Central Queensland Coal Project

Appendix 3b – Geochemical Assessment

Central Queensland Coal

CQC SEIS, Version 3

October 2020

TECHNICAL REPORT

Geochemical Assessment of Waste Rock and Coal Reject

Central Queensland Coal Project

Prepared for: **Central Queensland Coal Pty Ltd**

LEADERS IN MINING GEOCHEMISTRY

TECHNICAL REPORT

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Table of Contents

List of Figures

List of Tables

1 Introduction

1.1 Project Description

Central Queensland Coal Pty Ltd (CQC) and Fairway Coal Pty Ltd (Fairway Coal) (the joint Proponents), propose to develop the Central Queensland Coal Project (the Project). As CQC is the senior proponent, CQC is referred to throughout. The Project is located approximately 130 km north west of Rockhampton and approximately 25 km north west of Marlborough within the Livingstone Shire Council area (**Figure 1-1**). The Project is being progressing through the Queensland and Commonwealth Government approvals processes under the Environmental Protection Act 1994 (EP Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), respectively. Departmental submissions and comments have been received on a Supplementary Environmental Impact Statement (SEIS) (version 2), which are to be responded to as part of the revised SEIS version 3 (SEISv3).

The Project covers an area of approximately 3,028 ha and will be located within Mining Lease (ML) 80187 and ML 700022, which are adjacent to Mineral Development Licence 468 and Exploration Permit for Coal 1029, both of which are held by the proponent. The Project is wholly contained within the Styx River Basin, comprising of Styx River, Waverley and St Lawrence Creeks. The Styx Basin discharges to the Great Barrier Reef Marine Park (GBRMP), which is listed as a World Heritage Area. The GBRMP is located approximately 40 km downstream of the MLA areas.

The Project proposes the development of two open cut mining areas using a truck and shovel methodology to access a 200 Million tonne coal resource to produce initially 2 Million tonnes per annum (Mtpa) of product coal and up to 10 Mtpa during peak operations. The proposed mine disturbance area would also contain two waste rock dumps, mine water dams, two mine industrial areas, two Coal Handling and Preparation Plants, haul roads and a conveyor. The waste rock dumps will be used to backfill the open pits towards the end of mine life as part of the Project rehabilitation and mine closure program.

The expected mine life is approximately 20 years including construction, operation, decommissioning and rehabilitation. Coal product would be transported via a haul road to a new train loadout facility that will connect to the existing North Coast Rail Line. Product coal would then be transported approximately 175 km north to the Dalrymple Bay Coal Terminal.

1.2 Background

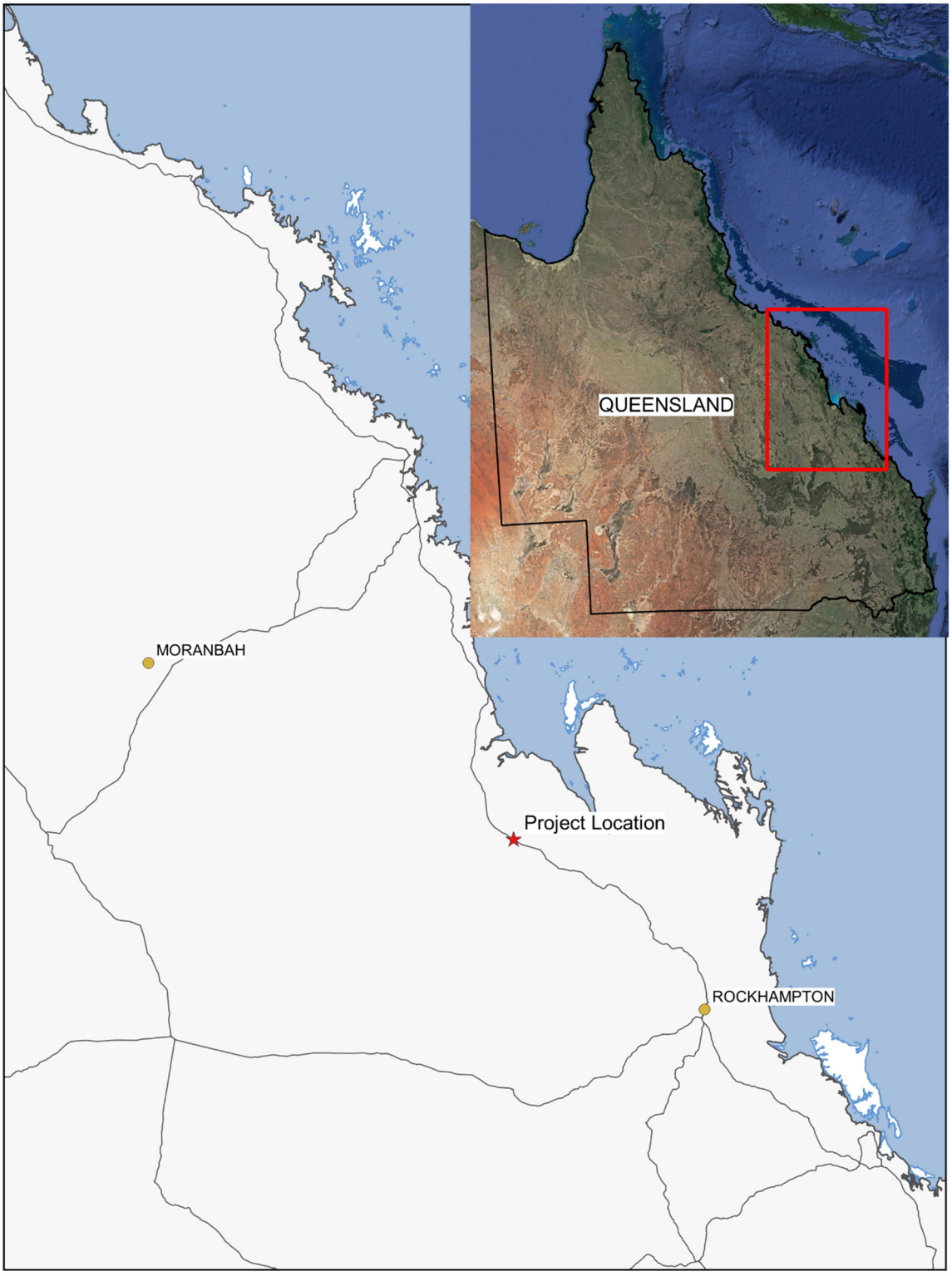
Orange Environmental Pty Ltd (Orange Environmental) was commissioned by CQC to assist in responding to the final Departmental submissions on the Supplementary Environmental Impact Statement (version 2) for the Project. Orange Environmental subsequently commissioned RGS Environmental Pty Ltd (RGS) to produce (i) a Geochemical Assessment Technical Report (this report), and (ii) a Land Stability Assessment Report. The RGS reports are desktop studies using existing data provided by Orange Environmental, albeit that RGS coordinated the original sampling and the geochemical characterisation test work program on 147 waste rock and 27 potential coal reject samples in 2012. The geochemical data set was complimented by characterisation results from testing a further 21 sample of coal reject materials in 2018, as coordinated by CDM Smith Pty Ltd and reported in the Supplementary EIS (CDM Smith, 2018).

1.3 Scope of Work

The objective of this desktop study was to compile and review existing information on the geochemical characteristics of representative samples of waste rock and coal reject materials likely to be generated from the Project against relevant legislation and technical guidelines. The scope of work included a review of:

- existing geochemical data;
- complementary chemical and physical data from soil studies; and
- coal resource sulfur assay data.

The outcome of this process is a technical report for the Project (this report), addressing the potential for any ***acid***, ***saline*** and ***metalliferous*** drainage issues for the mined and processed materials.



Source: Central Queensland Coal; Google Maps; MapInfo StreetPro

RGS	Scale 1:2,500,000 Datum: GDA94: Zone 55	Central Queensland Coal Project	0 25 50 75 100 km
	CQC Spatial Data.qgz; Project Location	**Project Location**	Figure: 1-1 Job Number: 2020023 16/04/2020 N

1.4 Project Geology

1.4.1 Regional geology

The Project is located within the southern parts of the Styx Basin. The Styx Basin covers approximately 800 km^2 and overlays a relatively small part of the eastern Bowen Basin extending north into the Great Barrier Reef Marine Park (GA, 2020). The basin is believed to have formed in the Early Cretaceous as the Permian aged Strathmuir Synclinorium in the Bowen Basin subsided.

The basin sediments are known collectively as the Styx Coal Measures and are interpreted as having been deposited in a freshwater delta to marshy environment with occasional marine incursions. The basin sediments comprise quartzose, calcareous, lithic and pebbly sandstones, pebbly conglomerate, siltstone, carbonaceous shale and coal.

1.4.2 Local geology

The local geology of the Project comprises relatively shallow coal seams overlain by Tertiary sediments with coal bearing strata extending to approximately 120 m depth. The coal bearing strata generally dip to the east at approximately 3° and are believed to be an arm of a syncline striking northwest/southeast. The coal measures outcrop as relatively low hills striking north/south in the west of the basin thought to comprise the coal-barren, quartzose sandstones that form the lower strata of the coal measures. The coal bearing seams have been labelled within a representation of a typical stratigraphic profile at the Project (**Figure 1-2**).

The coal seams vary in thickness, often splitting, and are generally less than 2 m thick. The Red Seam is an exception, with thicknesses often over 2 m. While the coal plies may lens out in some areas, the seams are generally considered to be laterally continuous, i.e., geological modelling has not identified vertical movement of seams through folding or faulting (CDM Smith, 2017).

1.5 Waste Rock and Coal Rejects

1.5.1 Waste rock

At a typical coal mine, waste rock is comprised of material that lies above the top target coal seam and is required to be moved to access the coal (overburden) as well as material from between the target coal seams (interburden). At the proposed Project a total of 742,439,602 bank cubic metres (BCM) of waste rock material will be generated over the life of mine, most of which will report as backfill to open pit areas.

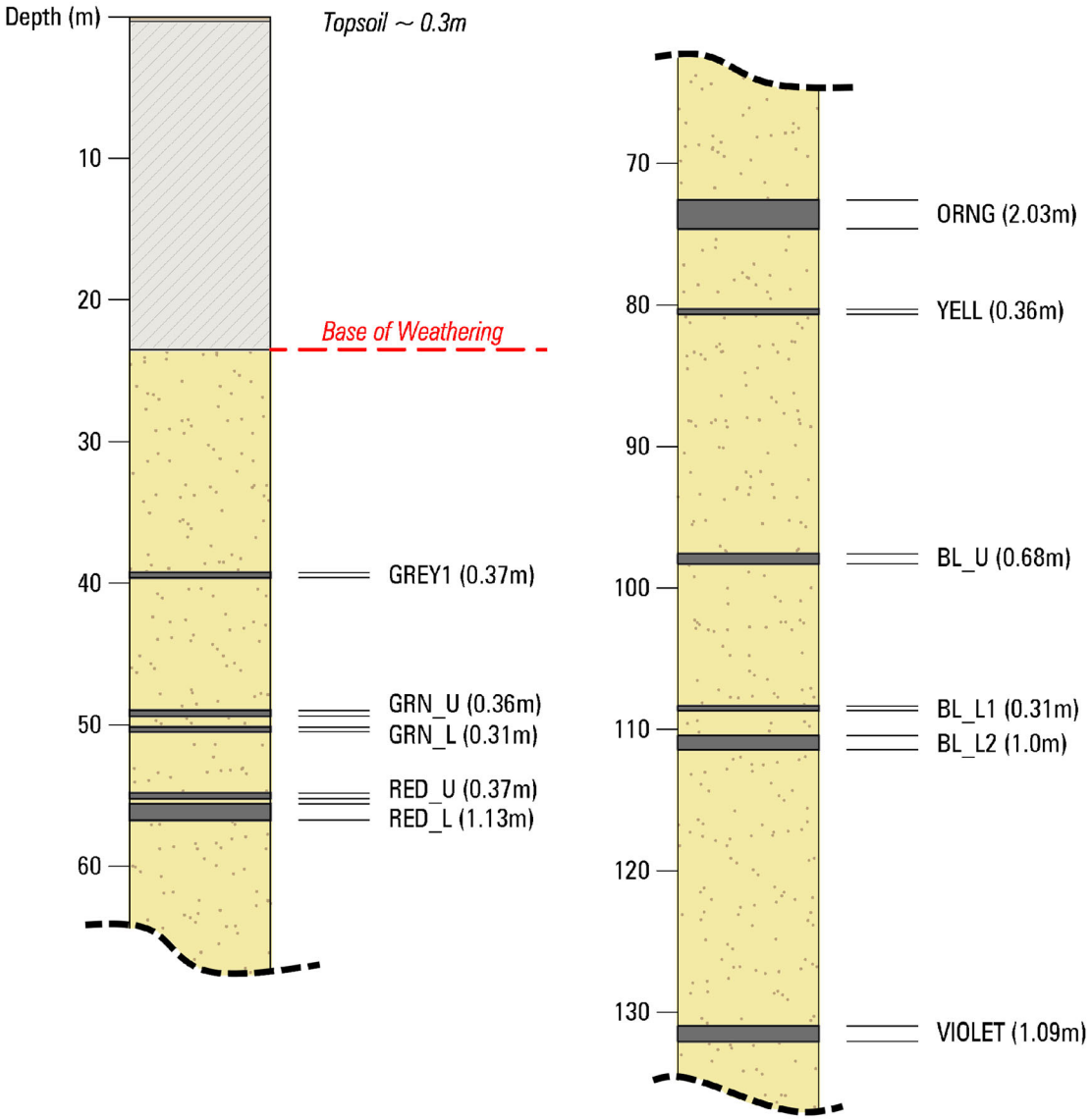
1.5.2 Coal reject

When coal seam material is processed at the Coal Handling and Preparation Plant (CHPP), some of the material is rejected and comprises low-grade coal and particulates that can vary in particle size from small (fine reject) to large (coarse reject). At the proposed project, these coal reject materials will be dewatered before leaving the CHPP for disposal within waste rock materials and will make up a small fraction (approximately 1.3 %) of total waste materials (9.3 MLCM).

1.6 Potential for AMD

Geochemical assessment of mined materials requires a thorough evaluation of acid and metalliferous drainage (AMD). In Australia, the term AMD is defined as incorporating ***acidic*** metalliferous drainage, neutral ***metalliferous*** drainage and ***saline*** drainage (COA, 2016).

At coal mines, the risk of significant AMD is typically dependent on the presence of sulfide bearing materials (such as pyrite and marcasite) which can oxidise upon exposure to the atmosphere and generate acidic conditions. This can lead to dissolution of metals/metalloids from the host rock and has the potential to generate poor quality surface runoff and seepage containing elevated concentrations of dissolved solids and major ions (salinity) and metal/metalloids, which can adversely affect the surrounding environment.



Source: Xenith Coal

RGS	CQC Spatial Data.qgz; Stratigraphic Column	Central Queensland Coal Project	Figure: 1-2
		Typical Stratigraphic Profile	Job Number: 2020023 17/04/2020

N

1.7 Relevant Legislation and Guidelines

The Project will be required to comply with applicable Australian Commonwealth and Queensland State legislation, regulation, guidelines, standards, and leading industry practice. The documents used by RGS as a reference guide for completing this desktop assessment include:

- AMIRA (2002). Acid Rock Drainage (ARD) Test Handbook P387A Prediction and Control of Acid Rock Drainage.
- AWQG (2018). Australian and New Zealand Water Quality Guidelines 2018 that supersede the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) (ANZECC & ARMCANZ).
- COA (2016) Commonwealth of Australia Leading Practice Sustainable Development Program (LPSDP) for the Mining Industry: Preventing Acid and Metalliferous Drainage.
- DEHP (2013). Application Requirements for Activities with Impacts to Land Guideline. Queensland Department of Environment and Heritage Protection.
- DME (1995). Draft Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland, Technical Guideline – Assessment and Management of Acid Drainage and Saline/Sodic Wastes. Queensland Department of Minerals and Energy (DME).
- Queensland Environmental Protection Act (1994).
- INAP (2009). International Network on Acid Prevention. Global Acid Rock Drainage (GARD) Guide.
- WA DMP (2016) Western Australia Department of Mines and Petroleum Draft Guidance Materials Characterisation Baseline Data Requirements for Mining Proposals DMPMAR15_3596.

2 Methodology

RGS developed an appropriate sampling and geochemical testing program in 2012, which was used to obtain representative samples of waste rock (overburden and interburden) and potential coal reject materials associated with the Project. The geochemical results from the 2012 program are included in the current assessment report. Geochemical test results for representative samples of fine reject materials reported in 2018 (CDM Smith, 2018) are also included in this assessment report in order to provide additional confidence in the coal washplant process waste stream composition and chemistry.

2.1 Sample Selection and Preparation

The sampling methodology used to obtain representative samples of waste rock and coal reject materials from the Project as part of the geochemical assessment process was undertaken in accordance with relevant guideline documents. While there are no specific regulatory guidelines regarding the number of samples required for such assessments in Queensland, existing risk-based technical guidelines for the geochemical assessment of mining waste materials in Australia (AMIRA, 2002; COA, 2016) and worldwide (INAP, 2009) were used by RGS as a framework for the sampling program. Whilst historical guidelines related to sampling for mining projects in Queensland do exist (DME, 1995) these are prescriptive and do not differentiate between the type of mine and risk profile (the intensity of sampling at a narrow veined gold mine, for example, would be much higher than at a large open cut coal mine with predictable stratigraphy and geochemistry). For a proposed project of this size and nature, the most appropriate technical guidelines (COA, 2016 and INAP, 2009) recommend collection of several hundred samples at the environmental assessment stage. These guidelines align well with technical guidelines used in other parts of Australia (e.g., Western Australia), which advocate a similar sampling frequency (WA DMP, 2016), albeit that these WA guidelines are mainly applied to hard rock mines where the geology is generally more complex than for than for coal mines in Queensland.

2.1.1 Waste Rock, Coal Reject and Coal

Representative samples of waste rock (overburden and interburden) and potential coal reject were identified and collected as drill core from the 2012 exploration drilling program. A total of 174 waste rock and potential coal reject samples were collected from 15 drill holes at the Project as illustrated in **Figure 2-1**. A further 21 additional fine reject samples were collected from the coal quality laboratory and tested in 2018 (CDM Smith, 2018), making a total of 195 waste rock and coal reject samples. In addition, total sulfur data was available for a further 292 coal samples from 51 drill holes at the Project as illustrated in **Figure 2-1** and included in the assessment program. Hence, a total of 487 samples have been collected from 66 drill holes and included in the geochemistry assessment for the Project. This demonstrates good lateral and vertical coverage of samples from the proposed open pit areas.

The samples represented the waste rock (overburden and interburden); potential coal reject (including roof, floor and parting materials), fine coal reject, and coal materials expected to be encountered during development activities.

The samples cover the entire stratigraphic profile that is currently under consideration for mining at the Project. **Table 2-1** provides the number of samples of each type of material collected from the Project and used in the geochemical assessment. The number of samples was selected to provide a good statistical representation of the amount and type of mined material expected to be encountered at the Project, considering the risk profile indicated from the geology and geochemical information from this and other similar coal mining projects.

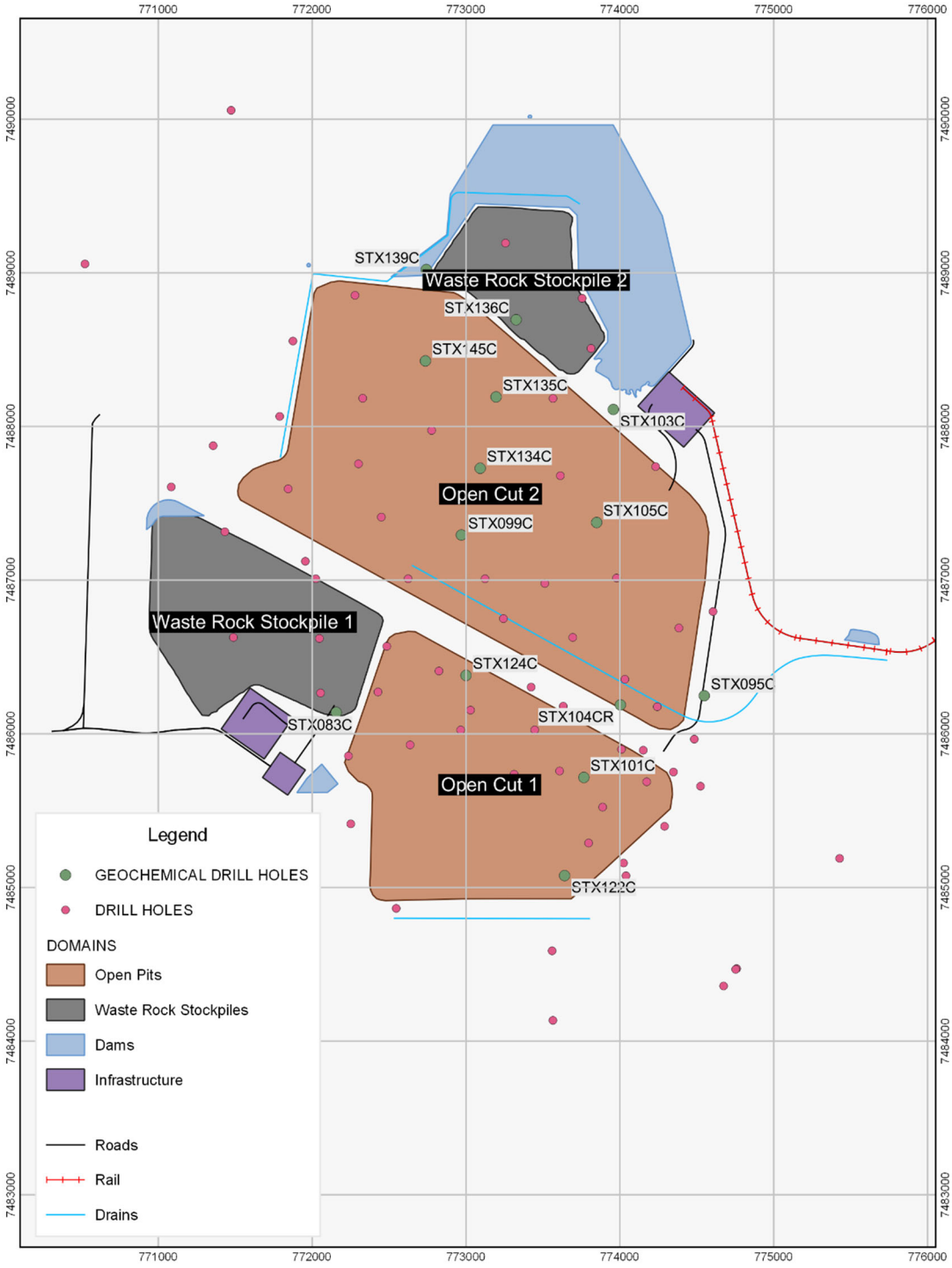
It should be noted that one of the drill holes sampled (STX148C) is located in an area approximately 2 km west and 5 km north of the currently proposed open cut mining area (i.e., this drill hole is in an area that is not now planned to be mined as part of the current Project). A total of 10 waste rock samples were collected from this drill hole and included in the 147 waste rock samples tested in the geochemical assessment program.

Table 2-1: Sample materials used for geochemical testing

Sample Description	Sample Type	Number of Samples
Mudstone, Sandstone, Siltstone	Waste Rock	147
Sandstone, siltstone and claystone	Potential Coal Reject	27
Mainly coal fines and other mixed lithologies	Fine Coal Reject	21
Coal seam material	Coal	292
	Total	**487**

2.1.2 Sample Preparation

The waste rock and coal reject samples tested in 2012 and 2018 were sent to ALS Environmental Laboratory (ALS) in Stafford, Queensland for geochemical testing. Once received, the samples were prepared by crushing and pulverising to less than 75 µm size, where necessary. This method of sample preparation results in a homogenous sample, but also generates a large sample surface area in contact with the assay solution. This provides a greater potential for dissolution and reaction and represents an assumed initial 'worst case' scenario for these materials. A list describing the source of the 147 waste rock samples included in this study is provided in **Table B1** (**Attachment B**). The identity of the 48 coal reject samples included in this study is detailed in **Table B3** (**Attachment B**).



Source: Central Queensland Coal

RGS	Scale 1:35,000 Datum: GDA 94: Zone 55	Central Queensland Coal Project	500 0 500 1000 m
	CQC Spatial Data.qgz; Drill Holes	**Drill Holes in the Proposed Project Area**	Figure: 2-1 Job Number: 2020023 05/08/2020 N

2.2 Geochemical Test Program

A series of geochemical tests were completed on the total of 195 waste rock and coal reject samples described in detail in **Section 2.1**. The test program was designed to assess the degree of risk from the presence and potential oxidation of sulfides, as well as the generation and the presence/leaching of soluble metals/metalloids and salts. The assessment also included characterisation and calculation of standard soil parameters including salinity, sodicity, cation exchange capacity, exchangeable sodium percentage and major metal concentrations.

A detailed summary of the parameters involved in completing a static and kinetic geochemical characterisation and assessment program for mine waste materials is provided in **Attachment A**.

2.2.1 Static Tests

Static geochemical tests provide a 'snapshot' of the characteristics of a sample material at a single point in time. These tests were staged to screen individual samples before selecting either individual and/or composite samples for more detailed static test work.

The Acid Base Account (ABA) method was used as a screening procedure whereby the acid-neutralising and acid-generating characteristics of a material are assessed. All 195 samples were screened using the ABA method. The ABA screening included static geochemical testing for the following parameters:

- pH [1:5 w:v. sample:deionised water];
- Electrical conductivity (EC) [1:5 w:v. sample:deionised water];
- Total sulfur [LECO analyser]; and
- Acid neutralising capacity (ANC) [AMIRA, 2002 method].

The results of the ABA screening tests are discussed in **Section 3** (along with Net Acid Generation (NAG) test results for the 21 fine reject samples only). After the results of the ABA screening tests were received and interpreted, 43 waste rock samples and seven potential coal reject samples were also tested for sulfide sulfur, using the chromium reducible sulfur (Scr), Australian Standard (AS 4969.7, 2008) method.

From the total sulfur value (or Scr value, where available), maximum potential acidity (MPA) values were calculated. Scr data was preferentially used, as it provides a more accurate representation of the potential MPA, as acid generation primarily forms from the oxidation of reactive sulfide measured by this method.

After the results of the initial static geochemical tests were received and reviewed, 144 of the original 174 waste rock and potential coal reject samples were used to create 12 composite samples for waste rock and three composite samples for potential coal reject materials. The sample selection process was based on sample lithology and material type. The additional 21 fine reject samples (2018) were also included and all 36 samples were sent for whole rock multi-element testing at ALS laboratory and tested for:

- Total metals (Al, As, B, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, Hg, K, Pb, Mg, Mn, Mo, Na, Ni, P, Sb, Se, V and Zn) [HCl and HNO_3 acid digest followed by FIMS and/or ICP-AES/MS].

The 12 composite samples of waste rock and three composite samples of potential coal reject materials were also tested for:

- Paste pH and EC [1:5 w:v. sample: deionised water];
- Major cations (Ca, Mg, K, Na) [HCl and HNO_3 acid digest followed by ICP-AES/MS];
- Major anions (Cl, SO_4) [ICP-AES/MS and PC Titrator (1:5 w:v water extracts)];
- Acidity and alkalinity as $CaCO_3$ mg/L [PC Titrator (1:5 w:v water extracts)]; and
- Soluble metals (Al, As, B, Cd, Cr, Co, Cu, Fe, Hg, Pb, Mn, Mo, Ni, P, Sb, Se, V and Zn) [ICPAES/MS and FIMS (1:5 w:v water extracts)].

The 15 composite waste rock and potential coal reject samples were also tested for exchangeable cations (Ca, Mg, Na and K) [ICP-AES], and results were used to calculate the cation exchange capacity (CEC) and exchangeable sodium percentage (ESP).

Summary geochemical results tables for the static geochemical test program are provided in **Attachment B**. The ALS laboratory certificates of analysis are provided in **Attachment C**.

2.2.2 Kinetic Tests

Following receipt and interpretation of the static geochemical test results, six kinetic leach column (KLC) tests were set up at the RGS 'in-house' laboratory using composite waste rock and potential coal reject materials from the Project. The KLC tests were completed from May to August 2012. No KLC test were completed on the 2018 fine rejects. A description of the material represented by each KLC is provided in **Section 3.6**

Approximately 2 kg of each composite sample was accurately weighed and used in each of the KLC tests. Heat lamps were used daily to simulate sunshine and ensure that the KLC test materials were unsaturated and subject to oxidising conditions between leaching events (this is essentially an assumed "worst case" scenario for sulfide oxidation and potential acid/salt generation). Further details and a schematic of the KLC test arrangement are provided in **Attachment A**.

