< 0.250	< 0.0200	< 0.0750	< 0.1000	< 0.0100	< 0.0150	< 0.1000	< 0.1000	< 0.1000	0.1500	< 0.0500	< 0.1300	< 0.0500	< 0.0125	< 0.0002
	15	5.6	< 0.50	170	280	0.10	56	< 0.10	9.0	19.0	12.0	< 0.050	< 0.0100	< 0.0150	0.0280	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.0960	< 0.0100	0.0770	< 0.0050	< 0.0025	< 0.0002
	17	3.7	< 0.50	210	380	0.10	70	< 0.10	11.0	25.0	11.0	< 0.050	< 0.0250	< 0.0100	0.0310	< 0.0010	< 0.0030	< 0.0100	< 0.0100	< 0.0100	0.1000	< 0.0100	0.0750	< 0.0050	< 0.0500	< 0.0002
	19				1300	0.10	130	< 0.10	22.0	45.0	19.0	< 0.050	< 0.0250	< 0.0100	0.0480	< 0.0010	< 0.0030	< 0.0100	0.0340	< 0.0100	0.1400	< 0.0100	0.1600	< 0.0050	< 0.0500	< 0.0002
	22	3.5	< 0.50	280	480	0.10	97	< 0.10	13.0	29.0	10.0	< 0.050	< 0.0250	< 0.0100	0.0380	< 0.0010	< 0.0030	< 0.0100	0.0290	< 0.0100	0.1400	< 0.0100	0.0970	< 0.0050	< 0.0500	< 0.0002