All leachate samples collected from the KLC tests were assayed at ALS laboratory for:

- pH and EC;
- Acidity and alkalinity [PC Titrator];
- Dissolved metals/metalloids (Al, As, B, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, Se, V and Zn) [ICP-AES/MS];
- Dissolved major cations (Ca, Mg, Na and K) [ICP-AES/MS]; and
- Dissolved major anions (Cl and SO_4) [ICP-AES/MS].

Summary results tables and trends for the KLC tests are provided in **Attachment B**. The raw ALS laboratory test results received for the KLC test program are provided in **Attachment C**.

3 Presentation of Existing Data

A summary of a typical geochemical assessment program for mining waste materials such as waste rock and coal reject materials is presented in **Attachment A**.

3.1 Acid Base Account

Acid Base Account results from the 2012 and 2018 sampling and analysis programs for waste rock are presented in **Section 3.1.1** and for potential coal reject and fine reject materials in **Section 3.1.2**. The results have been used to characterise the acid forming/acid consuming nature of the sample materials.

3.1.1 Waste Rock

Acid Base Account results for 147 waste rock samples from the Project are presented in **Table B1 (Attachment B)** and summarised in **Figures 3-1** to **3-7**.

- **pH:** The pH values of the samples range from (4.8 to 10.2) and are typically alkaline (median 9.9). Only one sample (sandstone sample) has a pH value less than 6.8 (**Figure 3-1**).

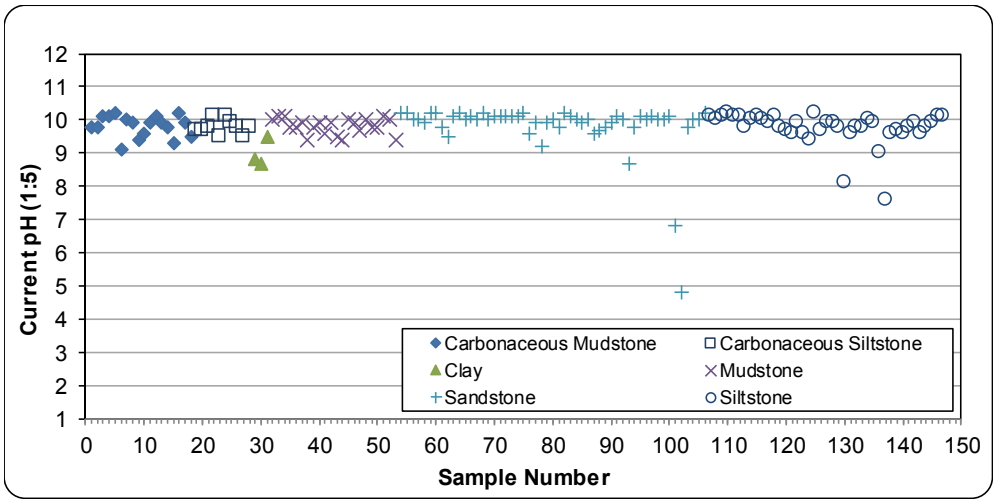


Figure 3-1: pH values for waste rock

- **EC:** The EC values of the samples range from 106 to 2,780 µS/cm) and are typically low (median 612 µS/cm), apart from the single sandstone sample with a reduced pH value described above (**Figure 3-2**).

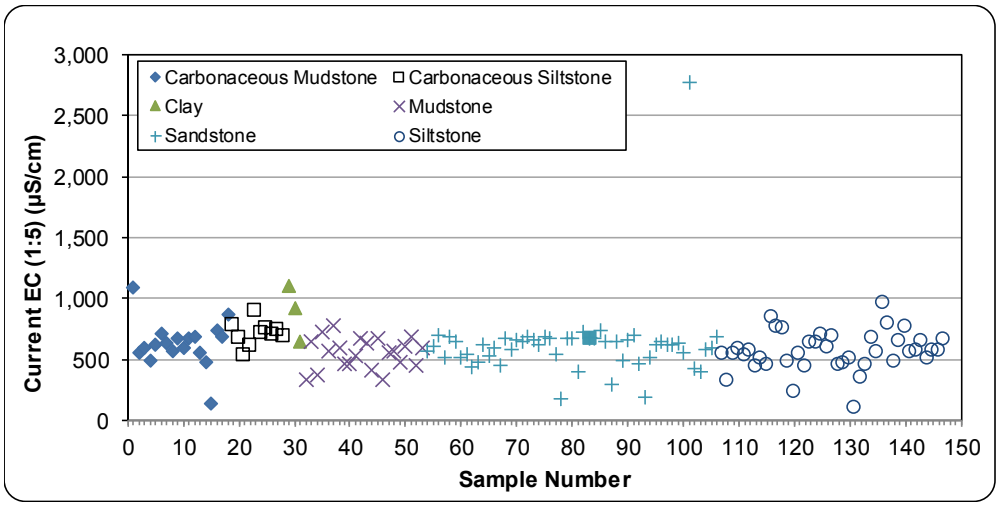


Figure 3-2: EC values for waste rock

To provide additional context, the $EC_{(1:5)}$ and $pH_{(1:5)}$ results for waste rock are classified against pH and salinity criteria for mine waste materials, as defined by the Queensland DME (1995) technical guidelines for the environmental management of exploration and mining in Queensland (**Table 3-1**). Based on the median pH and EC values, the waste rock samples tested are generally regarded as having a ' 'Very High' soil pH and 'Medium' salinity characteristics, as indicated by the distribution of samples corresponding to each pH and salinity class.

Table 3-1: pH and salinity criteria for assessment of waste rock samples

Vulcan Target	Very Low	Low	Medium	High	Very High
$pH_{1:5}$	< 4.5	4.5 – 5.5	5.5 – 7.0	7.0 – 9.0 (Median – 8.6)	> 9.0
$EC_{1:5}$ (µS/cm)	< 150	150 – 450 (Median – 365)	450 – 900	900 – 2,000	> 2,000

Note: Adapted from DME, 1995. Highlighted cells show the category corresponding to the median pH and EC values (orange shading) for the waste rock samples.

The pH and EC tests were completed on pulverised samples (≤ 75 µm) with a large surface area in contact with the leaching solution, thereby providing greater potential for dissolution and reaction, and represent an assumed 'worst case' scenario. It is also expected that the salinity of leachate from low sulfur waste rock materials will diminish with time as salts are flushed from the rock matrix and a state of equilibrium develops. At that point, the salinity of seepage/runoff should stabilise at a lower asymptotic concentration relative to the weathering/erosion of the materials.

- **Total Sulfur**: The total sulfur concentration in the waste rock samples ranges from below the limit of reporting (LoR) (0.01 %S) to 8.18 %S (**Figure 3-3** and **Figure 3-4**). The total sulfur concentrations are generally low with a median value of 0.04 %S, below the global median crustal abundance of sulfur in unmineralised soils (0.07%) (INAP, 2009). A single sandstone sample has an elevated total sulfur concentration of 8.18 %S, which appears anomalous to the remainder of the total sulfur dataset. Materials with a total sulfur content less than or equal to 0.1% S are essentially barren of sulfur, generally represent background concentrations, and have negligible capacity to generate acidity. Forty-three (43) waste rock samples have a total sulfur concentration greater than 0.1 %S and these were resubmitted for chromium reducible sulfur (Scr) analysis to determine the concentration of sulfur present as sulfide.

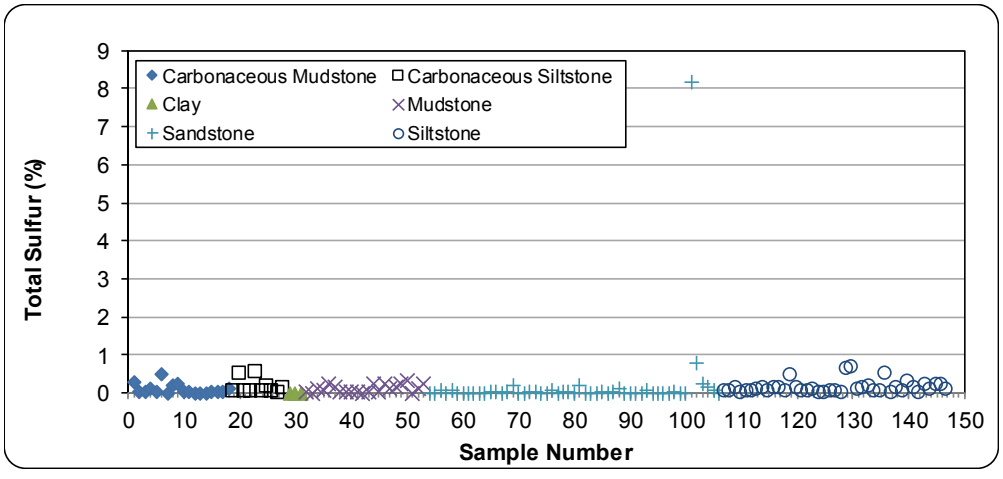


Figure 3-3: Total sulfur values for waste rock

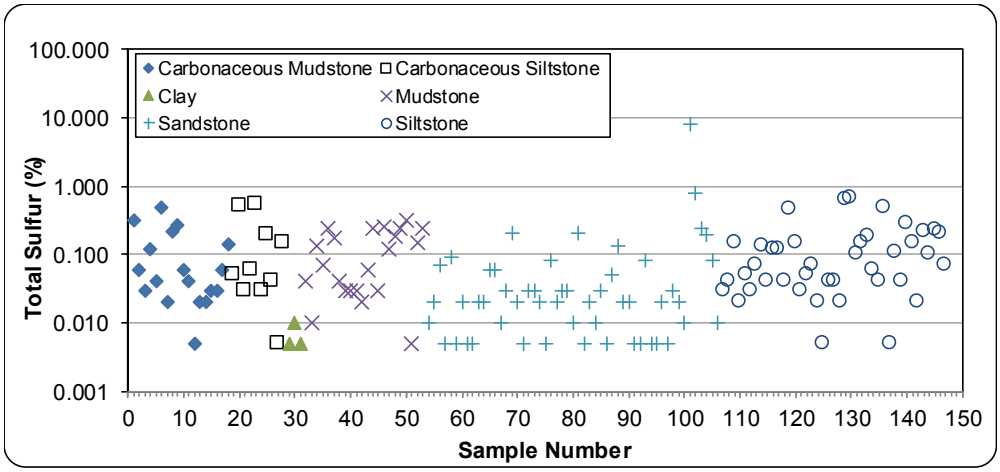


Figure 3-4: Total sulfur values for waste rock (log scale)

- **Sulfide Sulfur:** The Scr method measures the amount of sulfur present in the waste rock samples as potentially reactive sulfide sulfur, which may oxidise and generate acid. The results indicate that on average, approximately half of the total sulfur content is present as organic sulfur which will not generate acid. Whilst some samples do contain a higher proportion of sulfide sulfur, 126 of the 147 waste rock samples (86 %) are essentially 'barren' and have a total sulfur content less than or equal to 0.1 %S.
- **MPA**: The Maximum Potential Acidity (MPA) that could be generated through sulfide oxidation from the 147 samples ranges from 0.2 kg H_2SO_4/t to 233.4 kg H_2SO_4/t and has a median value of 0.9 kg H_2SO_4/t). The MPA value is calculated from the total sulfur content or sulfide sulfur content (where available) of the samples. The MPA results show that most waste rock materials represented by these samples have a very low risk of generating any significant acidity through sulfide oxidation.
- **ANC**: The Acid Neutralising Capacity (ANC) value for the 147 waste rock samples ranges from 5.3 to 390.0 kg H_2SO_4/t and has a median value of 39.8 kg H_2SO_4/t. The median ANC value is more than an order of magnitude greater than the median MPA of the samples and the ANC exceeds the MPA in 98 % of the samples analysed. Most of the waste rock samples reacted quickly in the ANC test (elevated "fizz" rating) and therefore most of the measured ANC is expected to be available in these materials.
- **Net Acid Producing Potential (NAPP)**: The NAPP is the balance between the capacity of a sample to generate acidity (MPA) minus its capacity to neutralise acidity (ANC). The NAPP value for the 147 waste rock samples ranges from -389.7 to 197.2 kg H_2SO_4/t and has a negative median value of -38.2 kg H_2SO_4/t. The NAPP data for the samples presented in **Figure 3-5** (overleaf) illustrates that most waste rock samples have negative NAPP values. Only one sandstone sample from drill hole STX136C (shown as sample number 101 in the graph) has a strongly positive NAPP value. This sample was logged as sandstone but contains some carbonaceous mudstone.

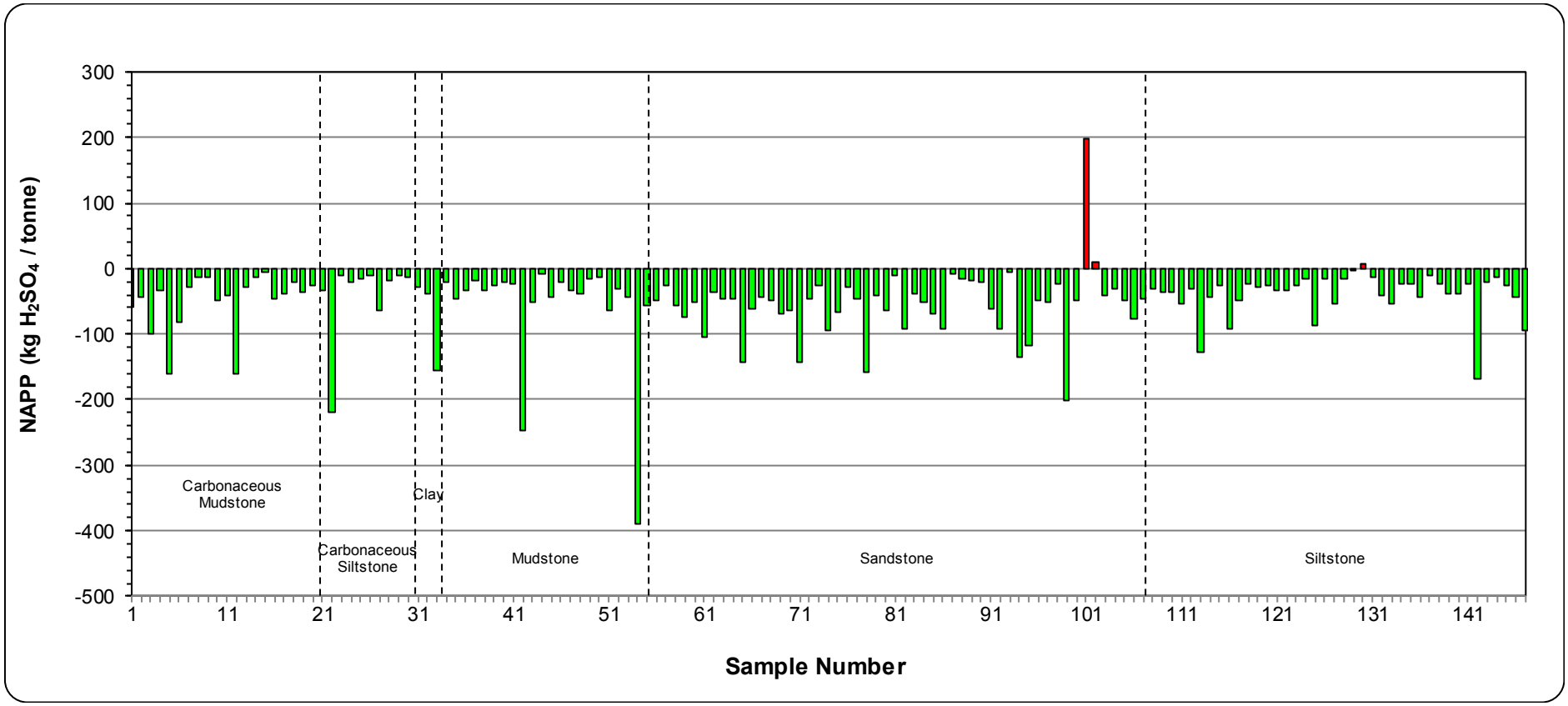


Figure 3-5: NAPP values for waste rock

- **ANC:MPA ratio**: The ANC:MPA ratio of the 147 samples ranges from 0.2 to 1,273.5 and is typically elevated (median 34.0). In simplistic terms, this means that there is a large excess ANC over MPA.

  Graphs 3-6 and **3-7** (a zoomed in version of **Graph 3-6**) show plots of ANC versus MPA for the 147 overburden samples. ANC:MPA ratio lines have been plotted on the graph to illustrate the factor of safety associated with the samples. Generally, those samples with an ANC:MPA ratio of greater than 2 and/or low sulfur content (≤ 0.1 % S) are considered to have negligible to low risk of acid generation and a high factor of safety in terms of potential for AMD and/or NMD (COA, 2016; INAP, 2009[1]). The overwhelming majority of waste rock samples tested plot in the negligible to low risk domains in the figures and therefore, as a bulk material, waste rock is expected to have a high factor of safety and low risk of acid generation.

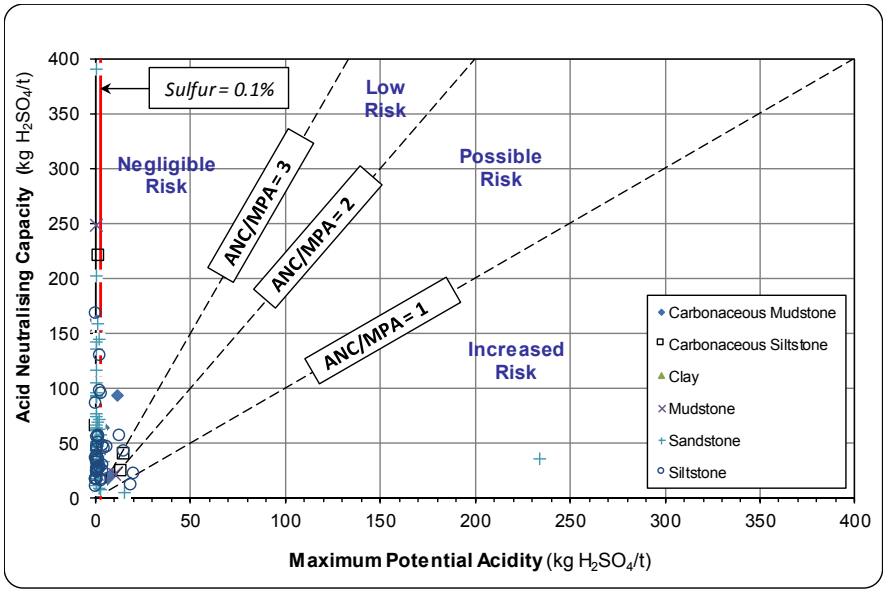


Figure 3-6: ANC vs MPA for waste rock

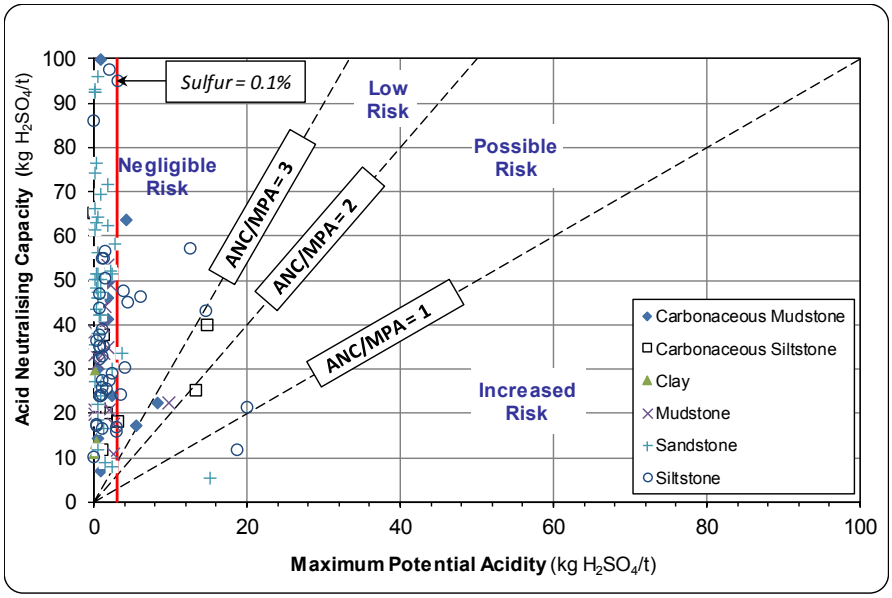


Figure 3-7: ANC vs MPA for waste rock

[1] INAP considers that mine materials with an ANC:MPA ratio greater than 2 are likely to be NAF unless significant preferential exposure of sulfides along fracture planes occurs in combination with insufficiently reactive ANC.

The ABA test data presented in **Table B1 (Attachment B)** have been used to classify the acid forming nature of the 147 waste rock samples. These classification criteria generally reflect Australian (COA, 2016) and international (INAP, 2019) guideline criteria for classification of mine waste materials. **Table 3-2** provides a summary of the criteria used by RGS in this study to classify the acid forming nature of the samples and a breakdown of the number of samples in each classification category by material type.

Table 3-2: Geochemical classification criteria for waste rock samples

Geochemical Classification	Total Sulfur[1] (%)	NAPP (kg H_2SO_4/t)	ANC:MPA Ratio	Waste Rock Samples (n = 147)
Non-Acid Forming (Barren)	≤ 0.1	-	-	126
Non-Acid Forming	> 0.1	< -5	> 2	17
Uncertain	> 0.1	≥ -5 to ≤ +5	< 2	1
Potentially Acid Forming (Low Capacity)	> 0.1	> +5 ≤ +10	< 2	2
Potentially Acid Forming	> 0.1	> +10	< 2	1

Notes:
1. If total sulfur is less than or equal to 0.1 %S, the NAPP and ANC:MPA ratio are not required for material classification as the sample is essentially barren of oxidisable sulfur and essentially has negligible capacity to generate acidity through sulfide oxidation.

The data presented in **Table 3-2** illustrate that most (143) of the 147 waste rock samples (97.3 %) are classified as Non-Acid Forming (NAF) with only one sample classified as Uncertain, two samples classified as Potentially Acid Forming (Low Capacity) (PAF–LC) and one sample classified as Potentially Acid Forming (PAF). Further analysis of the ABA data demonstrates that the single sandstone sample classified as PAF was from drill hole STX136C which is located in the Northern part of the proposed open pit area within the area marked as "Waste Rock Stockpile 2" (**Figure 2-1**). This sample was sourced from a depth interval of 20.35 m to 20.60 m approximately 6m below the base of weathering in the stratigraphic profile at this location. The sample was logged as sandstone but contains some carbonaceous mudstone, which is likely to be the source of the elevated sulfur content and potential acidity. Based on the stratigraphic profile at this location and geological model, the carbonaceous mudstone may be associated with the roof of the Red seam although the Red seam appears to peter out and generally be absent at this location.

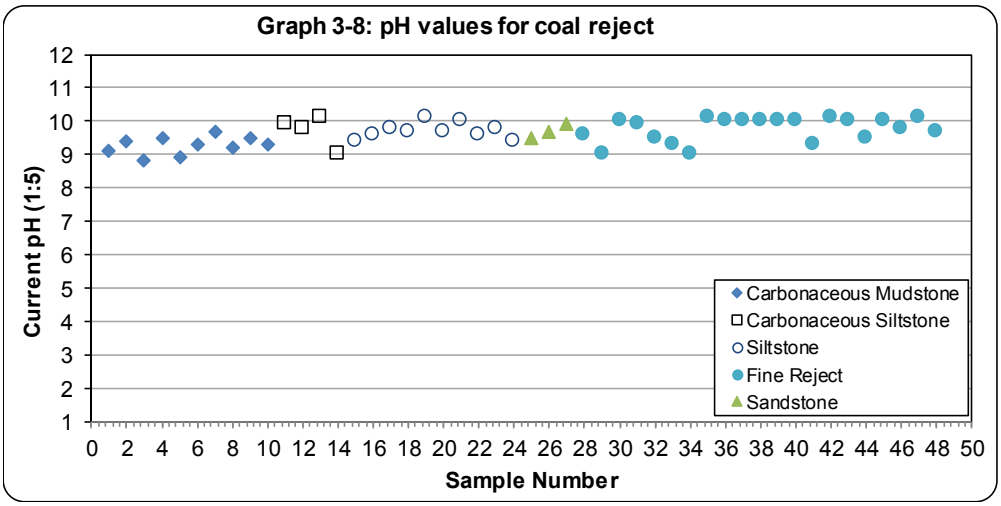
The three samples classified as Uncertain or PAF-LC, were sourced from drill hole STX148C from depths ranging from 78.7 – 79.0 m, 87.8 - 88.2 m and 89.6 – 90.0 m, respectively. This drill hole is located in an area approximately 2 km west and 5 km north of the proposed open cut mining area (i.e., this drill hole is in an area that is not planned to be mined as part of the current Project).

Hence, these results confirm that the overwhelming majority of waste rock materials represented by the samples tested are likely to have a high factor of safety with respect to potential acid generation and there is therefore likely to be a relatively low risk of AMD or NMD generation through sulfide oxidation from these materials at the Project. ABA testing indicates that approximately less than 1 % of the samples of the samples obtained from within the planned open pit area are PAF although as a bulk material, waste rock is expected to have a significant excess of ANC.

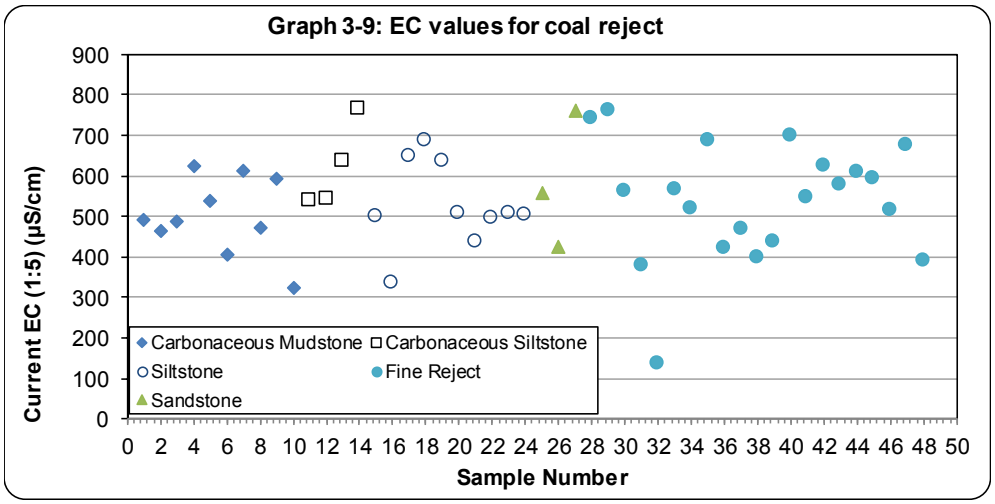
3.1.2 Coal Reject

ABA test results for 27 potential coal reject samples and 21 fine reject samples from the Project are presented in **Table B2 (Attachment B)** and summarised in **Graphs 3-8** to **3-13**.

- **pH:** The pH values of the 48 reject samples range from (8.8 to 10.1) and are typically alkaline (median 9.6) (**Graph 3-8**). There is no significant difference between the pH value of the potential coal reject and fine reject samples.

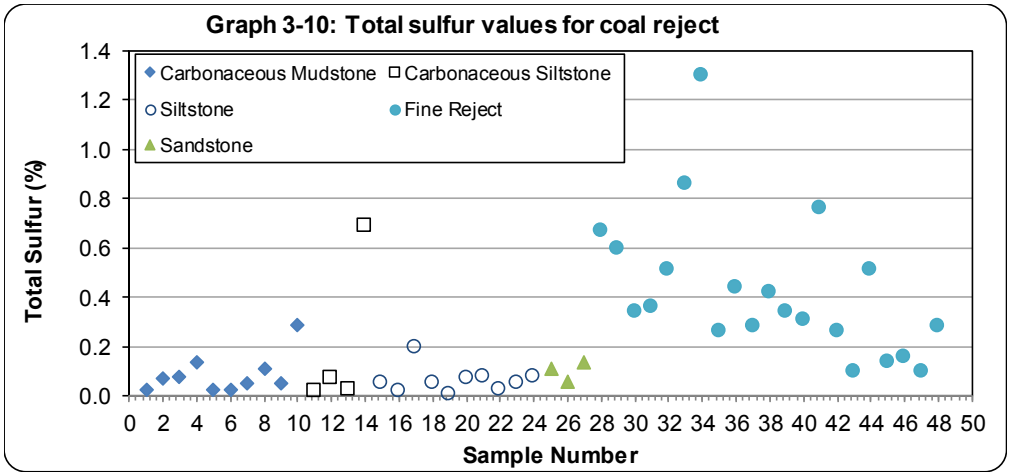


- **EC:** The EC of the 48 coal reject samples ranges from 137 to 768 µS/cm (median 541 µS/cm). There is no significant difference between the EC value of the potential coal reject and fine reject samples (**Graph 3.9**).

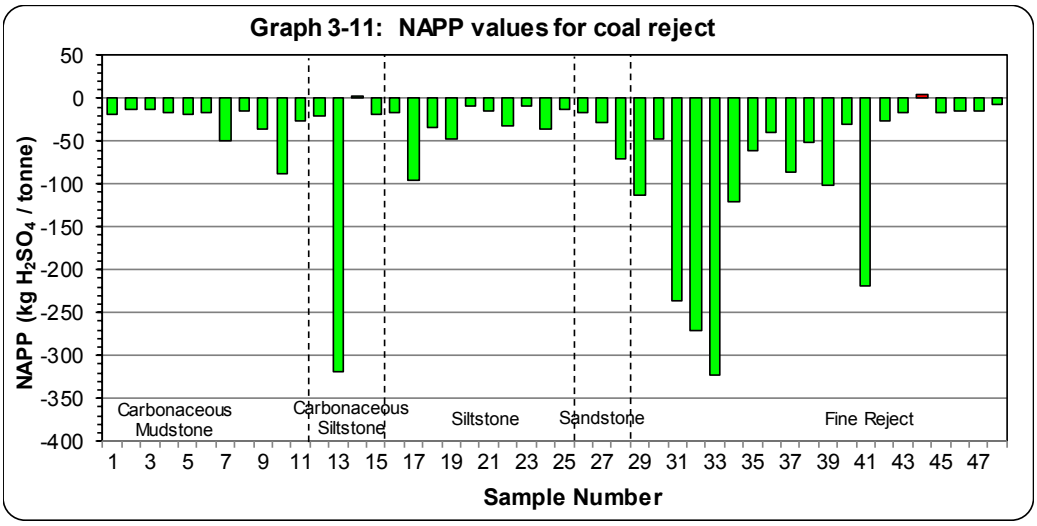


The pH and EC tests were completed on pulverised samples (≤ 75 µm) with a large surface area in contact with the leaching solution, thereby providing greater potential for dissolution and reaction, and represent an assumed 'worst case' scenario.

- **Total sulfur:** Total sulfur concentration in the coal reject samples ranges from 0.01 to 1.30 %S (median (0.13 %S) as shown in **Graph 3-10**. Whilst the total sulfur content of the fine reject samples (median 0.34 %S) is greater than the potential coal reject samples (median 0.06 %S), the nature of fine reject being directly related to coal, means that a significant portion of the total sulfur is likely to be in organic sulfur form, which does not contribute to generation of acidity.
- **MPA**: The MPA of the 48 samples ranges from 0.2 kg H_2SO_4/t to 39.8 kg H_2SO_4/t and has a median value of 3.2 kg H_2SO_4/t). The MPA results show that most coal reject materials represented by these samples have a relatively low risk of generating significant acidity through sulfide oxidation.
- **ANC**: The ANC value for the 48 samples ranges from 10.0 to 349.0 kg H_2SO_4/t and has a median value of 33.1 kg H_2SO_4/t. The median ANC value is therefore more than an order of magnitude greater than the median MPA of the samples tested. Most of the waste rock samples reacted quickly in the ANC test (elevated "fizz" rating) and therefore most of the measured ANC is expected to be available in these materials.



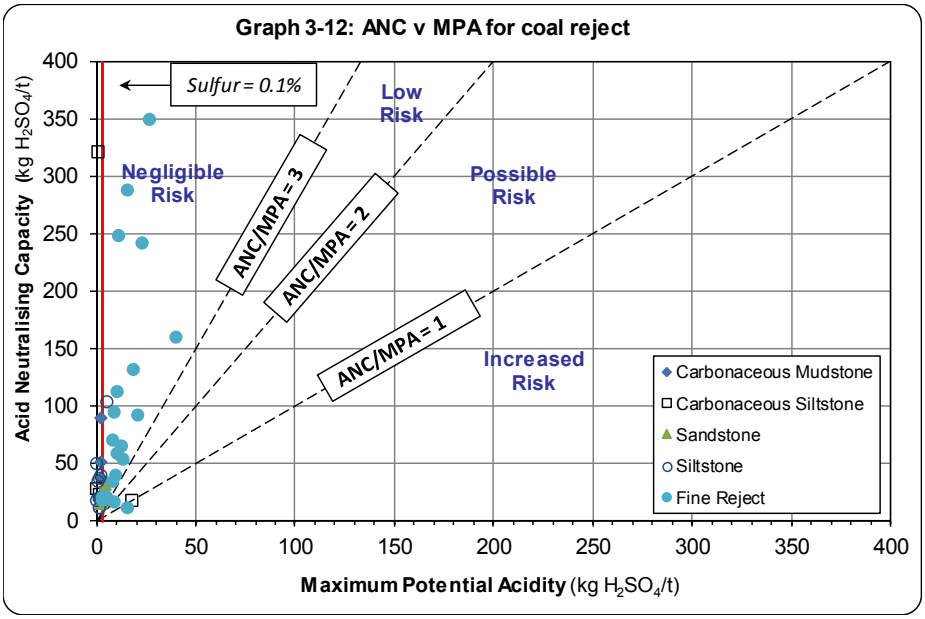
- **Net Acid Producing Potential (NAPP)**: The NAPP value for the 48 samples ranges from -322.7 to 4.2 kg H_2SO_4/t and has a negative median value of -27.4 kg H_2SO_4/t. The NAPP data for the samples presented in **Graph 3-11** illustrates that all coal reject samples have NAPP values that are negative or close to zero.



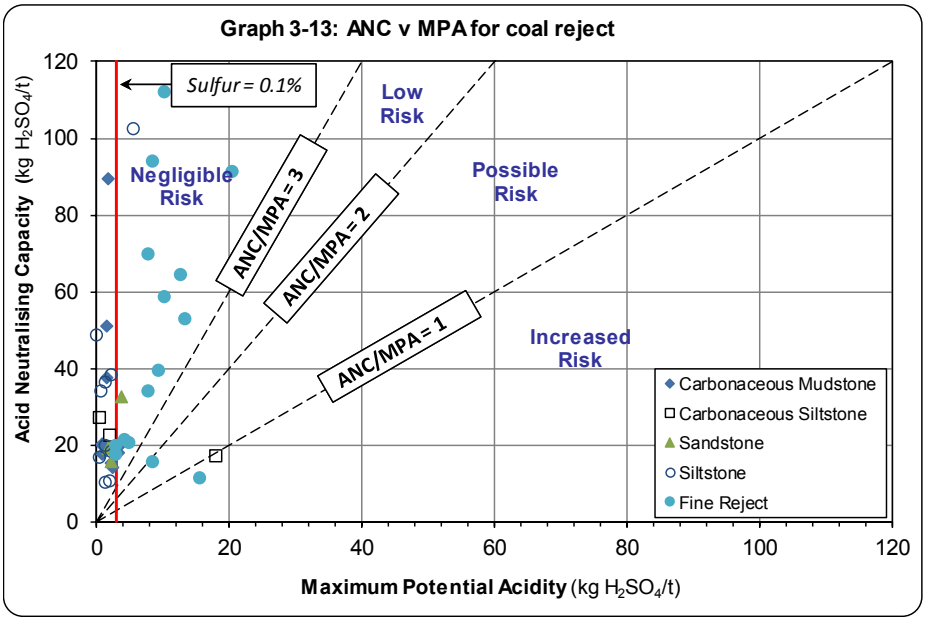
- **ANC:MPA ratio**: The ANC:MPA ratio of the 27 samples ranges from 0.9 to 348.3 and is typically elevated (median 15.5). In simplistic terms, this means that there is a large excess of ANC over MPA.

Graphs 3-12 and **3-13** show plots of ANC versus MPA for the 48 coal reject samples. ANC:MPA ratio lines have been plotted on the graphs to illustrate the factor of safety associated with the samples. Generally, those samples with an ANC:MPA ratio of greater than 2 and/or low sulfur content (≤ 0.1 % S) have a negligible to low risk of acid generation and a high factor of safety in terms of potential for AMD and/or NMD (COA, 2016; INAP, 2009[1]). The overwhelming majority of reject samples tested plot in the negligible to low risk domains in the figures and therefore, as a bulk material, reject is expected to have a high factor of safety and low risk of acid generation.

Graph 3-12: ANC v MPA for coal reject



Graph 3-13: ANC v MPA for coal reject



The ABA test data presented in **Table B2 (Attachment B)** have been used to classify the acid forming nature of the 48 coal reject samples.

The data presented in **Table 3-3** illustrate that most (46) of the 48 reject samples (95.8 %) are classified as NAF with only two sample classified as Uncertain, and no samples classified as PAF–LC or PAF.

Overall, these results confirm that the overwhelming majority of reject materials represented by the samples tested are likely to have a high factor of safety with respect to potential acid generation and there is therefore likely to be a relatively low risk of AMD or NMD generation through sulfide oxidation from these materials at the Project. As a bulk material, reject is expected to have excess inherent ANC.

Table 3-3: Geochemical classification criteria for coal reject samples

Geochemical Classification	Total Sulfur[1] (%)	NAPP (kg H_2SO_4/t)	ANC:MPA Ratio	Waste Rock Samples (n = 48)
Non-Acid Forming (Barren)	≤ 0.1	-	-	24
Non-Acid Forming	> 0.1	< -5	> 2	22
Uncertain	> 0.1	≥ -5 to ≤ +5	< 2	2
Potentially Acid Forming (Low Capacity)	> 0.1	> +5 ≤ +10	< 2	0
Potentially Acid Forming	> 0.1	> +10	< 2	0

Notes:
1. If total sulfur is less than or equal to 0.1 %S, the NAPP and ANC:MPA ratio are not required for material classification as the sample is essentially barren of oxidisable sulfur and essentially has negligible capacity to generate acidity through sulfide oxidation.

- **NAG test**: The 21 fine reject samples tested in 2018 were also subjected to the standard Net Acid Generation (NAG) test (AMIRA, 2002) and the final NAG pH value was greater than pH 4.5 in all but one sample (Sample C6). This sample was classified as Uncertain using ABA data. It should be noted that the standard NAG test must be used with caution for coal reject samples as the presence of organic matter can produce erroneous results (ACARP, 2008). Notwithstanding, in this particular case the overall Standard NAG test data aligns well with the NAPP data for the classification of coal reject materials.

3.2 Coal Resource Sulfur Assay Data

Coal resource sulfur assay data is available for 292 coal samples from 51 drill holes. The samples were split at the coal quality laboratory (ALS Richlands Laboratory) based on particle size (i.e., ± 0.125 mm) with the + 0.125 mm size fraction split again based on the density of the particles (**Table 3-4**).

Table 3-4: Coal size fraction description

Size Fraction	Label	Density
- 0.125 mm	-	-
+ 0.125 mm	F1.40	< 1.40 g/cm^3
	S1.4 - F1.50	1.40 g/cm^3 - 1.50 g/cm^3
	S1.50 - S1.60	1.50 g/cm^3 - 1.6 g/cm^3
	S1.6	> 1.60 g/cm^3

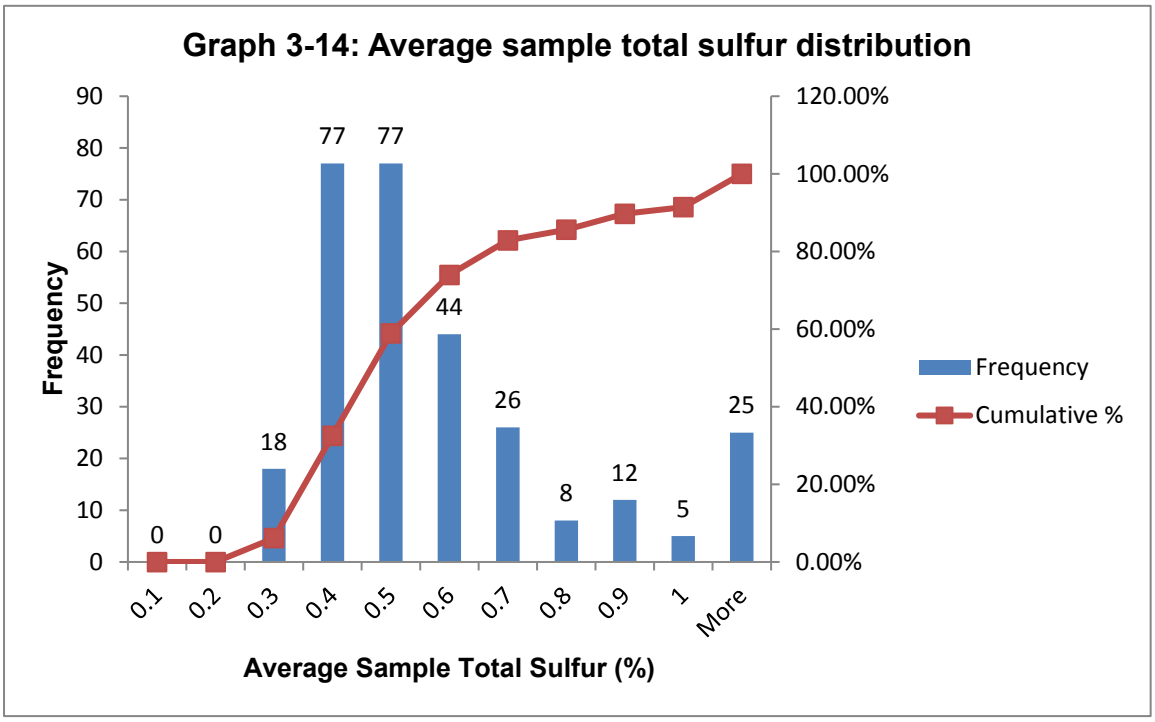
The results are plotted in **Graph 3-14**, which shows that most of the coal samples (83 %) have total sulfur values in the range 0.3 to 0.7 %S and approximately 8.5 % have a total sulfur value greater than 1 %S. It is important to note however, that total sulfur concentrations include other forms of sulfur such as sulfate, organic sulfur (sulfur comprising organic compounds within the coal) and sulfide sulfur, while generally only sulfide sulfur (e.g., pyrite and/or marcasite) can contribute to the generation of acidity. In many coal samples, a significant proportion of the sulfur species is likely to be organic sulfur, which does not contribute to potential acid generation.

Box and whisker plots for total sulfur concentrations by size and density fractions (**Graph 3-15**) show the interquartile range (the box), the median (the line within the box), the minimum and maximum values (within 1.5 times the interquartile range) and outliers (concentrations outside 1.5 times the interquartile range). The extent of the outliers in the data set relative to the interquartile ranges are illustrated on the graph.

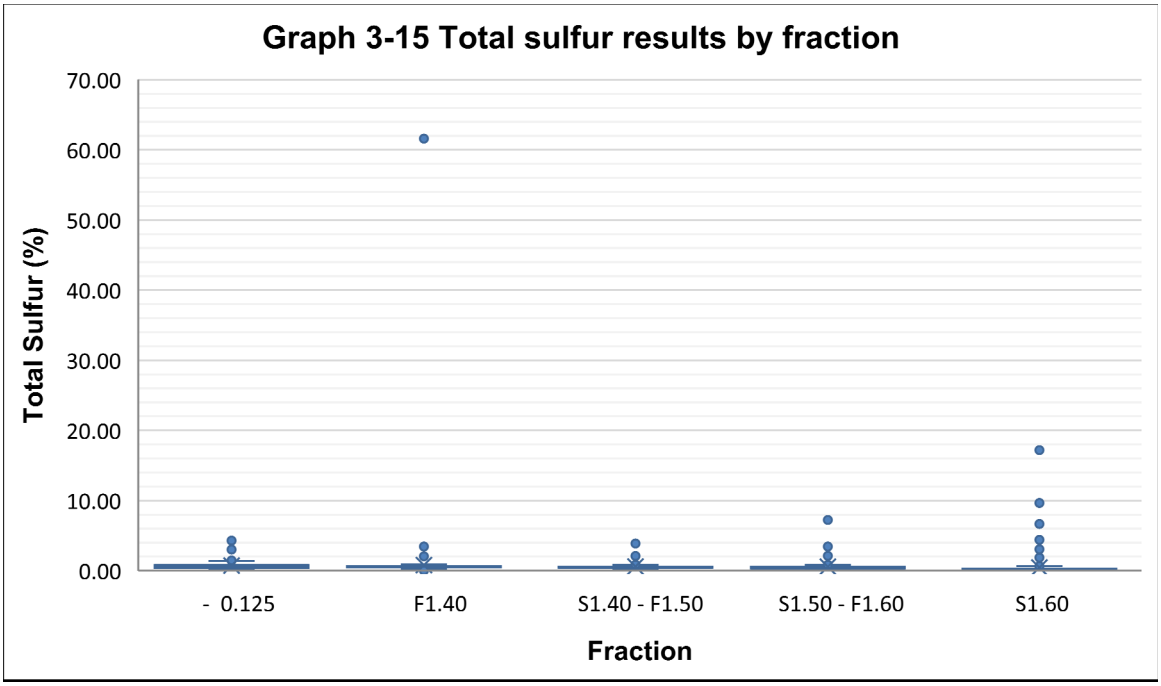
The sub-0.125 mm fraction contains the largest range of total sulfur concentrations, excluding outliers, of approximately 0.08 % to 1.38 % total sulfur with a median of 0.54 % total sulfur (**Graph 3-16**). Sub-samples of material larger than 0.125 mm show decreasing total sulfur ranges and medians with increasing material

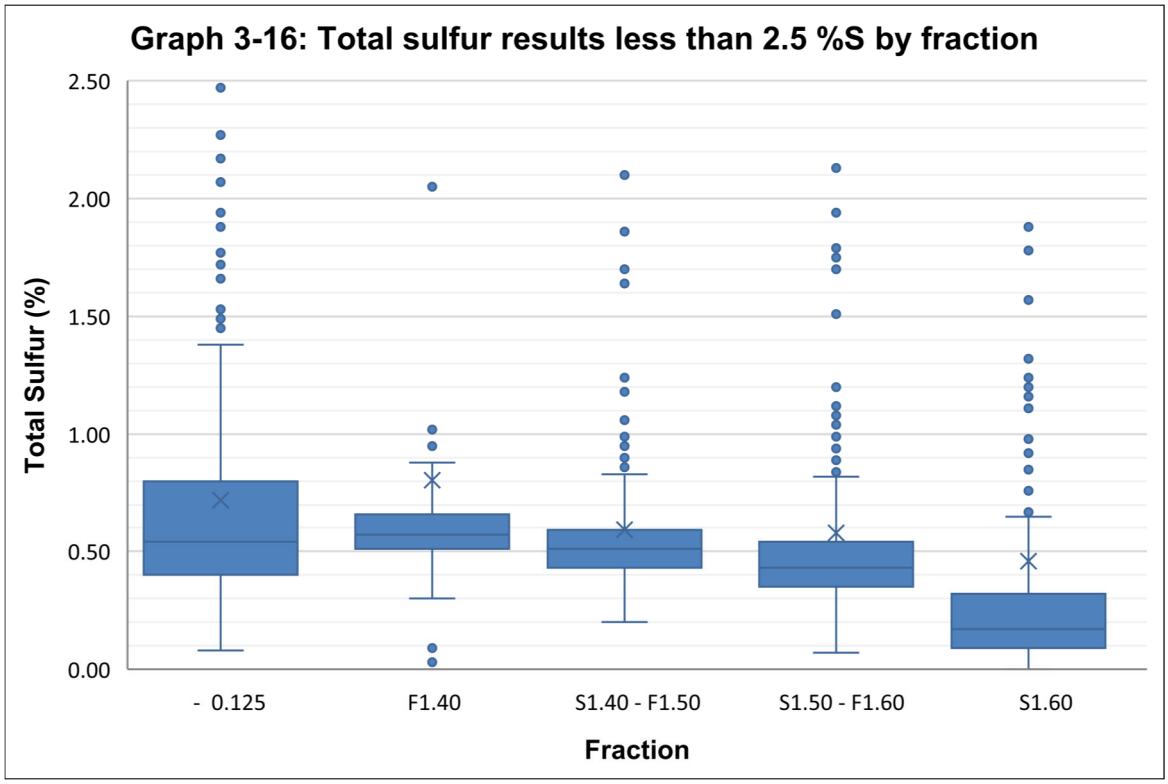
density. The density of pyrite (the primary acid producing sulfide) is approximately 5.0 g/cm^3. These results suggest that the total sulfur content of the coal materials is skewed towards the fine fraction. Fine coal reject materials are mainly comprised of coal fines which generally contain a higher proportion of organic sulfur than coarse coal reject material. The ABA (and NAG) test results for fine coal reject materials described in **Section 3.1.2** confirm this finding in that most fine reject samples are classified as NAF and none are classified as PAF.

Graph 3-14: Average sample total sulfur distribution



Graph 3-15 Total sulfur results by fraction





3.3 Multi-Element Concentrations in Solids

Multi-element scans were carried out on 12 composite waste rock, three composite potential coal reject, and 21 individual fine reject samples. The composition of the total of 15 composite waste rock and potential coal reject samples is provided in **Table B4** (**Attachment B**). This work was completed to identify any elements (metals/metalloids) present in these materials at concentrations that may be of environmental concern with respect to materials handling, storage, and water quality. The results of these scans are presented in **Tables B5** and **B6** (**Attachment B**) for waste rock and coal reject, respectively.

In order to provide some context, the multi-element results for the waste rock and coal reject samples were compared to the median background concentration (median crustal abundance) of those elements (metal/metalloids) in unmineralised soil (**Table B7** and **B8**, **Attachment B**). From this comparison, a geochemical abundance index (GAI) was calculated. The GAI quantifies an assay result for a particular element in terms of the average crustal abundance for that element. The index, based on a log (2) scale, is expressed in seven integer increments (0 to 6), which correspond to enrichment factors from 0 to over 96 times average crustal abundance, as shown in **Table 3-5**.

Table 3-5: Geochemical Abundance Index values and Enrichment Factors

GAI	Enrichment factor
0	Less than 3-fold enrichment
1	3 – 6 fold enrichment
2	6 – 12 fold enrichment
3	12 – 24 fold enrichment
4	24 – 48 fold enrichment
5	48 – 96 fold enrichment
6	Greater than 96 fold enrichment

Generally, a GAI greater than or equal to 3 indicates enrichment to a level that may warrant further investigation. This is the case for some environmentally important 'trace' elements, such as As, Cd, Cu and Zn, rather than for major rock-forming elements, such as Ca, Mg, K and Na.

Elements identified as enriched may not necessarily be a concern for revegetation, drainage water quality or public health, but their significance should still be evaluated. Similarly, because an element is not enriched does not mean it will never be a concern, because under some conditions (e.g., low pH) the solubility of common environmentally important elements such as Al, Cu, Cd, Fe and Zn increases significantly.

The GAI results presented in **Table B7** and **B8** (**Attachment B**) indicate that all of the waste rock and coal reject samples tested have GAI values less than 3 for all elements and are not significantly enriched with metals/metalloids compared to unmineralised soils (INAP, 2019; Bowen, 1979). The solubility of metals/ metalloids contained in waste rock and coal reject materials in water extract tests is discussed in **Section 3.5** and in kinetic leach column tests is discussed in **Section 3.6**.

3.4 Soil Characteristics and Sodicity

3.4.1 Soil Characteristics

The exchangeable cation results for the 12 composite waste rock samples and three composite potential coal reject samples described in **Section 3.3** are presented in **Table B5** and **B6** (**Attachment B**), respectively. The results indicate that the effective cation exchange capacity (eCEC) of the 15 samples ranges from 55.2 to 80.2 meq/100g and is typically in the 'Very High' range as described in **Table 3-6** (Hazelton and Murphy, 2007). The calcium:magnesium ratio is also typically elevated in the samples tested. Waste rock and potential coal reject materials with a high eCEC value and elevated calcium:magnesium ratio, generally provide a reasonable growth medium for vegetation roots as part of revegetation and rehabilitation activities.

Table 3-6: Ratings for Cation Exchange Capacity

eCEC Rating	CEC (meq/100g)
Very low	<6
Low	6 – 12
Moderate	12 – 25
High	25 – 40
Very high	>40

3.4.2 Sodicity

The exchangeable sodium percentage (ESP) results for the 12 composite waste rock samples and 3 composite potential coal reject samples are presented in **Table B5** and **B6** (**Attachment B**). The ESP results for the samples are typically elevated and range from 28.9 to 48.7 %. Generally, samples with ESP values less than 6 % are considered non-sodic, and greater than 14 % are considered strongly sodic and may be susceptible to dispersion and erosion (Isbell, 2002; and Northcote and Skene, 1972). Sodicity can result in surface crusting and low infiltration and hydraulic conductivity within the affected soils (Hazelton and Murphy, 2007).

Overall, the results of the ESP tests indicate that most waste rock and potential coal reject materials represented by the samples tested are likely to be strongly sodic; and consequently, may be susceptible to dispersion and erosion and should be managed appropriately. The addition of gypsum to sodic waste rock materials, covering with a well vegetated subsoil/topsoil cover and or use of a surface rock mulch as part of rehabilitation has the potential to lower the sodicity and reduce the potential for dispersion and erosion.

3.5 Multi-Element Concentrations in Water Extracts

The 15 composite waste rock and potential coal reject samples described in **Section 3.3** were subjected to water extract tests [1:5 solid:water (w:v)]. The soluble multi-element results from these water extract tests are compared with water quality guideline values (AWQG, 2018; ANZECC & ARMCANZ; 2000). These guidelines are provided for context only and are not intended to be interpreted as "maximum permissible levels" for site water storage or discharge.

It should also be recognised that direct comparison of geochemical data with guideline values can be misleading. For the purpose of this study, guideline values are only provided for broad context and should not be interpreted as arbitrary 'maximum' values or 'trigger' values. Using sample pulps (ground to passing 75 µm) provides a very high surface area to solution ratio, which encourages mineral reaction and dissolution of the solid phase. As such, the results of screening tests on water extract solutions are assumed to represent a 'worst case' scenario for initial surface runoff and seepage from waste rock materials.

The results from soluble multi-element testing water extracts (1:5 sample:water (w:v)) from the 15 composite waste rock and potential coal reject samples are presented in **Table B9** (**Attachment B**).

The pH values of the water extracts range from pH 8.6 to 10.0 (median pH 9.8) and are typically alkaline. Thirteen of the 15 composites had a pH value above the pH range for 95 % species protection in freshwater aquatic ecosystems guidelines; pH 6 to 9 (ANZECC & ARMCANZ, 2000).

The EC values for the water extracts range from 423 to 662 (median 593 mg/L) and both salinity and the corresponding concentration of total dissolved solids can be described as 'low' to 'medium' according to historical Queensland guidelines previously described in **Table 3-1** (DME, 1995).

Total alkalinity values in the sample range from 139 to 334 mg $CaCO_3$/L and are typically moderate (median total alkalinity is 262 mg $CaCO_3$/L) and the alkalinity is comprised of both bicarbonate and carbonate ions.

The concentration of major ions in the water extracts is dominated by sodium, chloride and sulfate whereas the concentration of calcium, magnesium and potassium is below the laboratory limit of reporting (LoR). The concentrations of calcium and sulfate in the water extracts are also well below the applied livestock drinking water quality guideline values for these ions (1,000 mg/L) (ANZECC & ARMCANZ, 2000).

The concentration of trace metals/metalloids tested in the water extracts is typically low, predominantly below the laboratory LoR, and generally below the applied water quality guideline criteria where these exist. The concentrations of aluminium (3 samples), arsenic (13 samples) and selenium (11 samples) is elevated in some of the water extracts compared to the applied freshwater aquatic ecosystem guideline concentration trigger values (95% species protection level). However, the only elements that are greater than the applied livestock drinking water guidelines are arsenic (1 sample), and selenium (5 samples) (ANZECC & ARMCANZ, 2000).

Whilst the concentrations of some elements in some water extract samples are greater than applied water quality guideline values, these guideline values are only provided for broad context and should not be interpreted as arbitrary 'maximum' values or 'trigger' values. The use of sample pulps is assumed to represent a 'worst case' pore water chemistry scenario and surface run-off and seepage from waste rock and coal reject (in the field) is expected to have lower concentrations than in water extracts from these materials.

Due to a number of factors in the field (compared to the laboratory), including scale-up, particle size distribution, hydrology, preferential flow paths, surface reactions and dilution, any direct comparison of soluble multi-element concentrations in laboratory leachate with water quality guidelines is strictly not valid and should be used with caution.

Notwithstanding, a range of parameters including soluble metals/metalloid concentrations will be regularly monitored in the surface water and groundwater quality monitoring program for the Project.

The potential solubility of metals/metalloids over time is discussed further using the results of kinetic leach column tests in **Section 3.6**.

3.6 Multi-element concentrations in Kinetic Leach Column tests

KLC tests were completed on six composite samples of mine waste materials (four waste rock and two potential coal reject samples) using the methodology described in **Section 2.2.2** and **Attachment A**. The composition of the six composite samples used in the KLC tests is provided in **Table B-10** (**Attachment B**) and summarised in **Table 3-7**. The KLC tests were operated for a period of three months from May to August 2012 under a fortnightly watering and leaching regime. The KLC tests were operated following mining industry guidelines for such tests (AMIRA, 2002; COA, 2016).

The leachate results from the KLC test program are presented alongside Australian water quality guideline values for livestock drinking water quality (ANZECC & ARCANZ, 2000). These guidelines are provided for context only and are not intended to be interpreted as "maximum permissible levels" for site water storage or discharge. It should be noted that the KLC samples were crushed to pass a 10 mm sieve size, where required, and therefore have a high surface area for potential geochemical reaction. The ratio of sample to water in the KLC tests was approximately 2.5:1 (w/v) (i.e., concentrated), whereas the ratio of sample to water generally used in tests where results can (arbitrarily) be compared against guideline concentrations to provide relevant context is over an order of magnitude more dilute at 1:5 (w/v). Whilst arbitrary comparisons against guideline concentrations can be helpful in some situations to provide relevant context, such comparisons cannot be directly extrapolated to the field situation at the Project.

Table 3-7: Composite samples selected for KLC tests

KLC Sample Number	Sample Type	Description
KLC1	Waste Rock	Carbonaceous Mudstone
KLC2	Waste Rock	Mudstone and Coal
KLC3	Waste Rock	Sandstone
KLC4	Waste Rock	Carbonaceous Siltstone and Coal
KLC5	Potential Coal Reject	Carbonaceous Mudstone/Siltstone
KLC6	Potential Coal Reject	Carbonaceous Mudstone, Siltstone and Sandstone

The KLC test results for the four composite waste rock samples and two composite potential coal reject samples are presented in **Attachment B**. Tables **KLC 1** to **KLC 6** provide the KLC test data for seven fortnightly leach events, selected components of which are also shown graphically. The KLC test results indicate that:

- Leachate from the six KLC tests has a pH value in a relatively narrow range of 8.74 to 9.64 over the test period. The lowest pH value is greater than the pH range of the deionised water used in the test program (typically pH 5 to 6.5). Therefore, it is likely that the mine waste materials add some alkalinity to contact/leaching water. These results suggest that pH values from bulk mine waste materials exposed to oxidising conditions will likely be in the range pH 8.5 to 9.5.
- Leachate from the six KLC tests has an EC value in the range of 117 to 1,004 µS/cm over the test period. Most EC values in leachate show a downward trend over time such that all EC values are less than 500 µS/cm at the end of the test period. These results indicate EC values from bulk mine waste materials exposed to oxidising conditions will be low to moderate.

  The slightly elevated EC value in the first few flushes from some of the mine waste sample materials is probably due to the increased solubility of minerals through crushing the sample materials before loading into the KLC test columns.
- The acidity value in leachate from the six KLC tests over the test period is very low, ranging from below the laboratory LoR (<1 mg/L, as $CaCO_3$) to 2 mg/L. The alkalinity values in leachate from the KLC tests are more than sufficient to create positive net alkalinity values (i.e., the alkalinity is greater than the acidity) during the test period.

- The concentration of major ions in leachate from the six KLC tests is typically dominated by variable concentrations of sodium, chloride and sulfate. The concentrations of the remaining major ions tested (calcium, magnesium and potassium) are less than the laboratory LoR (<1 mg/L).
- The sulfate release rate from the six KLC samples typically shows a relatively stable trend over the test period. The sulfate concentration in leachate from all of the KLC tests is generally an order of magnitude below the applied guideline value of 1,000 mg/L (ANZECC & ARMCANZ, 2000).
- The six composite samples used in the KLC tests retain at least ~82.3 % of their inherent total sulfur content after three months of exposure to idealised oxidising conditions, which reflects the slow rate of sulfide oxidation (and low potential for acid generation) for these materials.
- The six composite KLC samples retain at least ~99.95 % of their inherent ANC value after six months of exposure to idealised oxidising conditions, which reflects the slow release of alkalinity from these materials.
- The concentration of trace metals/metalloids in the leachate from the KLC tests is generally low and below the laboratory LoR. Most trace metals/metalloids are therefore sparingly soluble at the current pH of the KLC leachate. The concentrations of all metals/metalloids are typically below the applied water quality guideline criteria for livestock drinking water (ANZECC & ARMCANZ, 2000). The only exception is selenium in some of the leachate samples, which show concentrations above the livestock drinking water low risk trigger level (0.02 mg/L).
- The sulfate generation rate results obtained for the six KLC test samples have been used to determine the rate of sulfide oxidation in these materials. Most sulfate salts generated from sulfide reaction involving materials with a relatively low sulfide sulfur concentration are highly soluble, and therefore will be collected in column leachate. The dissolved sulfate (and calcium) concentrations in most of the KLC leachate are typically much less than the solubility limit of gypsum ($CaSO_4$), for example, which indicates that sulfate generation is not controlled by gypsum dissolution in the KLC test materials. Therefore, the sulfate concentrations and oxidation rate calculations provide reasonable estimates of these parameters and the results align well with existing static and dynamic geochemical data derived from a wide range of mine waste materials (AMIRA, 1995). The sulfate generation rate and associated sulfide oxidation rate for the KLC tests are shown in **Table 3-8**.

Table 3-8: Sulfate generation and sulfide oxidation rates for KLC tests

KLC Sample Number	Sample Description	Sulfate Generation Rate (mg/kg/week)	Oxidation Rate (kg $O_2/m^3/s$)
KLC1	Waste Rock	22.06	1.84×10^{-8}
KLC2	Waste Rock	15.32	1.20×10^{-8}
KLC3	Waste Rock	9.59	7.96×10^{-8}
KLC4	Waste Rock	29.00	2.45×10^{-9}
KLC5	Potential Coal Reject	19.15	1.56×10^{-8}
KLC6	Potential Coal Reject	12.36	1.03×10^{-8}

- The sulfate generation rate from the KLC samples ranges from 9.59 to 29.00 mg/kg/week which is equivalent to a sulfide oxidation rate ranging from 7.96×10^{-9} to 2.45×10^{-8} kg $O_2/m^3/s$. Mine waste materials with an oxidation rate less than 5×10^{-8} kg $O_2/m^3/s$ and a moderate ANC level have an increased factor of safety and are likely to generate leachate that is pH neutral and/or has a low level of acidity (AMIRA, 1995; Bennett *et al*., 2000). Hence, all of the mine waste materials tested in the KLC test program fall into this category. Overall, the KLC results reflect the range of material characteristics predicted from the static geochemical test results shown in **Sections 3.1** and **3.2**.

Potential implications of these results with respect to the management of the mine waste materials at the Project are discussed further in **Section 4**.

4 Discussion

4.1 AMD potential and Management

The results of the static and kinetic geochemical tests demonstrate that the overwhelming majority of the waste rock and coal reject materials represented by the samples tested have a low reactive sulfur content, excess ANC and are classified as NAF. Consequently, bulk waste rock and coal reject materials have a high factor of safety with respect to potential acid generation. While a small fraction of the waste rock and coal reject materials may have some potential to generate acidity, the bulk materials will have excess ANC and will generate alkaline surface runoff and seepage.

The fine reject material included in the test program generally has a higher total sulfur content than waste rock or potential coal reject materials. As the nature of fine reject material is directly related to coal, it is expected that a significant portion of the total sulfur in fine reject is likely to be in an organic sulfur form, which does not contribute to the generation of acidity. It is recommended that the validity of this assumption be verified in future using static and kinetic geochemical testing of coal reject samples generated from coal quality studies or from the Project washplant during operations.

As a precautionary measure, it is recommended to avoid placement of any visually identifiable pyritic waste rock material and coal reject material on the outside of the waste rock emplacement area during operations. Should any pyritic waste rock material be identified, this should be placed in the core of the waste rock emplacement. When operations cease and the open pits are backfilled, this precautionary principle should continue, to ensure that no pyritic waste rock or coal reject materials is placed at or near the surface of the final landform.

From a geochemistry viewpoint, co-disposal of coarse and fine reject materials will be beneficial. This is because fine reject materials typically remain moist and any oxidation will only occur at surface (i.e., the fine reject will fill the gaps between the coarse reject particles and generally limit oxygen ingress). The coarse reject material will also provide geotechnical strength to the co-disposed (mixed) material. Similarly, there may also be benefit in disposing of mixed coarse and fine reject materials within the core of the waste rock emplacement area as it has been clearly demonstrated that waste rock typically has very low sulfur content and excess ANC.

4.2 Multi-Element Composition and Water Quality

4.2.1 Multi-Element Composition and Enrichment

The multi-element concentrations of metal/metalloids in waste rock and coal reject materials are presented in **Section 3.3**, along with a comparison against applied guideline values and median crustal abundance in soils. The results indicate that these mine waste materials are not significantly enriched with metals/metalloids compared to median crustal abundance in unmineralised soils.

4.2.2 Water Quality

The static water extract and kinetic leach test results presented in this report indicate that surface runoff and seepage from bulk NAF mine waste materials is likely to be alkaline and have a low to moderate EC value indicating low to moderate salinity levels (and low to moderate concentrations of dissolved solids). Surface runoff and seepage from waste rock and potential coal reject materials is likely to be slightly higher than the range for 95 % species protection in freshwater aquatic ecosystems (pH 6 to 9) as set out in ANZECC and ARMCANZ (2000).

The major ion concentrations in leachate from waste rock and potential coal reject materials are relatively low and dominated by sodium, chloride and sulfate. Concentrations of other major ions are likely to be less than the laboratory LoR in leachate from these materials. The sulfate concentration in leachate from mine waste samples is typically an order of magnitude less than the applied ANZECC & ARMCANZ stock water quality guideline criterion (1,000 mg/L).

The water extract and KLC test results for waste rock and potential coal reject materials indicate that most trace metals/metalloids are sparingly soluble, and that the concentration of dissolved metals/metalloids in surface runoff and seepage is relatively low, predominantly below the laboratory LoR, and below the applied water quality guideline criteria. Minor exceptions may include aluminium, arsenic and selenium in pore water, which can occasionally be greater than the applied guideline concentrations (ANZECC & ARMCANZ, 2000) in selected samples.

The KLC test data over the test period indicates that the concentrations of most dissolved trace metal/metalloid in contact water are typically low and well within applied livestock drinking water guideline values. The only exception is selenium in some of the leachate samples, which show concentrations above the livestock drinking water low risk trigger level (0.02 mg/L).

Due to a number of factors in the field (compared to the laboratory), including scale-up, particle size distribution, hydrology, preferential flow paths, surface reactions and dilution, any direct comparison of soluble multi-element concentrations in laboratory leachate with water quality guidelines is strictly not valid and should be used with caution.

Notwithstanding, a range of parameters including soluble metals/metalloid concentrations will be monitored as part of the surface water and groundwater quality monitoring program for the Project, including areas used to store mine waste materials and coal.

4.3 Revegetation and Rehabilitation

From a soil chemistry viewpoint, bulk waste rock and potential coal reject materials are classified as NAF and are likely to be alkaline and have low to moderate levels of salinity. Most waste rock and potential coal reject materials may be susceptible to dispersion and erosion, although these material characteristics may be improved to some extent by considering options such as the addition of gypsum and use of a vegetated subsoil/topsoil cover and potentially surface rock mulch in the final landform. Cation exchange data indicates no specific requirements for fertiliser supplementation for surface mining waste materials to provide a reasonable growth medium for revegetation.

Additional confirmatory sampling and testing and field trials should be completed on bulk mine waste materials when available during the operational phase of the Project to determine the best management option for progressive rehabilitation of these materials during operations and at mine closure.

5 Conclusions and Recommendations

5.1 Conclusions

RGS has completed a geochemistry assessment of mine waste (waste rock and coal reject) materials at the Project. The main findings of the geochemical assessment are as follows:

- The overwhelming majority of the waste rock and potential coal reject materials have low sulfide content, excess ANC, and are classified as NAF. These materials have a very low risk of acid generation and a high factor of safety with respect to potential for generation of acidity.
- Coal reject from the CHPP is also expected to have relatively low sulfide content and excess ANC. As a bulk mixed material, it is expected that coal reject will be classified as NAF and have a relatively low risk of generating acidic drainage.
- Initial and ongoing surface runoff and seepage from waste rock and coal reject materials is expected to be alkaline and have a low level of salinity (and low level of dissolved solids).
- There is no significant metal/metalloid enrichment in waste rock and coal reject materials compared to median crustal abundance in unmineralised soils.
- Most metals/metalloids are sparingly soluble at the alkaline pH of leachate expected from bulk NAF waste rock and potential coal reject materials. Dissolved metal/metalloid concentrations in surface runoff and leachate from bulk NAF waste rock and potential coal reject materials are expected to be low and unlikely to pose a significant risk to the quality of surface and groundwater resources at relevant storage facilities.
- NAF waste rock materials should be amenable to revegetation as part of rehabilitation activities, although, the addition of gypsum, vegetated subsoil/topsoil cover, and/or a surface rock mulch may need to be considered for sodic materials to limit the potential for dispersion and erosion.

5.2 Recommendations

As a result of the geochemical assessment work completed on waste rock and coal reject materials at the Project, several recommendations are provided to minimise the risk of any significant environmental harm to the immediate and downstream environment:

- Confirmatory sampling and testing should be completed when the mine is operational and bulk materials become available to confirm the most appropriate management methodology for progressive rehabilitation of these materials during mine operations and at mine closure.
- As a precautionary measure, placement of any visibly pyritic waste rock or coal reject materials at or near the final surfaces of waste rock storage emplacements should be avoided during operations. Should any pyritic waste rock material be identified, this should be placed in the core of the waste rock emplacement at a location where the material will ultimately be located well below the final landform surface and will not be exposed during operational reshaping activities. Similarly, co-disposal of coarse and fine reject materials within the core of the waste rock emplacement well below the final landform surface is recommended. When operations cease and the open pits are backfilled, this precautionary principle should continue, to ensure that no pyritic waste rock or coal reject materials occur near the surface of the final landform.
- Surface water and seepage from the proposed open pit, ROM coal and waste rock emplacement storage areas should be monitored to ensure that key water quality parameters remain within appropriate criteria. Whilst significantly elevated metal/metalloid concentrations in contact water are not expected in surface runoff at the Project, it is recommended that the suite of metals/metalloids described in the static and KLC test program in this report be included from time to time, where appropriate, in the site water quality monitoring program.

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Attachment A Geochemical Assessment of Mine Waste Materials

GEOCHEMICAL ASSESSMENT OF MINE WASTE MATERIALS

ACID GENERATION AND PREDICTION

Acid generation is caused by the exposure of sulfide minerals, most commonly pyrite (FeS_2), to atmospheric oxygen and water. Sulfur assay results are used to calculate the potential acidity that could be generated by the sample typically by determining the sulfidic S content directly. Pyrite reacts under oxidising conditions to generate acid according to the following overall reaction:

$$FeS_2 + 15/4\ O_2 + 7/2\ H_2O \rightarrow Fe(OH)_3 + 2\ H_2SO_4$$

According to this reaction, the maximum potential acidity (MPA) of a sample containing 1 %S as pyrite would be 30.6 kg H_2SO_4/t. The chemical components of the acid generation process consist of the above sulfide oxidation reaction and acid neutralization, which is mainly provided by inherent carbonates and to a lesser extent silicate minerals. The amount and rate of acid generation is determined by the interaction and overall balance of the acid generation and neutralisation components.

Net Acid Producing Potential

The net acid producing potential (NAPP) is used as an indicator of materials that may be of concern with respect to acid generation. The NAPP calculation represents the balance between the maximum potential acidity (MPA) of a sample, which is derived from the sulfide sulfur content, and the acid neutralising capacity (ANC) of the material, which is determined experimentally. By convention, the NAPP result is expressed in units of kg H_2SO_4/t sample. If the capacity of the solids to neutralise acid (ANC) exceeds their capacity to generate acid (MPA), then the NAPP of the material is negative. Conversely, if the MPA exceeds the ANC, the NAPP of the material is positive. A NAPP assessment involves a series of analytical tests that include:

Determination of pH and EC

pH and EC measured on 1:5 w/w water extract. This gives an indication of the inherent acidity and salinity of the waste material when initially exposed in a waste emplacement area.

Total sulfur content and Maximum Potential Acidity (MPA)

Total sulfur content is determined by the Leco high temperature combustion method. The total sulfur content is then used to calculate the MPA, which assumes that the entire sulfur content is present as reactive pyrite. Direct determination of the pyritic sulfur content can provide a more accurate estimate of the MPA.

Acid neutralising capacity (ANC)

By addition of acid to a known weight of sample, then titration with NaOH to determine the amount of residual acid. The ANC measures the capacity of a sample to react with and neutralise acid. The ANC can be further evaluated by slow acid titration to a set end-point in the Acid Buffering Characteristic Curve (ABCC) test through calculation of the amount of acid consumed and evaluation of the resultant titration curve.

Net Acid Generation (NAG)

The net acid generation (NAG) test involves the addition of hydrogen peroxide to a sample of mine rock or process residue to oxidise reactive sulfide, then measurement of pH and titration of any net acidity produced by the acid generation and neutralisation reactions occurring in the sample. A significant NAG result (i.e., final $NAG_{pH} < 4.5$) indicates that the sample is potentially acid forming (PAF) and the test provides a direct measure of the net amount of acid remaining in the sample after all acid generating and acid neutralising reactions have taken place. A $NAG_{pH} > 4.5$ indicates that the sample is non-acid forming (NAF). The NAG test can provide a direct assessment of the potential for a material to produce acid after a period of exposure and weathering and is used to refine the results of the theoretical NAPP predictions. The NAG test can be used as a stand-alone test but is recommended that this only be considered after site specific calibration work is carried out. The standard NAG test is generally unsuitable for coal mining projects as the high organic content of some materials can cause erroneous results (ACARP, 2008).

ASSESSMENT OF ELEMENT ENRICHMENT AND SOLUBILITY

In mineralised areas it is common to find a suite of enriched elements that have resulted from natural geological processes. Multi-element scans are carried out to identify any elements that are present in a material (or readily leachable from a material) at concentrations that may be of environmental concern with respect to surface water quality, revegetation and public health. The samples are generally analysed for the following elements:

Major elements	Al, Ca, Fe, K, Mg, Na and S.
Minor elements	As, B, Cd, Co, Cr, Cu, F, Hg, Mn, Mo, Ni, Pb, Sb, Se and Zn.

The concentration of these elements in samples can be directly compared with relevant state or national environmental and health-based concentration guideline criteria to determine the level of significance. Water extracts are used to determine the immediate element solubilities under the existing sample pH conditions of the sample. The following tests are normally carried out:

Multi-element composition of solids.

Multi-element composition of solid samples determined using a combination of ICP-mass spectroscopy (ICP-MS), ICP-optical emission spectroscopy (OES), and atomic absorption spectrometry (AAS).

Multi-element composition of water extracts (1:5 sample:deionised water).

Multi-element composition of water extracts from solid samples determined using a combination of ICP-mass spectroscopy (ICP-MS), ICP-optical emission spectroscopy (OES), and atomic absorption spectrometry (AAS).

Under some conditions (*e.g.* low pH) the solubility and mobility of common environmentally important elements can increase significantly. If element mobility under initial pH conditions is deemed likely and/or subsequent low pH conditions may occur, kinetic leach column test work may be completed on representative samples.

KINETIC LEACH COLUMN TESTS

Kinetic leach column (KLC) tests can be used to provide information on the reaction kinetics of mine waste materials. The major objectives of kinetics tests are to:

- Provide time-dependent data on the kinetics and rate of acid generation and acid neutralising reactions under laboratory controlled (or onsite conditions);
- Investigate metal release and drainage/seepage quality; and
- Assess treatment options such as addition of alkaline materials.

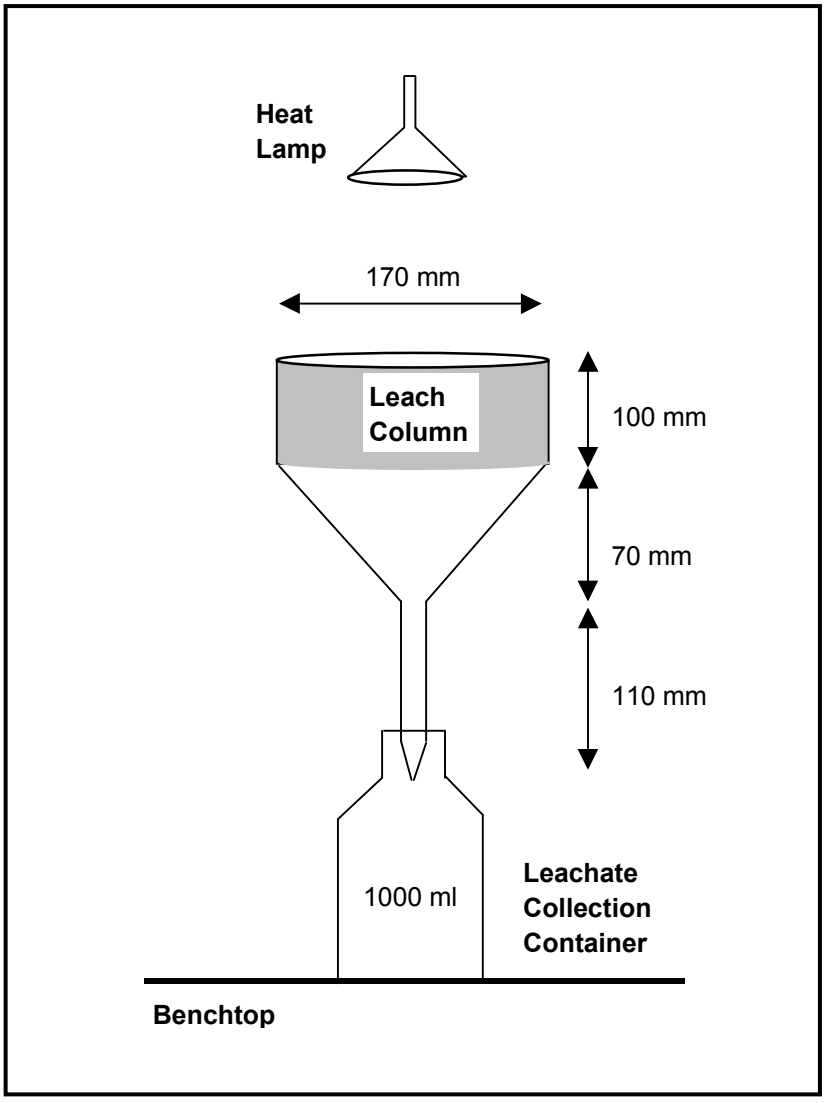
The KLC tests simulate the weathering process that leads to acid and base generation and reaction under laboratory controlled or site conditions. The kinetic tests allow an assessment of the acid forming characteristics and indicate the rate of acid generation, over what period it will occur, and what management controls may be required.

In KLC tests, water is added to a sample and the mixture allowed to leach products and by-products of acid producing and consuming reactions. Samples of leachate are then collected and analysed. Intermittent water application is applied to simulate rainfall and heat lamps are used to simulate sunshine. These tests provide real-time information and may have to continue for months or years. Monitoring includes trends in pH, sulfate, acidity or alkalinity, and metals, for example. The pH of the collected leachate simulates the acid drainage process, acidity or alkalinity levels indicate the rate of acid production and acid neutralisation, and sulfate production can be related to the rate of sulfide oxidation. Metal concentration data provides an assessment of metal solubility and leaching behaviour.

Figure A1 shows the kinetic leach column set up typically used by RGS adapted from *AMIRA, 2002*. The columns are placed under heat lamps to allow the sample to dry between water additions to ensure adequate oxygen ingress into the sample material.

Approximately 2 kg of sample is accurately weighed and used in the leach columns and depending on the physical nature of the material and particle size can be used on an as-received basis (i.e., no crushing as with process residues) or crushed to nominal 5-10 mm particle size (as with waste rock). The sample in the column is initially leached with deionised water at a rate of about 400 ml/kg of sample and the initial leachate from the columns collected and analysed. Subsequent column leaching is carried out at a rate of about 400 ml/kg per month and again collected and analysed. The leaching rate can be varied to better simulate expected site conditions or satisfy test program data requirements. The column must be exposed to drying conditions in between watering events. The residual water content and air void content in the column can be determined by comparing the wet and dry column weights. A heat lamp is generally used above the sample during daylight hours to maintain the leach column surface temperature at about 30^{o}C.

Figure A1: Kinetic leach column setup



Attachment B Static and Kinetic Geochemical Test Results and Trends

Table B1: Waste Rock Samples Sorted by Drill Hole and Depth

ALS Laboratory Sample ID	RGS Sample ID	RGS Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type
				From	To	Interval		
EB1208605176	RGS001	137	STX083	12.10	12.55	0.45	Siltstone	Waste rock
EB1208605177	RGS002	30	STX083	17.70	18.10	0.40	Clay	Waste rock
EB1208605063	RGS003	76	STX083	24.20	24.60	0.40	Sandstone	Waste rock
EB1208605064	RGS004	9	STX083	27.40	27.90	0.50	Carbonaceous Mudstone	Waste rock
EB1208605178	RGS005	138	STX083	38.50	38.90	0.40	Siltstone	Waste rock
EB1208605066	RGS006	77	STX083	39.20	39.65	0.45	Sandstone	Waste rock
EB1208605067	RGS007	105	STX083	47.45	48.00	0.55	Sandstone w/coal	Waste rock
EB1208605068	RGS008	119	STX083	53.25	53.70	0.45	Siltstone	Waste rock
EB1208605069	RGS009	78	STX083	67.10	67.60	0.50	Sandstone	Waste rock
EB1208605070	RGS010	120	STX083	74.60	75.00	0.40	Siltstone	Waste rock
EB1208605001	RGS001	55	STX095	24.40	24.70	0.30	Sandstone	Waste rock
EB1208605002	RGS002	53	STX095	28.30	28.90	0.60	Mudstone w/Coal	Waste rock
EB1208605003	RGS003	104	STX095	34.20	34.85	0.65	Sandstone w/coal	Waste rock
EB1208605004	RGS004	56	STX095	36.50	36.75	0.25	Sandstone	Waste rock
EB1208605005	RGS005	144	STX095	38.55	39.15	0.60	Siltstone w/coal	Waste rock
EB1208605006	RGS006	57	STX095	42.75	43.15	0.40	Sandstone	Waste rock
EB1208605007	RGS007	145	STX095	44.75	45.40	0.65	Siltstone w/coal	Waste rock
EB1208605008	RGS008	146	STX095	48.75	49.45	0.70	Siltstone w/coal	Waste rock
EB1208605009	RGS009	58	STX095	51.75	52.05	0.30	Sandstone	Waste rock
EB1208605010	RGS010	1	STX095	57.75	58.05	0.30	Carbonaceous Mudstone	Waste rock
EB1208605011	RGS011	32	STX095	60.35	60.75	0.40	Mudstone	Waste rock
EB1208605012	RGS012	59	STX095	63.75	64.20	0.45	Sandstone	Waste rock
EB1208605013	RGS013	33	STX095	69.30	69.75	0.45	Mudstone	Waste rock
EB1208605014	RGS014	60	STX095	78.75	78.95	0.20	Sandstone	Waste rock
EB1208605071	RGS001	38	STX099C	20.50	21.00	0.50	Mudstone	Waste rock
EB1208605072	RGS002	79	STX099C	26.60	27.00	0.40	Sandstone	Waste rock
EB1208605075	RGS005	80	STX099C	41.10	41.60	0.50	Sandstone	Waste rock
EB1208605076	RGS006	51	STX099C	44.20	44.60	0.40	Mudstone w/Coal	Waste rock
EB1208605077	RGS007	81	STX099C	51.20	51.50	0.30	Sandstone	Waste rock
EB1208605078	RGS008	21	STX099C	56.10	56.60	0.50	Carbonaceous Siltstone	Waste rock
EB1208605079	RGS009	82	STX099C	62.60	63.00	0.40	Sandstone	Waste rock
EB1208605080	RGS010	19	STX099C	65.60	65.94	0.34	Carbonaceous Siltstone	Waste rock
EB1208605081	RGS011	20	STX099C	68.60	69.00	0.40	Carbonaceous Siltstone	Waste rock
EB1208605156	RGS001	43	STX101C	19.55	20.05	0.50	Mudstone	Waste rock
EB1208605161	RGS006	136	STX101C	35.50	36.01	0.51	Siltstone	Waste rock
EB1208605162	RGS007	139	STX101C	38.85	39.20	0.35	Siltstone	Waste rock
EB1208605166	RGS011	143	STX101C	43.60	44.00	0.40	Siltstone w/coal	Waste rock
EB1208605167	RGS012	99	STX101C	50.54	50.85	0.31	Sandstone	Waste rock
EB1208605170	RGS015	100	STX101C	59.85	60.15	0.30	Sandstone	Waste rock
EB1208605171	RGS016	49	STX101C	60.25	60.65	0.40	Mudstone w/Coal	Waste rock
EB1208605172	RGS017	50	STX101C	67.90	68.18	0.28	Mudstone w/Coal	Waste rock
EB1208605015	RGS001	61	STX103C	15.40	15.85	0.45	Sandstone	Waste rock
EB1208605016	RGS002	62	STX103C	20.60	20.90	0.30	Sandstone	Waste rock
EB1208605017	RGS003	2	STX103C	26.60	27.00	0.40	Carbonaceous Mudstone	Waste rock
EB1208605018	RGS004	63	STX103C	32.60	33.00	0.40	Sandstone	Waste rock
EB1208605019	RGS005	107	STX103C	38.60	39.05	0.45	Siltstone	Waste rock
EB1208605020	RGS006	108	STX103C	44.24	44.64	0.40	Siltstone	Waste rock
EB1208605021	RGS007	109	STX103C	48.80	49.30	0.50	Siltstone	Waste rock
EB1208605022	RGS008	110	STX103C	53.60	53.97	0.37	Siltstone	Waste rock
EB1208605023	RGS009	3	STX103C	55.99	56.54	0.55	Carbonaceous Mudstone	Waste rock
EB1208605024	RGS010	111	STX103C	61.00	61.54	0.54	Siltstone	Waste rock
EB1208605025	RGS011	112	STX103C	63.00	63.30	0.30	Siltstone	Waste rock
EB1208605026	RGS012	34	STX103C	65.60	66.05	0.45	Mudstone	Waste rock
EB1208605027	RGS013	64	STX103C	67.00	67.60	0.60	Sandstone	Waste rock
EB1208605028	RGS014	4	STX103C	70.70	71.20	0.50	Carbonaceous Mudstone	Waste rock
EB1208605082	RGS001	10	STX104CR	30.22	30.54	0.32	Carbonaceous Mudstone	Waste rock
EB1208605083	RGS002	83	STX104CR	81.23	81.70	0.47	Sandstone	Waste rock
EB1208605084	RGS003	121	STX104CR	87.00	87.44	0.44	Siltstone	Waste rock
EB1208605085	RGS004	122	STX104CR	97.45	98.10	0.65	Siltstone	Waste rock
EB1208605114	RGS001	127	STX105	25.97	26.49	0.52	Siltstone	Waste rock
EB1208605115	RGS002	88	STX105	30.27	31.00	0.73	Sandstone	Waste rock
EB1208605116	RGS003	11	STX105	36.19	36.84	0.65	Carbonaceous Mudstone	Waste rock
EB1208605117	RGS004	89	STX105	41.74	42.53	0.79	Sandstone	Waste rock
EB1208605118	RGS005	128	STX105	45.00	45.67	0.67	Siltstone	Waste rock
EB1208605119	RGS006	12	STX105	50.74	51.49	0.75	Carbonaceous Mudstone	Waste rock
EB1208605120	RGS007	90	STX105	53.74	54.39	0.65	Sandstone	Waste rock
EB1208605121	RGS008	13	STX105	61.41	61.74	0.33	Carbonaceous Mudstone	Waste rock
EB1208605122	RGS009	91	STX105	65.74	66.16	0.42	Sandstone	Waste rock
EB1208605123	RGS010	14	STX105	68.74	69.21	0.47	Carbonaceous Mudstone	Waste rock
EB1208605086	RGS001	123	STX122C	22.00	22.50	0.50	Siltstone	Waste rock
EB1208605087	RGS002	140	STX122C	25.20	25.60	0.40	Siltstone w/coal	Waste rock
EB1208605088	RGS003	22	STX122C	28.90	29.30	0.40	Carbonaceous Siltstone	Waste rock
EB1208605089	RGS004	23	STX122C	36.40	37.00	0.60	Carbonaceous Siltstone	Waste rock
EB1208605090	RGS005	28	STX122C	39.60	40.00	0.40	Carbonaceous Siltstone	Waste rock

Table B1: Waste Rock Samples Sorted by Drill Hole and Depth

ALS Laboratory Sample ID	RGS Sample ID	RGS Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type
				From	To	Interval		
EB1208605091	RGS006	24	STX122C	44.60	45.20	0.60	Carbonaceous Siltstone	Waste rock
EB1208605092	RGS007	84	STX122C	53.60	53.90	0.30	Sandstone	Waste rock
EB1208605093	RGS008	103	STX122C	57.25	57.70	0.45	Sandstone w/coal	Waste rock
EB1208605094	RGS009	45	STX122C	61.74	62.18	0.44	Mudstone w/Coal	Waste rock
EB1208605095	RGS010	25	STX122C	67.32	67.58	0.26	Carbonaceous Siltstone	Waste rock
EB1208605096	RGS011	26	STX122C	74.55	75.05	0.50	Carbonaceous Siltstone	Waste rock
EB1208605029	RGS001	35	STX124	23.60	24.13	0.53	Mudstone	Waste rock
EB1208605030	RGS002	113	STX124	29.60	30.08	0.48	Siltstone	Waste rock
EB1208605032	RGS004	65	STX124	38.60	38.96	0.36	Sandstone	Waste rock
EB1208605033	RGS005	36	STX124	47.60	48.14	0.54	Mudstone	Waste rock
EB1208605034	RGS006	114	STX124	53.60	54.05	0.45	Siltstone	Waste rock
EB1208605035	RGS007	52	STX124	50.60	51.00	0.40	Mudstone w/Coal	Waste rock
EB1208605036	RGS008	66	STX124	58.95	59.50	0.55	Sandstone	Waste rock
EB1208605037	RGS009	5	STX124	60.30	60.60	0.30	Carbonaceous Mudstone	Waste rock
EB1208605038	RGS010	67	STX124	71.60	72.00	0.40	Sandstone	Waste rock
EB1208605039	RGS011	6	STX124	75.90	76.20	0.30	Carbonaceous Mudstone	Waste rock
EB1208605050	RGS001	117	STX134C	23.15	23.60	0.45	Siltstone	Waste rock
EB1208605051	RGS002	73	STX134C	29.60	29.90	0.30	Sandstone	Waste rock
EB1208605052	RGS003	54	STX134C	37.30	37.70	0.40	Sandstone	Waste rock
EB1208605053	RGS004	74	STX134C	33.20	33.60	0.40	Sandstone	Waste rock
EB1208605054	RGS005	118	STX134C	35.00	35.40	0.40	Siltstone	Waste rock
EB1208605055	RGS006	17	STX134C	74.60	78.10	3.50	Carbonaceous Mudstone	Waste rock
EB1208605056	RGS007	16	STX134C	59.60	60.05	0.45	Carbonaceous Mudstone	Waste rock
EB1208605057	RGS008	7	STX134C	62.20	62.60	0.40	Carbonaceous Mudstone	Waste rock
EB1208605058	RGS009	106	STX134C	53.60	54.00	0.40	Sandstone w/siderite	Waste rock
EB1208605059	RGS010	75	STX134C	62.60	64.00	1.40	Sandstone	Waste rock
EB1208605060	RGS011	8	STX134C	74.10	74.50	0.40	Carbonaceous Mudstone	Waste rock
EB1208605146	RGS001	29	STX135C	11.60	12.10	0.50	Clay	Waste rock
EB1208605147	RGS002	18	STX135C	22.00	22.50	0.50	Coal	Waste rock
EB1208605148	RGS003	42	STX135C	31.25	31.58	0.33	Mudstone	Waste rock
EB1208605151	RGS006	47	STX135C	42.00	42.50	0.50	Mudstone w/Coal	Waste rock
EB1208605152	RGS007	97	STX135C	50.00	50.60	0.60	Sandstone	Waste rock
EB1208605153	RGS008	48	STX135C	56.60	57.10	0.50	Mudstone w/Coal	Waste rock
EB1208605154	RGS009	135	STX135C	59.60	60.10	0.50	Siltstone	Waste rock
EB1208605155	RGS010	98	STX135C	70.00	70.35	0.35	Sandstone	Waste rock
EB1208605135	RGS001	31	STX136C	13.96	14.42	0.46	Clay	Waste rock
EB1208605136	RGS002	94	STX136C	17.60	18.00	0.40	Sandstone	Waste rock
EB1208605137	RGS003	101	STX136C	20.35	20.60	0.25	Sandstone w/carb.mudstone	Waste rock
EB1208605138	RGS004	41	STX136C	29.20	29.60	0.40	Mudstone	Waste rock
EB1208605139	RGS005	141	STX136C	37.60	38.10	0.50	Siltstone w/coal	Waste rock
EB1208605142	RGS008	95	STX136C	59.80	60.22	0.42	Sandstone	Waste rock
EB1208605143	RGS009	142	STX136C	62.70	63.10	0.40	Siltstone w/coal	Waste rock
EB1208605144	RGS010	96	STX136C	71.60	72.20	0.60	Sandstone	Waste rock
EB1208605145	RGS011	134	STX136C	74.00	74.60	0.60	Siltstone	Waste rock
EB1208605041	RGS002	115	STX139C	33.85	34.30	0.45	Siltstone	Waste rock
EB1208605042	RGS003	147	STX139C	35.90	36.50	0.60	Siltstone w/coal	Waste rock
EB1208605043	RGS004	68	STX139C	43.40	43.90	0.50	Sandstone	Waste rock
EB1208605044	RGS005	69	STX139C	46.95	47.25	0.30	Sandstone	Waste rock
EB1208605045	RGS006	116	STX139C	48.35	48.65	0.30	Siltstone	Waste rock
EB1208605046	RGS007	37	STX139C	50.60	50.85	0.25	Mudstone	Waste rock
EB1208605047	RGS008	70	STX139C	53.50	53.85	0.35	Sandstone	Waste rock
EB1208605048	RGS009	71	STX139C	59.85	60.15	0.30	Sandstone	Waste rock
EB1208605049	RGS010	72	STX139C	71.85	72.50	0.65	Sandstone	Waste rock
EB1208605097	RGS 001	27	STX145C	13.97	14.60	0.63	Carbonaceous Siltstone	Waste rock
EB1208605098	RGS 002	85	STX145C	20.30	20.60	0.30	Sandstone	Waste rock
EB1208605099	RGS 003	124	STX145C	23.60	24.10	0.50	Siltstone	Waste rock
EB1208605100	RGS 004	44	STX145C	26.80	27.30	0.50	Mudstone w/Coal	Waste rock
EB1208605101	RGS 005	86	STX145C	35.60	36.10	0.50	Sandstone	Waste rock
EB1208605102	RGS 006	125	STX145C	44.60	44.94	0.34	Siltstone	Waste rock
EB1208605106	RGS 010	126	STX145C	72.00	72.50	0.50	Siltstone	Waste rock
EB1208605110	RGS014	15	STX145C	95.60	95.95	0.35	Carbonaceous Mudstone	Waste rock
EB1208605112	RGS 016	87	STX145C	119.00	119.60	0.60	Sandstone	Waste rock
EB1208605124	RGS001	39	STX148C	59.60	60.00	0.40	Mudstone	Waste rock
EB1208605125	RGS002	46	STX148C	62.60	63.00	0.40	Mudstone w/Coal	Waste rock
EB1208605126	RGS003	40	STX148C	64.00	64.47	0.47	Mudstone	Waste rock
EB1208605127	RGS004	92	STX148C	71.20	71.60	0.40	Sandstone	Waste rock
EB1208605128	RGS005	129	STX148C	78.70	79.00	0.30	Siltstone	Waste rock
EB1208605129	RGS006	130	STX148C	87.80	88.20	0.40	Siltstone	Waste rock
EB1208605130	RGS007	102	STX148C	89.60	90.00	0.40	Sandstone	Waste rock
EB1208605131	RGS008	93	STX148C	95.60	96.05	0.45	Sandstone	Waste rock
EB1208605132	RGS009	131	STX148C	116.60	117.15	0.55	Siltstone	Waste rock
EB1208605133	RGS010	132	STX148C	131.05	131.60	0.55	Siltstone	Waste rock
EB1208605134	RGS011	133	STX148C	146.60	147.00	0.40	Siltstone	Waste rock

Table B2: Acid Base Account Results for Waste Rock

ALS Laboratory Sample ID	RGS Sample ID	RGS Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr[2]	MPA[2]	ANC[2]	NAPP[2]	ANC:MPA ratio	Sample Classification[3]
				From	To	Interval				(µS/cm)	(%)		(kg H_2SO_4/t)				
EB1208605010	RGS010	1	STX095	57.75	58.05	0.30	Carbonaceous Mudstone	Waste rock	9.8	1100	0.31	0.141	4.3	63.8	-59.5	14.8	Non-Acid Forming
EB1208605017	RGS003	2	STX103C	26.60	27.00	0.40	Carbonaceous Mudstone	Waste rock	9.8	557	0.06		1.8	46	-44.2	25.0	Non-Acid Forming (Barren)
EB1208605023	RGS009	3	STX103C	55.99	56.54	0.55	Carbonaceous Mudstone	Waste rock	10.1	601	0.03		0.9	99.8	-98.9	108.6	Non-Acid Forming (Barren)
EB1208605028	RGS014	4	STX103C	70.70	71.20	0.50	Carbonaceous Mudstone	Waste rock	10.1	501	0.12	0.019	0.6	34.3	-33.7	58.9	Non-Acid Forming (Barren)
EB1208605037	RGS009	5	STX124	60.30	60.60	0.30	Carbonaceous Mudstone	Waste rock	10.2	631	0.04		1.2	162	-160.8	132.2	Non-Acid Forming (Barren)
EB1208605039	RGS011	6	STX124	75.90	76.20	0.30	Carbonaceous Mudstone	Waste rock	9.1	718	0.49	0.370	11.3	93.5	-82.2	8.3	Non-Acid Forming
EB1208605057	RGS008	7	STX134C	62.20	62.60	0.40	Carbonaceous Mudstone	Waste rock	10.0	644	0.02		0.6	28.2	-27.6	46.0	Non-Acid Forming (Barren)
EB1208605060	RGS011	8	STX134C	74.10	74.50	0.40	Carbonaceous Mudstone	Waste rock	9.9	579	0.22	0.178	5.5	17.3	-11.8	3.2	Non-Acid Forming
EB1208605064	RGS004	9	STX083	27.40	27.90	0.50	Carbonaceous Mudstone	Waste rock	9.4	677	0.27		8.3	22.3	-14.0	2.7	Non-Acid Forming
EB1208605082	RGS001	10	STX104CR	30.22	30.54	0.32	Carbonaceous Mudstone	Waste rock	9.6	598	0.06		1.8	49.6	-47.8	27.0	Non-Acid Forming (Barren)
EB1208605116	RGS003	11	STX105	36.19	36.84	0.65	Carbonaceous Mudstone	Waste rock	9.9	682	0.04		1.2	41.1	-39.9	33.6	Non-Acid Forming (Barren)
EB1208605119	RGS006	12	STX105	50.74	51.49	0.75	Carbonaceous Mudstone	Waste rock	10.1	691	0.005		0.2	162	-161.8	1058.0	Non-Acid Forming (Barren)
EB1208605121	RGS008	13	STX105	61.41	61.74	0.33	Carbonaceous Mudstone	Waste rock	9.9	568	0.02		0.6	30	-29.4	49.0	Non-Acid Forming (Barren)
EB1208605123	RGS010	14	STX105	68.74	69.21	0.47	Carbonaceous Mudstone	Waste rock	9.8	488	0.02		0.6	14.5	-13.9	23.7	Non-Acid Forming (Barren)
EB1208605110	RGS014	15	STX145C	95.60	95.95	0.35	Carbonaceous Mudstone	Waste rock	9.3	145	0.03		0.9	6.9	-6.0	7.5	Non-Acid Forming (Barren)
EB1208605056	RGS007	16	STX134C	59.60	60.05	0.45	Carbonaceous Mudstone	Waste rock	10.2	741	0.03		0.9	46	-45.1	50.1	Non-Acid Forming (Barren)
EB1208605055	RGS006	17	STX134C	74.60	78.10	3.50	Carbonaceous Mudstone	Waste rock	9.9	688	0.06		1.8	41.1	-39.3	22.4	Non-Acid Forming (Barren)
EB1208605147	RGS002	18	STX135C	22.00	22.50	0.50	Coal	Waste rock	9.5	870	0.14	0.080	2.5	23.8	-21.4	9.7	Non-Acid Forming (Barren)
EB1208605080	RGS010	19	STX099C	65.60	65.94	0.34	Carbonaceous Siltstone	Waste rock	9.7	788	0.05		1.5	37.4	-35.9	24.4	Non-Acid Forming (Barren)
EB1208605081	RGS011	20	STX099C	68.60	69.00	0.40	Carbonaceous Siltstone	Waste rock	9.7	683	0.5	0.490	15.0	39.8	-24.8	2.7	Non-Acid Forming
EB1208605078	RGS008	21	STX099C	56.10	56.60	0.50	Carbonaceous Siltstone	Waste rock	9.8	535	0.03		0.9	34.9	-34.0	38.0	Non-Acid Forming (Barren)
EB1208605088	RGS003	22	STX122C	28.90	29.30	0.40	Carbonaceous Siltstone	Waste rock	10.1	620	0.06		1.8	220	-218.2	119.7	Non-Acid Forming (Barren)
EB1208605089	RGS004	23	STX122C	36.40	37.00	0.60	Carbonaceous Siltstone	Waste rock	9.5	903	0.54	0.439	13.4	24.8	-11.4	1.8	Non-Acid Forming
EB1208605091	RGS006	24	STX122C	44.60	45.20	0.60	Carbonaceous Siltstone	Waste rock	10.1	716	0.03		0.9	20.8	-19.9	22.6	Non-Acid Forming (Barren)
EB1208605095	RGS010	25	STX122C	67.32	67.58	0.26	Carbonaceous Siltstone	Waste rock	9.9	753	0.19	0.111	3.4	17.8	-14.4	5.2	Non-Acid Forming
EB1208605096	RGS011	26	STX122C	74.55	75.05	0.50	Carbonaceous Siltstone	Waste rock	9.8	709	0.04		1.2	11.5	-10.3	9.4	Non-Acid Forming (Barren)
EB1208605097	RGS 001	27	STX145C	13.97	14.60	0.63	Carbonaceous Siltstone	Waste rock	9.5	749	0.005		0.2	65	-64.8	424.5	Non-Acid Forming (Barren)
EB1208605090	RGS005	28	STX122C	39.60	40.00	0.40	Carbonaceous Siltstone	Waste rock	9.8	696	0.15	0.063	1.9	19.7	-17.8	10.2	Non-Acid Forming (Barren)
EB1208605146	RGS001	29	STX135C	11.60	12.10	0.50	Clay	Waste rock	8.8	1110	0.005		0.2	11	-10.8	71.8	Non-Acid Forming (Barren)
EB1208605177	RGS002	30	STX083	17.70	18.10	0.40	Clay	Waste rock	8.7	920	0.01		0.3	13.5	-13.2	44.1	Non-Acid Forming (Barren)
EB1208605135	RGS001	31	STX136C	13.96	14.42	0.46	Clay	Waste rock	9.5	649	0.005		0.2	29.5	-29.3	192.7	Non-Acid Forming (Barren)
EB1208605011	RGS011	32	STX095	60.35	60.75	0.40	Mudstone	Waste rock	10.0	342	0.04		1.2	39.8	-38.6	32.5	Non-Acid Forming (Barren)
EB1208605013	RGS013	33	STX095	69.30	69.75	0.45	Mudstone	Waste rock	10.1	658	0.01		0.3	157	-156.7	512.7	Non-Acid Forming (Barren)
EB1208605026	RGS012	34	STX103C	65.60	66.05	0.45	Mudstone	Waste rock	10.1	379	0.13	0.006	0.2	20.8	-20.6	113.2	Non-Acid Forming (Barren)
EB1208605029	RGS001	35	STX124	23.60	24.13	0.53	Mudstone	Waste rock	9.8	730	0.07		2.1	49	-46.9	22.9	Non-Acid Forming (Barren)
EB1208605033	RGS005	36	STX124	47.60	48.14	0.54	Mudstone	Waste rock	9.8	571	0.24	0.063	1.9	34.9	-33.0	18.1	Non-Acid Forming (Barren)
EB1208605046	RGS007	37	STX139C	50.60	50.85	0.25	Mudstone	Waste rock	9.9	789	0.17	0.069	2.1	20.6	-18.5	9.7	Non-Acid Forming (Barren)
EB1208605071	RGS001	38	STX099C	20.50	21.00	0.50	Mudstone	Waste rock	9.4	602	0.04		1.2	33.7	-32.5	27.5	Non-Acid Forming (Barren)
EB1208605124	RGS001	39	STX148C	59.60	60.00	0.40	Mudstone	Waste rock	9.8	471	0.03		0.9	25.8	-24.9	28.1	Non-Acid Forming (Barren)
EB1208605126	RGS003	40	STX148C	64.00	64.47	0.47	Mudstone	Waste rock	9.9	464	0.03		0.9	22.9	-22.0	24.9	Non-Acid Forming (Barren)
EB1208605138	RGS004	41	STX136C	29.20	29.60	0.40	Mudstone	Waste rock	9.6	536	0.03		0.9	25.1	-24.2	27.3	Non-Acid Forming (Barren)
EB1208605148	RGS003	42	STX135C	31.25	31.58	0.33	Mudstone	Waste rock	9.9	681	0.02		0.6	248	-247.4	404.9	Non-Acid Forming (Barren)
EB1208605156	RGS001	43	STX101C	19.55	20.05	0.50	Mudstone	Waste rock	9.5	639	0.06		1.8	53.3	-51.5	29.0	Non-Acid Forming (Barren)
EB1208605100	RGS 004	44	STX145C	26.80	27.30	0.50	Mudstone w/Coal	Waste rock	9.4	422	0.24	0.082	2.5	10.8	-8.3	4.3	Non-Acid Forming (Barren)
EB1208605094	RGS009	45	STX122C	61.74	62.18	0.44	Mudstone w/Coal	Waste rock	10.0	685	0.03		0.9	43.5	-42.6	47.3	Non-Acid Forming (Barren)
EB1208605125	RGS002	46	STX148C	62.60	63.00	0.40	Mudstone w/Coal	Waste rock	9.9	342	0.26	0.007	0.2	19.7	-19.5	91.9	Non-Acid Forming (Barren)
EB1208605151	RGS006	47	STX135C	42.00	42.50	0.50	Mudstone w/Coal	Waste rock	9.7	559	0.12	0.008	0.2	33.4	-33.2	136.3	Non-Acid Forming (Barren)
EB1208605153	RGS008	48	STX135C	56.60	57.10	0.50	Mudstone w/Coal	Waste rock	10.0	572	0.18	0.008	0.2	38.4	-38.2	156.7	Non-Acid Forming (Barren)
EB1208605171	RGS016	49	STX101C	60.25	60.65	0.40	Mudstone w/Coal	Waste rock	9.8	482	0.24	0.086	2.6	17.6	-15.0	6.7	Non-Acid Forming (Barren)
EB1208605172	RGS017	50	STX101C	67.90	68.18	0.28	Mudstone w/Coal	Waste rock	9.8	612	0.32		9.8	22.4	-12.6	2.3	Non-Acid Forming
EB1208605076	RGS006	51	STX099C	44.20	44.60	0.40	Mudstone w/Coal	Waste rock	10.1	693	0.005		0.2	63.1	-62.9	412.1	Non-Acid Forming (Barren)
EB1208605035	RGS007	52	STX124	50.60	51.00	0.40	Mudstone w/Coal	Waste rock	10.0	460	0.15	0.017	0.5	31.3	-30.8	60.1	Non-Acid Forming (Barren)
EB1208605002	RGS002	53	STX095	28.30	28.90	0.60	Mudstone w/Coal	Waste rock	9.4	601	0.24	0.050	1.5	44.1	-42.6	28.8	Non-Acid Forming (Barren)
EB1208605052	RGS003	54	STX134C	37.30	37.70	0.40	Sandstone	Waste rock	10.2	576	0.01		0.3	390	-389.7	1273.5	Non-Acid Forming (Barren)
EB1208605001	RGS001	55	STX095	24.40	24.70	0.30	Sandstone	Waste rock	10.2	615	0.02		0.6	56.4	-55.8	92.1	Non-Acid Forming (Barren)
EB1208605004	RGS004	56	STX095	36.50	36.75	0.25	Sandstone	Waste rock	10.0	705	0.07		2.1	52.1	-50.0	24.3	Non-Acid Forming (Barren)
EB1208605006	RGS006	57	STX095	42.75	43.15	0.40	Sandstone	Waste rock	10.0	521	0.005		0.2	27.1	-26.9	177.0	Non-Acid Forming (Barren)

Table B2: Acid Base Account Results for Waste Rock

ALS Laboratory Sample ID	RGS Sample ID	RGS Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr[2]	MPA[2]	ANC[2]	NAPP[2]	ANC:MPA ratio	Sample Classification[3]
				From	To	Interval				(µS/cm)	(%)		(kg H_2SO_4/t)				
EB1208605009	RGS009	58	STX095	51.75	52.05	0.30	Sandstone	Waste rock	9.9	689	0.09		2.8	58.2	-55.4	21.1	Non-Acid Forming (Barren)
EB1208605012	RGS012	59	STX095	63.75	64.20	0.45	Sandstone	Waste rock	10.2	658	0.005		0.2	74.2	-74.0	484.6	Non-Acid Forming (Barren)
EB1208605014	RGS014	60	STX095	78.75	78.95	0.20	Sandstone	Waste rock	10.2	523	0.02		0.6	51.5	-50.9	84.1	Non-Acid Forming (Barren)
EB1208605015	RGS001	61	STX103C	15.40	15.85	0.45	Sandstone	Waste rock	9.8	544	0.005		0.2	105	-104.8	685.7	Non-Acid Forming (Barren)
EB1208605016	RGS002	62	STX103C	20.60	20.90	0.30	Sandstone	Waste rock	9.5	444	0.005		0.2	35.6	-35.4	232.5	Non-Acid Forming (Barren)
EB1208605018	RGS004	63	STX103C	32.60	33.00	0.40	Sandstone	Waste rock	10.1	481	0.02		0.6	46	-45.4	75.1	Non-Acid Forming (Barren)
EB1208605027	RGS013	64	STX103C	67.00	67.60	0.60	Sandstone	Waste rock	10.2	632	0.02		0.6	47.2	-46.6	77.1	Non-Acid Forming (Barren)
EB1208605032	RGS004	65	STX124	38.60	38.96	0.36	Sandstone	Waste rock	10.0	530	0.06		1.8	145	-143.2	78.9	Non-Acid Forming (Barren)
EB1208605036	RGS008	66	STX124	58.95	59.50	0.55	Sandstone	Waste rock	10.1	597	0.06		1.8	62.5	-60.7	34.0	Non-Acid Forming (Barren)
EB1208605038	RGS010	67	STX124	71.60	72.00	0.40	Sandstone	Waste rock	10.0	457	0.01		0.3	43.5	-43.2	142.0	Non-Acid Forming (Barren)
EB1208605043	RGS004	68	STX139C	43.40	43.90	0.50	Sandstone	Waste rock	10.2	679	0.03		0.9	50.3	-49.4	54.7	Non-Acid Forming (Barren)
EB1208605044	RGS005	69	STX139C	46.95	47.25	0.30	Sandstone	Waste rock	10.0	589	0.2	0.058	1.8	71.7	-69.9	40.4	Non-Acid Forming (Barren)
EB1208605047	RGS008	70	STX139C	53.50	53.85	0.35	Sandstone	Waste rock	10.1	664	0.02		0.6	64.4	-63.8	105.1	Non-Acid Forming (Barren)
EB1208605048	RGS009	71	STX139C	59.85	60.15	0.30	Sandstone	Waste rock	10.1	651	0.005		0.2	142	-141.8	927.3	Non-Acid Forming (Barren)
EB1208605049	RGS010	72	STX139C	71.85	72.50	0.65	Sandstone	Waste rock	10.1	686	0.03		0.9	47.2	-46.3	51.4	Non-Acid Forming (Barren)
EB1208605051	RGS002	73	STX134C	29.60	29.90	0.30	Sandstone	Waste rock	10.1	662	0.03		0.9	26.2	-25.3	28.5	Non-Acid Forming (Barren)
EB1208605053	RGS004	74	STX134C	33.20	33.60	0.40	Sandstone	Waste rock	10.1	630	0.02		0.6	96	-95.4	156.7	Non-Acid Forming (Barren)
EB1208605059	RGS010	75	STX134C	62.60	64.00	1.40	Sandstone	Waste rock	10.2	686	0.005		0.2	66.2	-66.0	432.3	Non-Acid Forming (Barren)
EB1208605063	RGS003	76	STX083	24.20	24.60	0.40	Sandstone	Waste rock	9.6	685	0.08		2.5	30	-27.6	12.2	Non-Acid Forming (Barren)
EB1208605066	RGS006	77	STX083	39.20	39.65	0.45	Sandstone	Waste rock	9.9	547	0.02		0.6	46	-45.4	75.1	Non-Acid Forming (Barren)
EB1208605069	RGS009	78	STX083	67.10	67.60	0.50	Sandstone	Waste rock	9.2	185	0.03		0.9	159	-158.1	173.1	Non-Acid Forming (Barren)
EB1208605072	RGS002	79	STX099C	26.60	27.00	0.40	Sandstone	Waste rock	9.9	673	0.03		0.9	42.3	-41.4	46.0	Non-Acid Forming (Barren)
EB1208605075	RGS005	80	STX099C	41.10	41.60	0.50	Sandstone	Waste rock	10.0	673	0.01		0.3	63.1	-62.8	206.0	Non-Acid Forming (Barren)
EB1208605077	RGS007	81	STX099C	51.20	51.50	0.30	Sandstone	Waste rock	9.8	407	0.21	0.017	0.5	11.8	-11.3	22.7	Non-Acid Forming (Barren)
EB1208605079	RGS009	82	STX099C	62.60	63.00	0.40	Sandstone	Waste rock	10.2	731	0.005		0.2	92.6	-92.4	604.7	Non-Acid Forming (Barren)
EB1208605083	RGS002	83	STX104CR	81.23	81.70	0.47	Sandstone	Waste rock	10.1	685	0.02		0.6	38	-37.4	62.0	Non-Acid Forming (Barren)
EB1208605092	RGS007	84	STX122C	53.60	53.90	0.30	Sandstone	Waste rock	10.0	680	0.01		0.3	51.5	-51.2	168.2	Non-Acid Forming (Barren)
EB1208605098	RGS 002	85	STX145C	20.30	20.60	0.30	Sandstone	Waste rock	9.9	743	0.03		0.9	69.3	-68.4	75.4	Non-Acid Forming (Barren)
EB1208605101	RGS 005	86	STX145C	35.60	36.10	0.50	Sandstone	Waste rock	10.0	656	0.005		0.2	92.6	-92.4	604.7	Non-Acid Forming (Barren)
EB1208605112	RGS 016	87	STX145C	119.00	119.60	0.60	Sandstone	Waste rock	9.6	307	0.05		1.5	9	-7.5	5.9	Non-Acid Forming (Barren)
EB1208605115	RGS002	88	STX105	30.27	31.00	0.73	Sandstone	Waste rock	9.7	654	0.13	0.044	1.3	16.6	-15.3	12.3	Non-Acid Forming (Barren)
EB1208605117	RGS004	89	STX105	41.74	42.53	0.79	Sandstone	Waste rock	9.8	502	0.02		0.6	18.6	-18.0	30.4	Non-Acid Forming (Barren)
EB1208605120	RGS007	90	STX105	53.74	54.39	0.65	Sandstone	Waste rock	9.9	664	0.02		0.6	22.1	-21.5	36.1	Non-Acid Forming (Barren)
EB1208605122	RGS009	91	STX105	65.74	66.16	0.42	Sandstone	Waste rock	10.1	709	0.005		0.2	61.3	-61.1	400.3	Non-Acid Forming (Barren)
EB1208605127	RGS004	92	STX148C	71.20	71.60	0.40	Sandstone	Waste rock	10.0	475	0.005		0.2	93.2	-93.0	608.7	Non-Acid Forming (Barren)
EB1208605131	RGS008	93	STX148C	95.60	96.05	0.45	Sandstone	Waste rock	8.7	202	0.08		2.5	7.9	-5.5	3.2	Non-Acid Forming (Barren)
EB1208605136	RGS002	94	STX136C	17.60	18.00	0.40	Sandstone	Waste rock	9.8	517	0.005		0.2	136	-135.8	888.2	Non-Acid Forming (Barren)
EB1208605142	RGS008	95	STX136C	59.80	60.22	0.42	Sandstone	Waste rock	10.1	626	0.005		0.2	117	-116.8	764.1	Non-Acid Forming (Barren)
EB1208605144	RGS010	96	STX136C	71.60	72.20	0.60	Sandstone	Waste rock	10.0	652	0.02		0.6	50.3	-49.7	82.1	Non-Acid Forming (Barren)
EB1208605152	RGS007	97	STX135C	50.00	50.60	0.60	Sandstone	Waste rock	10.1	633	0.005		0.2	50.3	-50.1	328.5	Non-Acid Forming (Barren)
EB1208605155	RGS010	98	STX135C	70.00	70.35	0.35	Sandstone	Waste rock	10.0	626	0.03		0.9	23.8	-22.9	25.9	Non-Acid Forming (Barren)
EB1208605167	RGS012	99	STX101C	50.54	50.85	0.31	Sandstone	Waste rock	10.0	640	0.02		0.6	203	-202.4	331.4	Non-Acid Forming (Barren)
EB1208605170	RGS015	100	STX101C	59.85	60.15	0.30	Sandstone	Waste rock	10.1	560	0.01		0.3	48.4	-48.1	158.0	Non-Acid Forming (Barren)
EB1208605137	RGS003	101	STX136C	20.35	20.60	0.25	Sandstone w/carb.mudstone	Waste rock	6.8	2,780	8.18	7.620	233.4	36.2	197.2	0.2	Potentially Acid Forming
EB1208605130	RGS007	102	STX148C	89.60	90.00	0.40	Sandstone	Waste rock	4.8	437	0.79	0.498	15.3	5.3	10.0	0.3	Potentially Acid Forming (Low Capacity)
EB1208605093	RGS008	103	STX122C	57.25	57.70	0.45	Sandstone w/coal	Waste rock	9.8	409	0.24	0.022	0.7	42.3	-41.6	62.8	Non-Acid Forming (Barren)
EB1208605003	RGS003	104	STX095	34.20	34.85	0.65	Sandstone w/coal	Waste rock	10.0	583	0.19	0.123	3.8	33.7	-29.9	8.9	Non-Acid Forming
EB1208605067	RGS007	105	STX083	47.45	48.00	0.55	Sandstone w/coal	Waste rock	10.0	595	0.08		2.5	51.5	-49.1	21.0	Non-Acid Forming (Barren)
EB1208605058	RGS009	106	STX134C	53.60	54.00	0.40	Sandstone w/siderite	Waste rock	10.2	687	0.01		0.3	76.6	-76.3	250.1	Non-Acid Forming (Barren)
EB1208605019	RGS005	107	STX103C	38.60	39.05	0.45	Siltstone	Waste rock	10.1	552	0.03		0.9	46.6	-45.7	50.7	Non-Acid Forming (Barren)
EB1208605020	RGS006	108	STX103C	44.24	44.64	0.40	Siltstone	Waste rock	10.0	321	0.04		1.2	32.5	-31.3	26.5	Non-Acid Forming (Barren)
EB1208605021	RGS007	109	STX103C	48.80	49.30	0.50	Siltstone	Waste rock	10.1	551	0.15	0.027	0.8	37.4	-36.6	45.2	Non-Acid Forming (Barren)
EB1208605022	RGS008	110	STX103C	53.60	53.97	0.37	Siltstone	Waste rock	10.2	593	0.02		0.6	36.2	-35.6	59.1	Non-Acid Forming (Barren)
EB1208605024	RGS010	111	STX103C	61.00	61.54	0.54	Siltstone	Waste rock	10.1	540	0.05		1.5	54.6	-53.1	35.7	Non-Acid Forming (Barren)
EB1208605025	RGS011	112	STX103C	63.00	63.30	0.30	Siltstone	Waste rock	10.1	570	0.03		0.9	31.9	-31.0	34.7	Non-Acid Forming (Barren)
EB1208605030	RGS002	113	STX124	29.60	30.08	0.48	Siltstone	Waste rock	9.8	438	0.07		2.1	130	-127.9	60.6	Non-Acid Forming (Barren)
EB1208605034	RGS006	114	STX124	53.60	54.05	0.45	Siltstone	Waste rock	10.0	512	0.13	0.028	0.9	43.5	-42.6	50.7	Non-Acid Forming (Barren)

Table B2: Acid Base Account Results for Waste Rock

ALS Laboratory Sample ID	RGS Sample ID	RGS Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr[2]	MPA[2]	ANC[2]	NAPP[2]	ANC:MPA ratio	Sample Classification[3]
				From	To	Interval				(µS/cm)	(%)		(kg H_2SO_4/t)				
EB1208605041	RGS002	115	STX139C	33.85	34.30	0.45	Siltstone	Waste rock	10.1	460	0.04		1.2	27.3	-26.1	22.3	Non-Acid Forming (Barren)
EB1208605045	RGS006	116	STX139C	48.35	48.65	0.30	Siltstone	Waste rock	10.0	842	0.12	0.107	3.3	94.8	-91.5	28.9	Non-Acid Forming
EB1208605050	RGS001	117	STX134C	23.15	23.60	0.45	Siltstone	Waste rock	9.9	771	0.12	0.052	1.6	50.3	-48.7	31.6	Non-Acid Forming (Barren)
EB1208605054	RGS005	118	STX134C	35.00	35.40	0.40	Siltstone	Waste rock	10.1	760	0.04		1.2	25.6	-24.4	20.9	Non-Acid Forming (Barren)
EB1208605068	RGS008	119	STX083	53.25	53.70	0.45	Siltstone	Waste rock	9.8	486	0.47	0.484	14.8	42.9	-28.1	2.9	Non-Acid Forming
EB1208605070	RGS010	120	STX083	74.60	75.00	0.40	Siltstone	Waste rock	9.7	242	0.15	0.139	4.3	30	-25.7	7.0	Non-Acid Forming
EB1208605084	RGS003	121	STX104CR	87.00	87.44	0.44	Siltstone	Waste rock	9.6	551	0.03		0.9	34.9	-34.0	38.0	Non-Acid Forming (Barren)
EB1208605085	RGS004	122	STX104CR	97.45	98.10	0.65	Siltstone	Waste rock	9.9	449	0.05		1.5	34.9	-33.4	22.8	Non-Acid Forming (Barren)
EB1208605086	RGS001	123	STX122C	22.00	22.50	0.50	Siltstone	Waste rock	9.6	635	0.07		2.1	27	-24.9	12.6	Non-Acid Forming (Barren)
EB1208605099	RGS 003	124	STX145C	23.60	24.10	0.50	Siltstone	Waste rock	9.4	635	0.02		0.6	17.3	-16.7	28.2	Non-Acid Forming (Barren)
EB1208605102	RGS 006	125	STX145C	44.60	44.94	0.34	Siltstone	Waste rock	10.2	704	0.005		0.2	85.8	-85.6	560.3	Non-Acid Forming (Barren)
EB1208605106	RGS 010	126	STX145C	72.00	72.50	0.50	Siltstone	Waste rock	9.7	604	0.04		1.2	16.3	-15.1	13.3	Non-Acid Forming (Barren)
EB1208605114	RGS001	127	STX105	25.97	26.49	0.52	Siltstone	Waste rock	9.9	688	0.04		1.2	54.6	-53.4	44.6	Non-Acid Forming (Barren)
EB1208605118	RGS005	128	STX105	45.00	45.67	0.67	Siltstone	Waste rock	9.9	463	0.02		0.6	17	-16.4	27.8	Non-Acid Forming (Barren)
EB1208605128	RGS005	129	STX148C	78.70	79.00	0.30	Siltstone	Waste rock	9.8	465	0.64	0.66	20.2	21.2	-1.0	1.0	Uncertain
EB1208605129	RGS006	130	STX148C	87.80	88.20	0.40	Siltstone	Waste rock	8.1	503	0.68	0.615	18.8	11.5	7.3	0.6	Potentially Acid Forming (Low Capacity)
EB1208605132	RGS009	131	STX148C	116.60	117.15	0.55	Siltstone	Waste rock	9.6	106	0.1		3.1	15.5	-12.4	5.1	Non-Acid Forming (Barren)
EB1208605133	RGS010	132	STX148C	131.05	131.60	0.55	Siltstone	Waste rock	9.8	357	0.15	0.149	4.6	44.8	-40.2	9.8	Non-Acid Forming
EB1208605134	RGS011	133	STX148C	146.60	147.00	0.40	Siltstone	Waste rock	9.8	458	0.18	0.056	1.7	56.4	-54.7	32.9	Non-Acid Forming (Barren)
EB1208605145	RGS011	134	STX136C	74.00	74.60	0.60	Siltstone	Waste rock	10.0	676	0.06		1.8	25.1	-23.3	13.7	Non-Acid Forming (Barren)
EB1208605154	RGS009	135	STX135C	59.60	60.10	0.50	Siltstone	Waste rock	9.9	568	0.04		1.2	24.1	-22.9	19.7	Non-Acid Forming (Barren)
EB1208605161	RGS006	136	STX101C	35.50	36.01	0.51	Siltstone	Waste rock	9.0	971	0.49	0.414	12.7	57	-44.3	4.5	Non-Acid Forming
EB1208605176	RGS001	137	STX083	12.10	12.55	0.45	Siltstone	Waste rock	7.6	801	0.005		0.2	9.9	-9.7	64.7	Non-Acid Forming (Barren)
EB1208605178	RGS005	138	STX083	38.50	38.90	0.40	Siltstone	Waste rock	9.6	479	0.11	0.031	0.9	23.6	-22.7	24.9	Non-Acid Forming (Barren)
EB1208605162	RGS007	139	STX101C	38.85	39.20	0.35	Siltstone	Waste rock	9.7	648	0.04		1.2	38.6	-37.4	31.5	Non-Acid Forming (Barren)
EB1208605087	RGS002	140	STX122C	25.20	25.60	0.40	Siltstone w/coal	Waste rock	9.6	769	0.28	0.207	6.3	46	-39.7	7.3	Non-Acid Forming
EB1208605139	RGS005	141	STX136C	37.60	38.10	0.50	Siltstone w/coal	Waste rock	9.8	563	0.15	0.038	1.2	23.6	-22.4	20.3	Non-Acid Forming (Barren)
EB1208605143	RGS009	142	STX136C	62.70	63.10	0.40	Siltstone w/coal	Waste rock	9.9	573	0.02		0.6	168	-167.4	274.3	Non-Acid Forming (Barren)
EB1208605166	RGS011	143	STX101C	43.60	44.00	0.40	Siltstone w/coal	Waste rock	9.6	651	0.22	0.123	3.8	23.8	-20.0	6.3	Non-Acid Forming
EB1208605005	RGS005	144	STX095	38.55	39.15	0.60	Siltstone w/coal	Waste rock	9.8	510	0.1		3.1	16.6	-13.5	5.4	Non-Acid Forming (Barren)
EB1208605007	RGS007	145	STX095	44.75	45.40	0.65	Siltstone w/coal	Waste rock	9.9	575	0.23	0.087	2.7	28.6	-25.9	10.7	Non-Acid Forming (Barren)
EB1208605008	RGS008	146	STX095	48.75	49.45	0.70	Siltstone w/coal	Waste rock	10.1	569	0.2	0.133	4.1	47.2	-43.1	11.6	Non-Acid Forming
EB1208605042	RGS003	147	STX139C	35.90	36.50	0.60	Siltstone/Sandstone w/coal	Waste rock	10.1	663	0.07		2.1	97.3	-95.2	45.4	Non-Acid Forming (Barren)

Notes

1. Current pH, EC, Alkalinity and Acidity provided for 1:5 sample:water extracts
2. Scr = Chromium Reducible Sulfur; MPA = Maximum Potential Acidity; ANC = Acid Neutralising Capacity and NAPP = Net Acid Producing Potential .
3. Sample classification criteria detail provided in report text.

* Where total sulfur results are less than the laboratory limit of reporting (LoR) a value of half of the LoR is used in Table B1.

Table B3: Acid-Base Account Results for Coal Reject

ALS Laboratory Sample ID	RGS Sample ID	RGS Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr[2]	MPA[2]	ANC[2]	NAPP[2]	ANC:MPA ratio	Sample Classification[3]
				From	To	Interval				(µS/cm)	%		kg H_2SO_4/t				
EB1208605158	RGS003	1	STX101C	23.13	23.75	0.62	Carbonaceous Mudstone (Floor)	Potential Reject	9.1	493	0.03		0.9	20.3	-19.4	22.1	Non-Acid Forming (Barren)
EB1208605169	RGS014	2	STX101C	53.85	54.05	0.20	Carbonaceous Mudstone (Floor)	Potential Reject	9.4	466	0.07		2.1	15.3	-13.2	7.1	Non-Acid Forming (Barren)
EB1208605160	RGS005	3	STX101C	28.57	28.97	0.40	Carbonaceous Mudstone (Floor)	Potential Reject	8.8	488	0.08		2.5	14.3	-11.9	5.8	Non-Acid Forming (Barren)
EB1208605165	RGS010	4	STX101C	42.36	42.56	0.20	Carbonaceous Mudstone (Floor)	Potential Reject	9.5	627	0.14	0.114	3.4	20.1	-16.7	5.8	Non-Acid Forming
EB1208605157	RGS002	5	STX101C	21.59	21.89	0.30	Carbonaceous Mudstone (Roof)	Potential Reject	8.9	541	0.03		0.9	20.1	-19.2	21.9	Non-Acid Forming (Barren)
EB1208605159	RGS004	6	STX101C	27.85	28.17	0.32	Carbonaceous Mudstone (Roof)	Potential Reject	9.3	407	0.03		0.9	17.6	-16.7	19.2	Non-Acid Forming (Barren)
EB1208605168	RGS013	7	STX101C	52.72	52.92	0.20	Carbonaceous Mudstone (Roof)	Potential Reject	9.7	615	0.05		1.5	50.9	-49.4	33.2	Non-Acid Forming (Barren)
EB1208605163	RGS008	8	STX101C	41.60	42.10	0.50	Carbonaceous Mudstone (Roof)	Potential Reject	9.2	475	0.11	0.111	3.4	18.0	-14.6	5.4	Non-Acid Forming
EB1208605074	RGS004	9	STX099C	35.10	35.60	0.50	Coal and Mudstone (Floor)	Potential Reject	9.5	596	0.05		1.5	37.4	-35.9	24.4	Non-Acid Forming (Barren)
EB1208605164	RGS009	10	STX101C	42.10	42.36	0.26	Coal (Seam)	Potential Reject	9.3	326	0.29	0.056	1.7	89.5	-87.8	52.8	Non-Acid Forming (Barren)
EB1208605173	RGS018	11	STX101C	70.94	71.34	0.40	Carbonaceous Siltstone (Floor:)	Potential Reject	9.9	540	0.02		0.6	26.8	-26.2	43.8	Non-Acid Forming (Barren)
EB1208605175	RGS020	12	STX101C	73.30	73.65	0.35	Carbonaceous Siltstone (Floor:)	Potential Reject	9.8	542	0.07		2.1	22.1	-20.0	10.3	Non-Acid Forming (Barren)
EB1208605174	RGS019	13	STX101C	71.85	72.10	0.25	Carbonaceous Siltstone (Roof)	Potential Reject	10.1	637	0.03		0.9	320.0	-319.1	348.3	Non-Acid Forming (Barren)
EB1208605105	RGS009	14	STX145C	64.00	64.50	0.50	Carbonaceous Siltstone (Floor)	Potential Reject	9.0	768	0.69	0.602	18.2	16.8	1.4	0.9	Uncertain
EB1208605150	RGS005	15	STX135C	37.55	37.95	0.40	Siltstone (Floor)	Potential Reject	9.4	499	0.05		1.5	19.6	-18.1	12.8	Non-Acid Forming (Barren)
EB1208605141	RGS007	16	STX136C	51.96	52.30	0.34	Siltstone (Floor)	Potential Reject	9.6	337	0.02		0.6	16.4	-15.8	26.8	Non-Acid Forming (Barren)
EB1208605149	RGS004	17	STX135C	35.50	36.15	0.65	Siltstone (Roof)	Potential Reject	9.8	648	0.20	0.192	5.8	102.0	-96.2	17.6	Non-Acid Forming
EB1208605113	RGS017	18	STX145C	128.10	128.60	0.50	Siltstone (Parting)	Potential Reject	9.7	690	0.05		1.5	36.2	-34.7	23.6	Non-Acid Forming (Barren)
EB1208605111	RGS015	19	STX145C	101.90	102.50	0.60	Siltstone (Parting)	Potential Reject	10.1	639	0.005		0.2	48.4	-48.2	316.1	Non-Acid Forming (Barren)
EB1208605107	RGS011	20	STX145C	76.50	76.85	0.35	Siltstone (Floor)	Potential Reject	9.7	510	0.07		2.1	10.5	-8.4	4.9	Non-Acid Forming (Barren)
EB1208605109	RGS013	21	STX145C	83.90	84.25	0.35	Siltstone (Floor)	Potential Reject	10.0	440	0.08		2.5	18.0	-15.6	7.3	Non-Acid Forming (Barren)
EB1208605073	RGS003	22	STX099C	30.47	30.77	0.30	Siltstone (Roof)	Potential Reject	9.6	497	0.03		0.9	33.7	-32.8	36.7	Non-Acid Forming (Barren)
EB1208605108	RGS012	23	STX145C	82.50	82.85	0.35	Siltstone (Roof)	Potential Reject	9.8	509	0.05		1.5	10.0	-8.5	6.5	Non-Acid Forming (Barren)
EB1208605031	RGS003	24	STX124	32.08	32.60	0.52	Siltstone and Sandstone (Floor)	Potential Reject	9.4	505	0.08		2.5	38.0	-35.6	15.5	Non-Acid Forming (Barren)
EB1208605103	RGS 007	25	STX145C	49.50	49.90	0.40	Sandstone (Floor)	Potential Reject	9.5	560	0.11	0.070	2.1	15.5	-13.4	7.3	Non-Acid Forming (Barren)
EB1208605140	RGS006	26	STX136C	50.60	51.02	0.42	Sandstone (Roof)	Potential Reject	9.7	425	0.06		1.8	19.1	-17.3	10.4	Non-Acid Forming (Barren)
EB1208605104	RGS008	27	STX145C	61.30	61.80	0.50	Sandstone (Roof)	Potential Reject	9.9	761	0.14	0.126	3.8	32.5	-28.7	8.5	Non-Acid Forming
EB1820723001	FR001	28	A1 S1.50	-	-	-	Various (composite)	Fine Reject	9.6	742	0.67		20.5	91.0	-70.5	4.4	Non-Acid Forming
EB1820723002	FR002	29	A2 S1.50	-	-	-	Various (composite)	Fine Reject	9.0	764	0.60		18.4	131.0	-112.6	7.1	Non-Acid Forming
EB1820723003	FR003	30	A3 S1.50	-	-	-	Various (composite)	Fine Reject	10.0	563	0.34		10.4	58.6	-48.2	5.6	Non-Acid Forming
EB1820723004	FR004	31	A4 S1.50	-	-	-	Various (composite)	Fine Reject	9.9	378	0.36		11.0	248.0	-237.0	22.5	Non-Acid Forming
EB1820723005	FR005	32	A5 S1.50	-	-	-	Various (composite)	Fine Reject	9.5	137	0.51		15.6	287.0	-271.4	18.4	Non-Acid Forming
EB1820723006	FR006	33	A6 S1.50	-	-	-	Various (composite)	Fine Reject	9.3	566	0.86		26.3	349.0	-322.7	13.3	Non-Acid Forming
EB1820723007	FR007	34	A7 S1.50	-	-	-	Various (composite)	Fine Reject	9.0	521	1.30		39.8	160.0	-120.2	4.0	Non-Acid Forming
EB1820723008	FR008	35	A8 S1.50	-	-	-	Various (composite)	Fine Reject	10.1	690	0.26		8.0	69.8	-61.8	8.8	Non-Acid Forming
EB1820723009	FR009	36	A9 S1.50	-	-	-	Various (composite)	Fine Reject	10.0	423	0.44		13.5	52.9	-39.4	3.9	Non-Acid Forming
EB1820723010	FR010	37	A10 S1.50	-	-	-	Various (composite)	Fine Reject	10.0	470	0.28		8.6	93.8	-85.2	10.9	Non-Acid Forming
EB1820723011	FR011	38	A11 S1.50	-	-	-	Various (composite)	Fine Reject	10.0	401	0.42		12.9	64.3	-51.4	5.0	Non-Acid Forming
EB1820723012	FR012	39	B1 S1.50	-	-	-	Various (composite)	Fine Reject	10.0	437	0.34		10.4	112.0	-101.6	10.8	Non-Acid Forming
EB1820723013	FR013	40	B2 S1.50	-	-	-	Various (composite)	Fine Reject	10.0	699	0.31		9.5	39.3	-29.8	4.1	Non-Acid Forming
EB1820723014	FR014	41	B3 S1.50	-	-	-	Various (composite)	Fine Reject	9.3	548	0.76		23.3	242.0	-218.7	10.4	Non-Acid Forming
EB1820723015	FR015	42	B4 S1.50	-	-	-	Various (composite)	Fine Reject	10.1	626	0.26		8.0	34.0	-26.0	4.3	Non-Acid Forming
EB1820723016	FR016	43	C1	-	-	-	Various (composite)	Fine Reject	10.0	579	0.10		3.1	19.8	-16.7	6.5	Non-Acid Forming (Barren)
EB1820723017	FR017	44	C2	-	-	-	Various (composite)	Fine Reject	9.5	610	0.51		15.6	11.4	4.2	0.7	Uncertain
EB1820723018	FR018	45	C3	-	-	-	Various (composite)	Fine Reject	10.0	593	0.14		4.3	21.3	-17.0	5.0	Non-Acid Forming
EB1820723019	FR019	46	C4	-	-	-	Various (composite)	Fine Reject	9.8	518	0.16		4.9	20.4	-15.5	4.2	Non-Acid Forming
EB1820723020	FR020	47	C5	-	-	-	Various (composite)	Fine Reject	10.1	678	0.10		3.1	17.4	-14.3	5.7	Non-Acid Forming (Barren)
EB1820723021	FR021	48	C6	-	-	-	Various (composite)	Fine Reject	9.7	393	0.28		8.6	15.5	-6.9	1.8	Non-Acid Forming

Notes

1. Current pH, EC, Alkalinity and Acidity provided for 1:5 sample:water extracts
2. Scr = Chromium Reducible Sulfur; MPA = Maximum Potential Acidity; ANC = Acid Neutralising Capacity and NAPP = Net Acid Producing Potential .
3. Sample classification criteria detail provided in report text.

* Where total sulfur results are less than the laboratory limit of reporting (LoR) a value of half of the LoR is used in Table B2.

Table B4: Waste Rock and Reject Samples Selected for Multi-Element Testing

Composite Number	ALS Laboratory Sample ID	RGS Sample Number	Drill Hole Number	Sample Interval (m)		Lithology	Sample Type
				From	To		
1	EB1208605064	9	STX083	27.40	27.90	Carbonaceous Mudstone	Waste Rock
	EB1208605017	2	STX103C	26.60	27.00	Carbonaceous Mudstone	Waste Rock
	EB1208605082	10	STX104CR	30.22	30.54	Carbonaceous Mudstone	Waste Rock
	EB1208605116	11	STX105	36.19	36.84	Carbonaceous Mudstone	Waste Rock
2	EB1208605010	1	STX095	57.75	58.05	Carbonaceous Mudstone	Waste Rock
	EB1208605023	3	STX103C	55.99	56.54	Carbonaceous Mudstone	Waste Rock
	EB1208605028	4	STX103C	70.70	71.20	Carbonaceous Mudstone	Waste Rock
	EB1208605119	12	STX105	50.74	51.49	Carbonaceous Mudstone	Waste Rock
	EB1208605121	13	STX105	61.41	61.74	Carbonaceous Mudstone	Waste Rock
	EB1208605123	14	STX105	68.74	69.21	Carbonaceous Mudstone	Waste Rock
	EB1208605037	5	STX124	60.30	60.60	Carbonaceous Mudstone	Waste Rock
	EB1208605039	6	STX124	75.90	76.20	Carbonaceous Mudstone	Waste Rock
	EB1208605057	7	STX134C	62.20	62.60	Carbonaceous Mudstone	Waste Rock
	EB1208605060	8	STX134C	74.10	74.50	Carbonaceous Mudstone	Waste Rock
3	EB1208605158	1	STX101C	23.13	23.75	Carbonaceous Mudstone (Floor)	Potential Reject
	EB1208605169	2	STX101C	53.85	54.05	Carbonaceous Mudstone (Floor)	Potential Reject
	EB1208605160	3	STX101C	28.57	28.97	Carbonaceous Mudstone (Floor)	Potential Reject
	EB1208605165	4	STX101C	42.36	42.56	Carbonaceous Mudstone (Floor)	Potential Reject
	EB1208605157	5	STX101C	21.59	21.89	Carbonaceous Mudstone (Roof)	Potential Reject
	EB1208605159	6	STX101C	27.85	28.17	Carbonaceous Mudstone (Roof)	Potential Reject
	EB1208605168	7	STX101C	52.72	52.92	Carbonaceous Mudstone (Roof)	Potential Reject
	EB1208605163	8	STX101C	41.60	42.10	Carbonaceous Mudstone (Roof)	Potential Reject
4	EB1208605078	21	STX099C	56.10	56.60	Carbonaceous Siltstone	Waste Rock
	EB1208605173	9	STX101C	70.94	71.34	Carbonaceous Siltstone (Floor)	Potential Reject
	EB1208605175	10	STX101C	73.30	73.65	Carbonaceous Siltstone (Floor)	Potential Reject
	EB1208605174	11	STX101C	71.85	72.10	Carbonaceous Siltstone (Roof)	Potential Reject
	EB1208605088	22	STX122C	28.90	29.30	Carbonaceous Siltstone	Waste Rock
	EB1208605089	23	STX122C	36.40	37.00	Carbonaceous Siltstone	Waste Rock
	EB1208605091	24	STX122C	44.60	45.20	Carbonaceous Siltstone	Waste Rock
	EB1208605095	25	STX122C	67.32	67.58	Carbonaceous Siltstone	Waste Rock
	EB1208605096	26	STX122C	74.55	75.05	Carbonaceous Siltstone	Waste Rock
5	EB1208605076	51	STX099C	44.20	44.60	Mudstone w/Coal	Waste Rock
	EB1208605171	49	STX101C	60.25	60.65	Mudstone w/Coal	Waste Rock
	EB1208605172	50	STX101C	67.90	68.18	Mudstone w/Coal	Waste Rock
	EB1208605094	45	STX122C	61.74	62.18	Mudstone w/Coal	Waste Rock
	EB1208605151	47	STX135C	42.00	42.50	Mudstone w/Coal	Waste Rock
	EB1208605153	48	STX135C	56.60	57.10	Mudstone w/Coal	Waste Rock
	EB1208605125	46	STX148C	62.60	63.00	Mudstone w/Coal	Waste Rock
6	EB1208605071	38	STX099C	20.50	21.00	Mudstone	Waste Rock
	EB1208605156	43	STX101C	19.55	20.05	Mudstone	Waste Rock
	EB1208605029	35	STX124	23.60	24.13	Mudstone	Waste Rock
	EB1208605148	42	STX135C	31.25	31.58	Mudstone	Waste Rock
	EB1208605138	41	STX136C	29.20	29.60	Mudstone	Waste Rock
7	EB1208605011	32	STX095	60.35	60.75	Mudstone	Waste Rock
	EB1208605013	33	STX095	69.30	69.75	Mudstone	Waste Rock
	EB1208605026	34	STX103C	65.60	66.05	Mudstone	Waste Rock
	EB1208605033	36	STX124	47.60	48.14	Mudstone	Waste Rock
	EB1208605046	37	STX139C	50.60	50.85	Mudstone	Waste Rock
	EB1208605124	39	STX148C	59.60	60.00	Mudstone	Waste Rock
	EB1208605126	40	STX148C	64.00	64.47	Mudstone	Waste Rock
8	EB1208605002	53	STX095	28.30	28.90	Mudstone w/coal	Waste Rock
	EB1208605149	17	STX135C	35.50	36.15	Siltstone (Roof)	Potential Reject
	EB1208605150	14	STX135C	37.55	37.95	Siltstone (Floor)	Potential Reject
	EB1208605140	18	STX136C	50.60	51.02	Sandstone (Roof)	Potential Reject
	EB1208605141	15	STX136C	51.96	52.30	Siltstone (Floor)	Potential Reject
	EB1208605103	16	STX145C	49.50	49.90	Sandstone (Floor)	Potential Reject
	EB1208605104	20	STX145C	61.30	61.80	Sandstone (Roof)	Potential Reject
	EB1208605105	19	STX145C	64.00	64.50	Carbonaceous Siltstone (Floor)	Potential Reject
	EB1208605111	22	STX145C	101.90	102.50	Siltstone (Parting)	Potential Reject
	EB1208605113	21	STX145C	128.10	128.60	Siltstone (Parting)	Potential Reject
9	EB1208605015	61	STX103C	15.40	15.85	Sandstone	Waste Rock
	EB1208605136	94	STX136C	17.60	18.00	Sandstone	Waste Rock
	EB1208605098	85	STX145C	20.30	20.60	Sandstone	Waste Rock
	EB1208605016	62	STX103C	20.60	20.90	Sandstone	Waste Rock
	EB1208605063	76	STX083	24.20	24.60	Sandstone	Waste Rock
	EB1208605001	55	STX095	24.40	24.70	Sandstone	Waste Rock
	EB1208605072	79	STX099C	26.60	27.00	Sandstone	Waste Rock
	EB1208605051	73	STX134C	29.60	29.90	Sandstone	Waste Rock
	EB1208605115	88	STX105	30.27	31.00	Sandstone	Waste Rock
	EB1208605018	63	STX103C	32.60	33.00	Sandstone	Waste Rock
	EB1208605053	74	STX134C	33.20	33.60	Sandstone	Waste Rock
	EB1208605101	86	STX145C	35.60	36.10	Sandstone	Waste Rock
	EB1208605004	56	STX095	36.50	36.75	Sandstone	Waste Rock
	EB1208605032	65	STX124	38.60	38.96	Sandstone	Waste Rock
	EB1208605066	77	STX083	39.20	39.65	Sandstone	Waste Rock

Table B4: Waste Rock and Reject Samples Selected for Multi-Element Testing

Composite Number	ALS Laboratory Sample ID	RGS Sample Number	Drill Hole Number	Sample Interval (m)		Lithology	Sample Type
				From	To		
10	EB1208605075	80	STX099C	41.10	41.60	Sandstone	Waste Rock
	EB1208605117	89	STX105	41.74	42.53	Sandstone	Waste Rock
	EB1208605006	57	STX095	42.75	43.15	Sandstone	Waste Rock
	EB1208605043	68	STX139C	43.40	43.90	Sandstone	Waste Rock
	EB1208605044	69	STX139C	46.95	47.25	Sandstone	Waste Rock
	EB1208605152	97	STX135C	50.00	50.60	Sandstone	Waste Rock
	EB1208605167	99	STX101C	50.54	50.85	Sandstone	Waste Rock
	EB1208605077	81	STX099C	51.20	51.50	Sandstone	Waste Rock
	EB1208605009	58	STX095	51.75	52.05	Sandstone	Waste Rock
	EB1208605047	70	STX139C	53.50	53.85	Sandstone	Waste Rock
	EB1208605092	84	STX122C	53.60	53.90	Sandstone	Waste Rock
	EB1208605120	90	STX105	53.74	54.39	Sandstone	Waste Rock
	EB1208605036	66	STX124	58.95	59.50	Sandstone	Waste Rock
	EB1208605142	95	STX136C	59.80	60.22	Sandstone	Waste Rock
	EB1208605170	100	STX101C	59.85	60.15	Sandstone	Waste Rock
	EB1208605048	71	STX139C	59.85	60.15	Sandstone	Waste Rock
11	EB1208605079	82	STX099C	62.60	63.00	Sandstone	Waste Rock
	EB1208605059	75	STX134C	62.60	64.00	Sandstone	Waste Rock
	EB1208605012	59	STX095	63.75	64.20	Sandstone	Waste Rock
	EB1208605122	91	STX105	65.74	66.16	Sandstone	Waste Rock
	EB1208605027	64	STX103C	67.00	67.60	Sandstone	Waste Rock
	EB1208605069	78	STX083	67.10	67.60	Sandstone	Waste Rock
	EB1208605155	98	STX135C	70.00	70.35	Sandstone	Waste Rock
	EB1208605127	92	STX148C	71.20	71.60	Sandstone	Waste Rock
	EB1208605038	67	STX124	71.60	72.00	Sandstone	Waste Rock
	EB1208605144	96	STX136C	71.60	72.20	Sandstone	Waste Rock
	EB1208605049	72	STX139C	71.85	72.50	Sandstone	Waste Rock
	EB1208605014	60	STX095	78.75	78.95	Sandstone	Waste Rock
	EB1208605083	83	STX104CR	81.23	81.70	Sandstone	Waste Rock
	EB1208605131	93	STX148C	95.60	96.05	Sandstone	Waste Rock
	EB1208605112	87	STX145C	119.00	119.60	Sandstone	Waste Rock
12	EB1208605176	137	STX083	12.10	12.55	Siltstone	Waste Rock
	EB1208605086	123	STX122C	22.00	22.50	Siltstone	Waste Rock
	EB1208605050	117	STX134C	23.15	23.60	Siltstone	Waste Rock
	EB1208605099	124	STX145C	23.60	24.10	Siltstone	Waste Rock
	EB1208605114	127	STX105	25.97	26.49	Siltstone	Waste Rock
	EB1208605030	113	STX124	29.60	30.08	Siltstone	Waste Rock
	EB1208605041	115	STX139C	33.85	34.30	Siltstone	Waste Rock
	EB1208605054	118	STX134C	35.00	35.40	Siltstone	Waste Rock
	EB1208605161	136	STX101C	35.50	36.01	Siltstone	Waste Rock
	EB1208605178	138	STX083	38.50	38.90	Siltstone	Waste Rock
	EB1208605019	107	STX103C	38.60	39.05	Siltstone	Waste Rock
13	EB1208605020	108	STX103C	44.24	44.64	Siltstone	Waste Rock
	EB1208605102	125	STX145C	44.60	44.94	Siltstone	Waste Rock
	EB1208605118	128	STX105	45.00	45.67	Siltstone	Waste Rock
	EB1208605045	116	STX139C	48.35	48.65	Siltstone	Waste Rock
	EB1208605021	109	STX103C	48.80	49.30	Siltstone	Waste Rock
	EB1208605068	119	STX083	53.25	53.70	Siltstone	Waste Rock
	EB1208605022	110	STX103C	53.60	53.97	Siltstone	Waste Rock
	EB1208605034	114	STX124	53.60	54.05	Siltstone	Waste Rock
	EB1208605154	135	STX135C	59.60	60.10	Siltstone	Waste Rock
14	EB1208605145	134	STX136C	74.00	74.60	Siltstone	Waste Rock
	EB1208605070	120	STX083	74.60	75.00	Siltstone	Waste Rock
	EB1208605128	129	STX148C	78.70	79.00	Siltstone	Waste Rock
	EB1208605084	121	STX104CR	87.00	87.44	Siltstone	Waste Rock
	EB1208605129	130	STX148C	87.80	88.20	Siltstone	Waste Rock
	EB1208605085	122	STX104CR	97.45	98.10	Siltstone	Waste Rock
	EB1208605132	131	STX148C	116.60	117.15	Siltstone	Waste Rock
	EB1208605133	132	STX148C	131.05	131.60	Siltstone	Waste Rock
	EB1208605134	133	STX148C	146.60	147.00	Siltstone	Waste Rock
15	EB1208605107	23	STX145C	76.50	76.85	Siltstone (Floor)	Potential Reject
	EB1208605109	24	STX145C	83.90	84.25	Siltstone (Floor)	Potential Reject
	EB1208605162	139	STX101C	38.85	39.20	Siltstone	Waste Rock
	EB1208605073	25	STX099C	30.47	30.77	Siltstone (Roof)	Potential Reject
	EB1208605108	26	STX145C	82.50	82.85	Siltstone (Roof)	Potential Reject
	EB1208605042	147	STX139C	35.90	36.50	Siltstone/Sandstone w/coal	Waste Rock
	EB1208605005	144	STX095	38.55	39.15	Siltstone w/coal	Potential Reject
	EB1208605007	145	STX095	44.75	45.40	Siltstone w/coal	Potential Reject
	EB1208605008	146	STX095	48.75	49.45	Siltstone w/coal	Potential Reject

Table B5: Multi-Element Results for Waste Rock

			Waste Rock											
	RGS composite number -->		1	2	4	5	6	7	9	10	11	12	13	14
	Material description -->		Carbonaceous Mudstone	Carbonaceous Mudstone	Carbonaceous Siltstone (some roof & floor)	Coal/Mudstone	Mudstone	Mudstone	Sandstone	Sandstone	Sandstone	Siltstone	Siltstone	Siltstone
Parameters	Limit of Reporting	NEPC[1] Health-Based Investigation Level												
Elements	All units mg/kg													
Aluminium (Al)	50	-	8,730	6,940	6,140	4,860	9,070	6,220	8,630	6,670	5,770	11,500	8,150	12,100
Antimony (Sb)	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic (As)	5	200	<5	6	6	<5	<5	<5	<5	<5	6	<5	<5	6
Boron (B)	50	6,000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium (Cd)	1	40	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3	<1	<1
Calcium (Ca)	50	-	5,770	14,200	19,600	7,310	6,410	4,940	20,100	16,200	13,600	6,630	6,660	5,760
Chromium (Cr) total	2	-*	14	11	11	7	12	10	16	14	19	16	11	20
Cobalt (Co)	2	200	9	12	13	8	12	14	15	9	12	14	12	10
Copper (Cu)	5	2,000	21	24	20	19	24	22	15	16	13	21	23	20
Iron (Fe)	50	-	17,200	53,000	38,000	36,100	34,600	37,900	49,100	28,300	27,100	42,600	35,100	32,800
Lead (Pb)	5	600	10	11	10	8	11	10	9	8	8	11	10	14
Magnesium (Mg)	50	-	3,430	4,100	3,020	2,100	4,400	3,190	4,480	4,000	2,810	4,140	4,000	3,570
Manganese (Mn)	5	3,000	239	1,100	1,030	823	688	526	1,120	674	568	908	621	575
Mercury (Hg)	0.1	30	0.1	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1
Molybdenum (Mo)	2	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<5	<2	<2
Nickel (Ni)	2	600	11	14	14	9	15	14	17	11	13	16	14	16
Phosphorous (P)	50	-	180	530	500	160	300	230	500	480	380	390	310	520
Potassium (K)	50	-	820	660	680	550	780	640	610	610	570	1610	660	1120
Selenium (Se)	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Sodium (Na)	50	-	2,320	2,870	2,810	1,950	2,450	2,510	1,860	2,320	2,150	2,560	2,640	2,010
Vanadium (V)	5	-	22	28	26	19	24	22	27	23	18	30	25	28
Zinc (Zn)	5	14,000	450	189	99	136	330	170	164	120	115	595	144	87
Exchangeable Cations	All units meq/100g (except Exchangeable Sodium Percentage (%))													
Exch. Calcium	0.1	-	30.3	42.8	38.4	33	28.7	28.4	40.8	39.7	40.8	34.2	30.4	31.8
Exch. Magnesium	0.1	-	13.2	4.1	5.7	5.8	15.4	5.4	11.4	8.4	3	14.4	5.6	2.2
Exch. Potassium	0.1	-	1.5	1.6	1.7	1.1	1.5	1.4	1.4	1.3	1.3	1.5	1.5	2.2
Exch. Sodium	0.1	-	23.9	31.7	32.9	18.5	24.3	26.5	21.8	23.5	22.3	26	28	19
Cation Exchange Capacity	0.1	-	69	80.2	78.7	58.4	70	61.8	75.4	72.9	67.4	76.1	65.5	55.2
Exchangeable Sodium Percentage	0.1 %	-	34.6	39.5	41.8	31.7	34.7	42.8	28.9	32.2	33.1	34.2	42.7	34.4
Calcium/Magnesium Ratio	0.1 %	-	2.3	10.4	6.7	5.7	1.9	5.3	3.6	4.7	13.6	2.4	5.4	14.5

Notes < indicates less than the laboratory limit of reporting. Shaded cells exceed applied guideline limit. * Guideline level for Cr(VI) = 200 mg/kg. Guideine level for Cr(III) = 24% of total Cr.

1. NEPC (1999)a. National Environmental Protection Council (NEPC). National Environmental Protection (Assessment of Site Contamination) Measure (NEPM). Guideline on investigation levels for soil and groundwater. HIL(E); parks, recreation open space and playing fields.

Table B6: Multi-Element Results for Coal Reject

			Potential Coal Reject			Fine Reject																			
	RGS composite/sample number -->		3	8	15	A1 S1.50	A2 S1.50	A3 S1.50	A4 S1.50	A5 S1.50	A6 S1.50	A7 S1.50	A8 S1.50	A9 S1.50	A10 S1.50	A11 S1.50	B1 S1.50	B2 S1.50	B3 S1.50	B4 S1.50	C1	C2	C3	C4	C5	C6
	Material description -->		Carbonaceous Mudstone (Roof/Floor)	Mudstone, siltstone, sandstone (roof, parting & floor)	Siltstone (roof and floor), coal	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject
Parameters	Detection Limit	NEPC[1] Health-Based Investigation Level																							
Elements	All units mg/kg																								
Aluminium (Al)	50	-	7,850	7,890	7,840	1,890	1,440	2,920	1,250	1,150	2,260	1,680	6,060	2,010	1,580	1,520	1,390	3,410	2,080	4,180	6,240	4,860	4,530	8,090	6,850	2,540
Antimony (Sb)	5	-	<5	<5	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	5	200	<5	8	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Barium (Ba)	10	-	-	-	-	50	570	160	100	130	570	190	130	70	120	70	30	580	350	180	80	230	150	310	170	120
Beryllium (Be)	1	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)	50	6,000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium (Cd)	1	40	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Calcium (Ca)	50	-	2,490	7,310	6,320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr) total	2	-*	12	14	11	<2	2	3	<2	<2	5	2	6	<2	2	<2	3	2	10	4	5	4	5	10	7	4
Cobalt (Co)	2	200	8	14	8	4	2	4	<2	<2	3	3	9	<2	4	4	4	3	7	5	9	13	20	11	10	4
Copper (Cu)	5	2,000	27	25	23	16	12	25	8	6	17	15	27	15	14	10	7	28	8	20	28	31	30	37	38	25
Iron (Fe)	50	-	16,600	31,300	18,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	5	600	12	11	10	6	6	8	<5	6	8	6	8	7	8	8	<5	9	8	11	12	17	14	14	15	8
Magnesium (Mg)	50	-	3,540	3,380	3,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	5	3,000	242	605	285	108	185	40	135	177	1,070	442	103	530	54	47	158	76	1,210	62	54	38	66	170	46	773
Mercury (Hg)	0.1	30	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)	2	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nickel (Ni)	2	600	12	16	10	<2	2	3	<2	<2	3	4	5	3	3	3	2	4	4	5	9	14	19	14	10	4
Phosphorous (P)	50	-	160	300	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	50	-	630	770	630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Sodium (Na)	50	-	2,070	2,660	2,590	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (V)	5	-	24	26	22	8	5	11	6	6	10	15	15	9	15	12	6	10	44	14	13	14	15	20	18	11
Zinc (Zn)	5	14,000	228	286	204	13	10	13	14	22	47	21	47	48	32	10	10	10	28	66	76	99	69	80	92	41
Exchangeable Cations	All units meq/100g (except ESP (%))																								
Exch. Calcium	0.1	-	16.3	37.7	31.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exch. Magnesium	0.1	-	19.1	7.8	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exch. Potassium	0.1	-	1.5	1.8	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exch. Sodium	0.1	-	21	27.2	27.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Exchange Capacity	0.1	-	57.9	74.5	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exchangeable Sodium Percentage	0.1 %	-	36.3	36.6	39.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium/Magnesium Ratio	0.1 %	-	0.9	4.8	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes < indicates less than the analytical detection limit. Shaded cells exceed applied guideline limit. * Guideline level for Cr(VI) = 200 mg/kg. Guideline level for Cr(III) = 24% of total Cr.

1. NEPC (1999)a. National Environmental Protection Council (NEPC). National Environmental Protection (Assessment of Site Contamination) Measure (NEPM). Guideline on investigation levels for soil and groundwater. HIL(E); parks, recreation open space and playing fields.

Table B7: Geochemical Abundance Index Results for Waste Rock

			Waste Rock											
	RGS composite no. -->		1	2	4	5	6	7	9	10	11	12	13	14
	Material description -->		Carbonaceous Mudstone	Carbonaceous Mudstone	Carbonaceous Siltstone (some roof & floor)	Coal/Mudstone	Mudstone	Mudstone	Sandstone	Sandstone	Sandstone	Siltstone	Siltstone	Siltstone
Parameters	Li mit of Reporting	Median Crustal Abundance[1]												
	mg/kg		Geochemical Abundance Index											
Aluminium (Al)	50	71,000	0	0	0	0	0	0	0	0	0	0	0	0
Antimony (Sb)	5	1	0	0	0	0	0	0	0	0	0	0	0	0
Arsenic (As)	5	6	0	0	0	0	0	0	0	0	0	0	0	0
Boron (B)	50	20	0	0	0	0	0	0	0	0	0	0	0	0
Cadmium (Cd)	1	0.35	0	0	0	0	0	0	0	0	0	0	0	0
Calcium (Ca)	10	15,000	0	0	0	0	0	0	0	0	0	0	0	0
Chromium (Cr)	2	70	0	0	0	0	0	0	0	0	0	0	0	0
Cobalt (Co)	2	8	0	0	0	0	0	0	0	0	0	0	0	0
Copper (Cu)	5	30	0	0	0	0	0	0	0	0	0	0	0	0
Iron (Fe)	50	40,000	0	0	0	0	0	0	0	0	0	0	0	0
Lead (Pb)	5	35	0	0	0	0	0	0	0	0	0	0	0	0
Magnesium (Mg)	10	5,000	0	0	0	0	0	0	0	0	0	0	0	0
Manganese (Mn)	5	1,000	0	0	0	0	0	0	0	0	0	0	0	0
Mercury (Hg)	0.1	0.06	0	0	0	0	0	0	0	0	0	0	0	0
Molybdenum (Mo)	2	1.2	0	0	0	0	0	0	0	0	0	0	0	0
Nickel (Ni)	2	50	0	0	0	0	0	0	0	0	0	0	0	0
Phosphorous (P)	50	800	0	0	0	0	0	0	0	0	0	0	0	0
Potassium (K)	10	14,000	0	0	0	0	0	0	0	0	0	0	0	0
Selenium (Se)	5	0.4	0	0	0	0	0	0	0	0	0	0	0	0
Sodium (Na)	10	5,000	0	0	0	0	0	0	0	0	0	0	0	0
Vanadium	5	90	0	0	0	0	0	0	0	0	0	0	0	0
Zinc (Zn)	5	90	2	0	0	0	1	0	0	0	0	2	0	0

Notes:
GAI's greater than or equal to 3 are highlighted.
1. Bowen H.J.M.(1979) Environmental Chemistry of the Elements, Academic Press, New York, p60-61.

Table B8: Geochemical Abundance Index Results for Coal Reject

			Potential Coal Reject			Fine Reject																			
	RGS composite no. -->		3	8	15	A1 S1.50	A2 S1.50	A3 S1.50	A4 S1.50	A5 S1.50	A6 S1.50	A7 S1.50	A8 S1.50	A9 S1.50	A10 S1.50	A11 S1.50	B1 S1.50	B2 S1.50	B3 S1.50	B4 S1.50	C1	C2	C3	C4	C5	C6
	Material description -->		Carbonaceous Mudstone (Roof/Floor)	Mudstone, siltstone, sandstone (roof, parting & floor)	Siltstone (roof and floor), coal	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject	Fine Reject
Parameters	Limit of Reporting Limit	Median Crustal Abundance[1]																							
	mg/kg		Geochemical Abundance Index																							
Aluminium (Al)	50	71,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Antimony (Sb)	5	1	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barium (Ba)	10	500	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beryllium (Be)	1	0.3	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Boron (B)	50	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cadmium (Cd)	1	0.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calcium (Ca)	10	15,000	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	2	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cobalt (Co)	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Copper (Cu)	5	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iron (Fe)	50	40,000	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	5	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Magnesium (Mg)	10	5,000	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	5	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mercury (Hg)	0.1	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Molybdenum (Mo)	2	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nickel (Ni)	2	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phosphorous (P)	50	800	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	10	14,000	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sodium (Na)	10	5,000	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	5	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zinc (Zn)	5	90	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:
GAI's greater than or equal to 3 are highlighted.
1. Bowen H.J.M.(1979) Environmental Chemistry of the Elements, Academic Press, New York, p61-62.

Table B9: Multi-Element Results for Water Extracts from Waste Rock and Potential Coal Reject Materials

				Waste Rock												Potential Coal Reject		
	RGS Composite No. -->			1	2	4	5	6	7	9	10	11	12	13	14	3	8	15
	Material description -->			Carbonaceous Mudstone	Carbonaceous Mudstone	Carbonaceous Siltstone (some roof & floor)	Coal/Mudstone	Mudstone	Mudstone	Sandstone	Sandstone	Sandstone	Siltstone	Siltstone	Siltstone	Carbonaceous Mudstone (roof & floor)	Mudstone, siltstone, sandstone (roof, parting & floor)	Siltstone (roof &floor), coal.
Parameters	Limit of Reporting	Aquatic Ecosystems (freshwater)[1]	Livestock Drinking Water[2]															
pH	0.1 pH unit	6 to 9	-	9.6	9.8	9.9	9.8	9.6	9.9	9.9	10.0	9.6	8.6	10.0	9.0	9.2	9.5	9.8
Electrical Conductivity	1 µS/cm	1,000	3,580	629	652	662	568	638	525	606	611	548	654	560	423	514	593	547
Total Alkalinity ($mgCaCO_3/L$)	0.2 mg/L	-	-	272	334	330	230	189	139	238	278	238	274	292	262	238	254	278
Bicarbonate Alkalinity ($mgCaCO_3/L$	0.2 mg/L	-	-	145	158	158	107	94	25	98	74	90	152	41	98	204	135	131
Carbonate Alkalinity ($mgCaCO_3/L$)	0.2 mg/L	-	-	127	176	172	123	94	115	139	204	148	123	250	164	33	119	148
Major Ions	All element concentrations in mg/L																	
Calcium (Ca)	2	-	1,000	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Magnesium (Mg)	2	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Sodium (Na)	2	-	-	146	164	148	130	144	124	138	148	118	128	140	126	124	152	134
Potassium (K)	2	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<3	<4	<5	<6	<7	<8	<9
Chloride (Cl)	2	-	-	44	26	20	24	62	8	44	34	18	50	32	12	48	44	36
Sulfate (SO_4)	2	-	1,000	272	70	50	38	52	34	48	46	22	104	32	46	100	72	40
Metals	All element concentrations in mg/L																	
Aluminium (Al)	0.2	0.055	5	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	0.4	<0.2	<0.2	0.2	<0.2	<0.2	<0.2
Antimony (Sb)	0.02	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic (As)	0.02	0.024*	0.1	0.06	0.06	0.04	0.08	0.02	0.02	0.06	0.10	0.10	0.04	0.12	0.04	0.04	0.04	0.06
Boron (B)	0.2	0.37	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium (Cd)	0.02	0.0002	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chromium (Cr)	0.02	-	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cobalt (Co)	0.02	-	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Cu)	0.02	0.0014	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Iron (Fe)	0.2	-	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead (Pb)	0.02	0.0034	2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Manganese (Mn)	0.02	1.90	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury (Hg)	0.0001	0.0006	0.002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum (Mo)	0.02	-	0.15	0.02	0.04	0.04	0.04	0.02	<0.02	0.04	0.04	0.02	0.02	0.04	0.04	0.02	0.04	0.02
Nickel (Ni)	0.02	0.011	0.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phosphorus (P)	2	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Selenium (Se)	0.02	0.011	0.02	0.04	0.02	0.02	0.02	0.04	<0.002	0.02	<0.002	<0.002	<0.002	0.02	0.04	0.04	0.02	0.04
Vanadium (V)	0.02	-	0.1	0.04	0.04	0.06	0.06	0.02	0.02	0.02	0.04	0.04	<0.002	0.06	0.06	0.02	0.04	0.04
Zinc (Zn)	0.02	0.008	2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Notes: < Indicates concentration less than the detection limit. Shaded cells indicate values which exceed applied ANZECC/NEPC guideline value * Trigger value for trivalent arsenic.
ANZECC & ARMCANZ (2000). 1. Trigger values for aquatic ecosystems (95% species protection level); 2. Recommended guideline limits for Livestock Drinking Water. Long term trigger

Table B10: Samples Selected for KLC Composites

KLC No.	ALS Laboratory Sample ID	Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC: MPA ratio	Sample Classification[3]
				From	To	Depth				(µS/cm)	%	%	(kg H_2SO_4/t)				
Waste Rock																	
KLC1	EB1208605064	RGS004	STX083	27.40	27.90	0.50	Carbonaceous Mudstone	Waste Rock	9.4	677	0.27		8.3	22	-14	2.7	Non-Acid Forming
	EB1208605010	RGS010	STX095	57.75	58.05	0.30	Carbonaceous Mudstone	Waste Rock	9.8	1100	0.31	0.141	4.3	64	-59	14.8	Non-Acid Forming
	EB1208605017	RGS003	STX103C	26.60	27.00	0.40	Carbonaceous Mudstone	Waste Rock	9.8	557	0.06		1.8	46	-44	25.0	Non-Acid Forming (Barren)
	EB1208605023	RGS009	STX103C	55.99	56.54	0.55	Carbonaceous Mudstone	Waste Rock	10.1	601	0.03		0.9	100	-99	108.6	Non-Acid Forming (Barren)
	EB1208605028	RGS014	STX103C	70.70	71.20	0.50	Carbonaceous Mudstone	Waste Rock	10.1	501	0.12	0.019	0.6	34	-34	58.9	Non-Acid Forming (Barren)
	EB1208605082	RGS001	STX104CR	30.22	30.54	0.32	Carbonaceous Mudstone	Waste Rock	9.6	598	0.06		1.8	50	-48	27.0	Non-Acid Forming (Barren)
	EB1208605121	RGS008	STX105	61.41	61.74	0.33	Carbonaceous Mudstone	Waste Rock	9.9	568	0.02		0.6	30	-29	49.0	Non-Acid Forming (Barren)
	EB1208605123	RGS010	STX105	68.74	69.21	0.47	Carbonaceous Mudstone	Waste Rock	9.8	488	0.02		0.6	15	-14	23.7	Non-Acid Forming (Barren)
	EB1208605037	RGS009	STX124	60.30	60.60	0.30	Carbonaceous Mudstone	Waste Rock	10.2	631	0.04		1.2	162	-161	132.2	Non-Acid Forming (Barren)
	EB1208605039	RGS011	STX124	75.90	76.20	0.30	Carbonaceous Mudstone	Waste Rock	9.1	718	0.49	0.370	11.3	94	-82	8.3	Non-Acid Forming
	EB1208605057	RGS008	STX134C	62.20	62.60	0.40	Carbonaceous Mudstone	Waste Rock	10.0	644	0.02		0.6	28	-28	46.0	Non-Acid Forming (Barren)
KLC2	EB1208605011	RGS011	STX095	60.35	60.75	0.40	Mudstone	Waste Rock	10.0	342	0.04		1.2	40	-39	32.5	Non-Acid Forming (Barren)
	EB1208605071	RGS001	STX099C	20.50	21.00	0.50	Mudstone	Waste Rock	9.4	602	0.04		1.2	34	-32	27.5	Non-Acid Forming (Barren)
	EB1208605172	RGS017	STX101C	67.90	68.18	0.28	Mudstone w/Coal	Waste Rock	9.8	612	0.32		9.8	22	-13	2.3	Non-Acid Forming
	EB1208605026	RGS012	STX103C	65.60	66.05	0.45	Mudstone	Waste Rock	10.1	379	0.13	0.006	0.2	21	-21	113.2	Non-Acid Forming (Barren)
	EB1208605094	RGS009	STX122C	61.74	62.18	0.44	Mudstone w/Coal	Waste Rock	10.0	685	0.03		0.9	44	-43	47.3	Non-Acid Forming (Barren)
	EB1208605029	RGS001	STX124	23.60	24.13	0.53	Mudstone	Waste Rock	9.8	730	0.07		2.1	49	-47	22.9	Non-Acid Forming (Barren)
	EB1208605033	RGS005	STX124	47.60	48.14	0.54	Mudstone	Waste Rock	9.8	571	0.24	0.063	1.9	35	-33	18.1	Non-Acid Forming (Barren)
	EB1208605035	RGS007	STX124	50.60	51.00	0.40	Mudstone w/Coal	Waste Rock	10.0	460	0.15	0.017	0.5	31	-31	60.1	Non-Acid Forming (Barren)
	EB1208605148	RGS003	STX135C	31.25	31.58	0.33	Mudstone	Waste Rock	9.9	681	0.02		0.6	248	-247	404.9	Non-Acid Forming (Barren)
	EB1208605151	RGS006	STX135C	42.00	42.50	0.50	Mudstone w/Coal	Waste Rock	9.7	559	0.12	0.008	0.2	33	-33	136.3	Non-Acid Forming (Barren)
	EB1208605153	RGS008	STX135C	56.60	57.10	0.50	Mudstone w/Coal	Waste Rock	10.0	572	0.18	0.008	0.2	38	-38	156.7	Non-Acid Forming (Barren)
	EB1208605046	RGS007	STX139C	50.60	50.85	0.25	Mudstone	Waste Rock	9.9	789	0.17	0.069	2.1	21	-18	9.7	Non-Acid Forming (Barren)
	EB1208605100	RGS 004	STX145C	26.80	27.30	0.50	Mudstone w/Coal	Waste Rock	9.4	422	0.24	0.082	2.5	11	-8	4.3	Non-Acid Forming (Barren)
KLC3	EB1208605063	RGS003	STX083	24.20	24.60	0.40	Sandstone	Waste Rock	9.6	685	0.08		2.5	30	-28	12.2	Non-Acid Forming (Barren)
	EB1208605066	RGS006	STX083	39.20	39.65	0.45	Sandstone	Waste Rock	9.9	547	0.02		0.6	46	-45	75.1	Non-Acid Forming (Barren)
	EB1208605069	RGS009	STX083	67.10	67.60	0.50	Sandstone	Waste Rock	9.2	185	0.03		0.9	159	-158	173.1	Non-Acid Forming (Barren)
	EB1208605001	RGS001	STX095	24.40	24.70	0.30	Sandstone	Waste Rock	10.2	615	0.02		0.6	56	-56	92.1	Non-Acid Forming (Barren)
	EB1208605004	RGS004	STX095	36.50	36.75	0.25	Sandstone	Waste Rock	10.0	705	0.07		2.1	52	-50	24.3	Non-Acid Forming (Barren)
	EB1208605009	RGS009	STX095	51.75	52.05	0.30	Sandstone	Waste Rock	9.9	689	0.09		2.8	58	-55	21.1	Non-Acid Forming (Barren)
	EB1208605014	RGS014	STX095	78.75	78.95	0.20	Sandstone	Waste Rock	10.2	523	0.02		0.6	52	-51	84.1	Non-Acid Forming (Barren)
	EB1208605072	RGS002	STX099C	26.60	27.00	0.40	Sandstone	Waste Rock	9.9	673	0.03		0.9	42	-41	46.0	Non-Acid Forming (Barren)
	EB1208605075	RGS005	STX099C	41.10	41.60	0.50	Sandstone	Waste Rock	10.0	673	0.01		0.3	63	-63	206.0	Non-Acid Forming (Barren)
	EB1208605077	RGS007	STX099C	51.20	51.50	0.30	Sandstone	Waste Rock	9.8	407	0.21	0.017	0.5	12	-11	22.7	Non-Acid Forming (Barren)
	EB1208605079	RGS009	STX099C	62.60	63.00	0.40	Sandstone	Waste Rock	10.2	731	0.005		0.2	93	-92	604.7	Non-Acid Forming (Barren)
	EB1208605167	RGS012	STX101C	50.54	50.85	0.31	Sandstone	Waste Rock	10.0	640	0.02		0.6	203	-202	331.4	Non-Acid Forming (Barren)
	EB1208605170	RGS015	STX101C	59.85	60.15	0.30	Sandstone	Waste Rock	10.1	560	0.01		0.3	48	-48	158.0	Non-Acid Forming (Barren)
	EB1208605015	RGS001	STX103C	15.40	15.85	0.45	Sandstone	Waste Rock	9.8	544	0.005		0.2	105	-105	685.7	Non-Acid Forming (Barren)
	EB1208605016	RGS002	STX103C	20.60	20.90	0.30	Sandstone	Waste Rock	9.5	444	0.005		0.2	36	-35	232.5	Non-Acid Forming (Barren)
	EB1208605027	RGS013	STX103C	67.00	67.60	0.60	Sandstone	Waste Rock	10.2	632	0.02		0.6	47	-47	77.1	Non-Acid Forming (Barren)
	EB1208605083	RGS002	STX104CR	81.23	81.70	0.47	Sandstone	Waste Rock	10.1	685	0.02		0.6	38	-37	62.0	Non-Acid Forming (Barren)

Table B10: Samples Selected for KLC Composites

KLC No.	ALS Laboratory Sample ID	Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC: MPA ratio	Sample Classification[3]
				From	To	Depth				(µS/cm)	%	%	(kg H_2SO_4/t)				
KLC3	EB1208605115	RGS002	STX105	30.27	31.00	0.73	Sandstone	Waste Rock	9.7	654	0.13	0.044	1.3	17	-15	12.3	Non-Acid Forming (Barren)
	EB1208605117	RGS004	STX105	41.74	42.53	0.79	Sandstone	Waste Rock	9.8	502	0.02		0.6	19	-18	30.4	Non-Acid Forming (Barren)
	EB1208605120	RGS007	STX105	53.74	54.39	0.65	Sandstone	Waste Rock	9.9	664	0.02		0.6	22	-21	36.1	Non-Acid Forming (Barren)
	EB1208605092	RGS007	STX122C	53.60	53.90	0.30	Sandstone	Waste Rock	10.0	680	0.01		0.3	52	-51	168.2	Non-Acid Forming (Barren)
	EB1208605032	RGS004	STX124	38.60	38.96	0.36	Sandstone	Waste Rock	10.0	530	0.06		1.8	145	-143	78.9	Non-Acid Forming (Barren)
	EB1208605036	RGS008	STX124	58.95	59.50	0.55	Sandstone	Waste Rock	10.1	597	0.06		1.8	63	-61	34.0	Non-Acid Forming (Barren)
	EB1208605038	RGS010	STX124	71.60	72.00	0.40	Sandstone	Waste Rock	10.0	457	0.01		0.3	44	-43	142.0	Non-Acid Forming (Barren)
	EB1208605051	RGS002	STX134C	29.60	29.90	0.30	Sandstone	Waste Rock	10.1	662	0.03		0.9	26	-25	28.5	Non-Acid Forming (Barren)
	EB1208605052	RGS003	STX134C	37.30	37.70	0.40	Sandstone	Waste Rock	10.2	576	0.01		0.3	390	-390	1273.5	Non-Acid Forming (Barren)
	EB1208605053	RGS004	STX134C	33.20	33.60	0.40	Sandstone	Waste Rock	10.1	630	0.02		0.6	96	-95	156.7	Non-Acid Forming (Barren)
	EB1208605059	RGS010	STX134C	62.60	64.00	1.40	Sandstone	Waste Rock	10.2	686	0.005		0.2	66	-66	432.3	Non-Acid Forming (Barren)
	EB1208605152	RGS007	STX135C	50.00	50.60	0.60	Sandstone	Waste Rock	10.1	633	0.005		0.2	50	-50	328.5	Non-Acid Forming (Barren)
	EB1208605155	RGS010	STX135C	70.00	70.35	0.35	Sandstone	Waste Rock	10.0	626	0.03		0.9	24	-23	25.9	Non-Acid Forming (Barren)
	EB1208605136	RGS002	STX136C	17.60	18.00	0.40	Sandstone	Waste Rock	9.8	517	0.005		0.2	136	-136	888.2	Non-Acid Forming (Barren)
	EB1208605043	RGS004	STX139C	43.40	43.90	0.50	Sandstone	Waste Rock	10.2	679	0.03		0.9	50	-49	54.7	Non-Acid Forming (Barren)
	EB1208605044	RGS005	STX139C	46.95	47.25	0.30	Sandstone	Waste Rock	10.0	589	0.20	0.058	1.8	72	-70	40.4	Non-Acid Forming (Barren)
	EB1208605047	RGS008	STX139C	53.50	53.85	0.35	Sandstone	Waste Rock	10.1	664	0.02		0.6	64	-64	105.1	Non-Acid Forming (Barren)
	EB1208605048	RGS009	STX139C	59.85	60.15	0.30	Sandstone	Waste Rock	10.1	651	0.005		0.2	142	-142	927.3	Non-Acid Forming (Barren)
	EB1208605049	RGS010	STX139C	71.85	72.50	0.65	Sandstone	Waste Rock	10.1	686	0.03		0.9	47	-46	51.4	Non-Acid Forming (Barren)
	EB1208605098	RGS 002	STX145C	20.30	20.60	0.30	Sandstone	Waste Rock	9.9	743	0.03		0.9	69	-68	75.4	Non-Acid Forming (Barren)
	EB1208605112	RGS 016	STX145C	119.00	119.60	0.60	Sandstone	Waste Rock	9.6	307	0.05		1.5	9	-7	5.9	Non-Acid Forming (Barren)
KLC4	EB1208605007	RGS007	STX095	44.75	45.40	0.65	Siltstone w/Coal	Waste Rock	9.9	575	0.23	0.087	2.7	29	-26	10.7	Non-Acid Forming (Barren)
	EB1208605008	RGS008	STX095	48.75	49.45	0.70	Siltstone w/Coal	Waste Rock	10.1	569	0.20	0.133	4.1	47	-43	11.6	Non-Acid Forming
	EB1208605078	RGS008	STX099C	56.10	56.60	0.50	Carbonaceous Siltstone	Waste Rock	9.8	535	0.03		0.9	35	-34	38.0	Non-Acid Forming (Barren)
	EB1208605080	RGS010	STX099C	65.60	65.94	0.34	Carbonaceous Siltstone	Waste Rock	9.7	788	0.05		1.5	37	-36	24.4	Non-Acid Forming (Barren)
	EB1208605081	RGS011	STX099C	68.60	69.00	0.40	Carbonaceous Siltstone	Waste Rock	9.7	683	0.50	0.490	15.0	40	-25	2.7	Non-Acid Forming
	EB1208605166	RGS011	STX101C	43.60	44.00	0.40	Siltstone w/Coal	Waste Rock	9.6	651	0.22	0.123	3.8	24	-20	6.3	Non-Acid Forming
	EB1208605087	RGS002	STX122C	25.20	25.60	0.40	Siltstone w/Coal	Waste Rock	9.6	769	0.28	0.207	6.3	46	-40	7.3	Non-Acid Forming
	EB1208605088	RGS003	STX122C	28.90	29.30	0.40	Carbonaceous Siltstone	Waste Rock	10.1	620	0.06		1.8	220	-218	119.7	Non-Acid Forming (Barren)
	EB1208605089	RGS004	STX122C	36.40	37.00	0.60	Carbonaceous Siltstone	Waste Rock	9.5	903	0.54	0.439	13.4	25	-11	1.8	Non-Acid Forming
	EB1208605090	RGS005	STX122C	39.60	40.00	0.40	Carbonaceous Siltstone	Waste Rock	9.8	696	0.15	0.063	1.9	20	-18	10.2	Non-Acid Forming (Barren)
	EB1208605091	RGS006	STX122C	44.60	45.20	0.60	Carbonaceous Siltstone	Waste Rock	10.1	716	0.03		0.9	21	-20	22.6	Non-Acid Forming (Barren)
	EB1208605096	RGS011	STX122C	74.55	75.05	0.50	Carbonaceous Siltstone	Waste Rock	9.8	709	0.04		1.2	12	-10	9.4	Non-Acid Forming (Barren)
	EB1208605135	RGS001	STX136C	13.96	14.42	0.46	Clay	Waste Rock	9.5	649	0.005		0.2	30	-29	192.7	Non-Acid Forming (Barren)
	EB1208605139	RGS005	STX136C	37.60	38.10	0.50	Siltstone w/Coal	Waste Rock	9.8	563	0.15	0.038	1.2	24	-22	20.3	Non-Acid Forming (Barren)
	EB1208605143	RGS009	STX136C	62.70	63.10	0.40	Siltstone w/Coal	Waste Rock	9.9	573	0.02		0.6	168	-167	274.3	Non-Acid Forming (Barren)
	EB1208605042	RGS003	STX139C	35.90	36.50	0.60	Siltstone w/Coal	Waste Rock	10.1	663	0.07		2.1	97	-95	45.4	Non-Acid Forming (Barren)

Table B10: Samples Selected for KLC Composites

KLC No.	ALS Laboratory Sample ID	Sample Number	Drill Hole Number	Sample Interval (m)			Lithology	Sample Type	pH[1]	EC[1]	Total Sulfur	Scr	MPA[2]	ANC[2]	NAPP[2]	ANC: MPA ratio	Sample Classification[3]
				From	To	Depth				(µS/cm)	%	%	(kg H_2SO_4/t)				
Potential Coal Reject																	
KLC5	EB1208605157	RGS002	STX101C	21.59	21.89	0.30	Carbonaceous Mudstone (Roof)	Overburden	8.9	541	0.03		0.9	20	-19	21.9	Non-Acid Forming (Barren)
	EB1208605158	RGS003	STX101C	23.13	23.75	0.62	Carbonaceous Mudstone (Floor)	Overburden	9.1	493	0.03		0.9	20	-19	22.1	Non-Acid Forming (Barren)
	EB1208605159	RGS004	STX101C	27.85	28.17	0.32	Carbonaceous Mudstone (Roof)	Overburden	9.3	407	0.03		0.9	18	-17	19.2	Non-Acid Forming (Barren)
	EB1208605160	RGS005	STX101C	28.57	28.97	0.40	Carbonaceous Mudstone (Floor)	Overburden	8.8	488	0.08		2.5	14	-12	5.8	Non-Acid Forming (Barren)
	EB1208605163	RGS008	STX101C	41.60	42.10	0.50	Carbonaceous Mudstone (Roof)	Overburden	9.2	475	0.11	0.111	3.4	18	-15	5.3	Non-Acid Forming
	EB1208605165	RGS010	STX101C	42.36	42.56	0.20	Carbonaceous Mudstone (Floor)	Overburden	9.5	627	0.14	0.114	3.5	20	-17	5.8	Non-Acid Forming
	EB1208605168	RGS013	STX101C	52.72	52.92	0.20	Carbonaceous Mudstone (Roof)	Overburden	9.7	615	0.05		1.5	51	-49	33.2	Non-Acid Forming (Barren)
	EB1208605169	RGS014	STX101C	53.85	54.05	0.20	Carbonaceous Mudstone (Floor)	Overburden	9.4	466	0.07		2.1	15	-13	7.1	Non-Acid Forming (Barren)
	EB1208605173	RGS018	STX101C	70.94	71.34	0.40	Carbonaceous Siltstone (Floor)	Overburden	9.9	540	0.02		0.6	27	-26	43.8	Non-Acid Forming (Barren)
	EB1208605175	RGS020	STX101C	73.30	73.65	0.35	Carbonaceous Siltstone (Floor)	Overburden	9.8	542	0.07		2.1	22	-20	10.3	Non-Acid Forming (Barren)
KLC6	EB1208605074	RGS004	STX099C	35.10	35.60	0.50	Coal and Mudstone (Floor)	Potential Reject	9.5	596	0.05		1.5	37	-36	24.4	Non-Acid Forming (Barren)
	EB1208605149	RGS004	STX135C	35.50	36.15	0.65	Siltstone (Roof)	Overburden	9.8	648	0.20	0.192	5.9	102	-96	17.3	Non-Acid Forming
	EB1208605150	RGS005	STX135C	37.55	37.95	0.40	Siltstone (Floor)	Overburden	9.4	499	0.05		1.5	20	-18	12.8	Non-Acid Forming (Barren)
	EB1208605140	RGS006	STX136C	50.60	51.02	0.42	Sandstone (Roof)	Overburden	9.7	425	0.06		1.8	19	-17	10.4	Non-Acid Forming (Barren)
	EB1208605141	RGS007	STX136C	51.96	52.30	0.34	Siltstone (Floor)	Overburden	9.6	337	0.02		0.6	16	-16	26.8	Non-Acid Forming (Barren)
	EB1208605103	RGS 007	STX145C	49.50	49.90	0.40	Sandstone (Floor)	Overburden	9.5	560	0.11	0.07	2.1	16	-13	7.2	Non-Acid Forming (Barren)
	EB1208605113	RGS 017	STX145C	128.10	128.60	0.50	Siltstone Parting	Overburden	9.7	690	0.05		1.5	36	-35	23.6	Non-Acid Forming (Barren)

Notes

1. Current pH and EC provided for 1:5 sample:water extracts
2. Scr = Chromium Reducible Sulfur; MPA = Maximum Potential Acidity; ANC = Acid Neutralising Capacity and NAPP = Net Acid Producing Potential .
3. Sample classification criteria detail provided in report text.

* Where total sulfur results are less than the laboratory limit of reporting (LoR) a value of half of the LoR is used in Table B10.

KLC 1 - Waste Rock (Carbonaceous Mudstone)

Weight (kg)	1.87	**Total S (%)**	0.13	**ANC**	58.55
pH (1:5)	9.67	**Scr (%)**	0.180	**NAPP**	-53.0
EC (µS/cm)	644	**MPA**	5.5	**ANC:MPA**	10.6

Date			**21/05/2012**	**04/06/2012**	**19/06/2012**	**03/07/2012**	**17/07/2012**	**31/07/2012**	**14/08/2012**
Number of Weeks			**0**	**2**	**4**	**6**	**8**	**10**	**12**
Leach Number			**1**	**2**	**3**	**4**	**5***	**6**	**7**
ALS Laboratory Number			EB1213922001	EB1214967001	EB1216330001	EB1213922001	EB1213922001	EB1213922001	EB1213922001
Volume On (L)			1.000	1.000	1.000	1.000	1.000	1.000	1.000
Volume Off (L)			0.640	0.860	0.765	0.821	0.838	0.768	0.780
Cum. Volume (L)			0.640	1.500	2.265	3.086	3.924	4.692	5.472
Pore Volumes			0.5	1.1	1.7	2.3	2.9	3.5	4.1
pH (RGS Measurement)			9.38	8.99	8.94	9.01	9.15	9.22	9.29
pH (ALS Measurement)			9.52	8.87	9.34	9.38	8.84	9.28	9.01
EC (RGS Measurement) (µS/cm)			562	750	706	576	488	506	431
EC (ALS Measurement) (µS/cm)			638	781	727	585	487	526	431
Acidity (mg/L)*			<1	2	<1	<1	<1	<1	<1
Alkalinity (mg/L)*			97	46	56	50	61	95	100
Net Alkalinity (mg/L)*			97	44	56	50	61	95	100
Major Ions (mg/L)	**LoR**	**WQ Guidelines#**	All units mg/L						
Calcium (Ca)	1	1,000	1	1	<1	<1	<1	<1	<1
Potassium (K)	1	-	1	<1	<1	1	<1	<1	<1
Magnesium (Mg)	1	-	<1	<1	<1	<1	<1	<1	<1
Sodium (Na)	1	-	143	156	142	120	96	105	89
Chloride (Cl)	1	-	90	108	82	59	33	26	13
Sulfate (SO_4)	1	1,000	86	127	156	128	104	105	74
Trace metals/ metalloids (mg/L)	**LoR**	**LoR**	All units mg/L						
Aluminium (Al)	0.01	5	0.20	0.24	0.88	1.25	0.92	0.58	0.48
Arsenic (As)	0.001	0.5	0.009	0.005	0.008	0.007	<0.001	0.002	<0.001
Boron (B)	0.05	5	<0.05	<0.05	<0.05	0.05	0.01	<0.05	<0.05
Cadmium (Cd)	0.0001	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	0.001	1	<0.001	0.003	0.002	0.002	0.001	<0.001	<0.001
Chromium (Cr)	0.001	1	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu)	0.001	1	0.001	<0.001	<0.001	0.001	0.001	<0.001	0.001
Iron (Fe)	0.05	1	<0.05	0.08	0.13	0.23	0.014	0.10	<0.001
Manganese (Mn)	0.001	2	<0.001	0.001	0.002	0.002	0.001	<0.001	<0.001
Molybdenum (Mo)	0.001	0.15	0.018	0.035	0.03	0.03	0.02	0.004	0.006
Nickel (Ni)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.001	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony (Sb)	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (Se)	0.01	0.02	0.02	0.06	0.05	0.04	0.02	<0.01	<0.01
Vanadium	0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc (Zn)	0.005	20	<0.005	<0.005	0.006	0.013	0.009	0.007	<0.005
Calculations**									
SO_4 Release Rate			29	58	64	56	47	43	31
Cumulative SO_4 Release			29	58	64	56	47	43	31
Ca Release Rate			0.3	0.5	0.2	0.2	0.2	0.2	0.2
Cumulative Ca Release			0.3	0.5	0.2	0.2	0.2	0.2	0.2
Mg Release Rate			0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Mg Release			0.2	0.2	0.2	0.2	0.2	0.2	0.2
Residual ANC (%)			100.00	99.99	99.99	99.99	99.99	99.98	99.98
Residual Sulfur (%)			99.2	97.7	96.1	94.7	93.5	92.4	91.6

< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg CaCQ/L.

** SO_4, Ca and Mg release rates calculated in mg/kg/flush. * Results exptrapolated from data trends.

Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity.

MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

ANZECC & ARMCANZ (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy, 2000, ANZECC (Australian and New Zealand Environment Conservation Council) and ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand). Livestock Drinking Water Levels (Irrigation Levels used for Fe and Mn).

KLC 2 - Waste Rock (Mudstone and Coal)

Weight (kg)	1.19	Total S (%)	0.13	ANC	48.2
pH (1:5)	9.77	Scr (%)	0.040	NAPP	-47.0
EC (µS/cm)	570	MPA	1.2	ANC:MPA	39.3

Date			21/05/2012	04/06/2012	19/06/2012	03/07/2012	17/07/2012	31/07/2012	14/08/2012
Number of Weeks			0	2	4	6	8	10	12
Leach Number			1	2	3	4	5*	6	7
ALS Laboratory Number			EB1213922002	EB1214967002	EB1216330002	EB1213922002	EB1213922002	EB1213922002	EB1213922002
Volume On (L)			1.000	1.000	1.000	1.000	1.000	1.000	1.000
Volume Off (L)			0.707	0.796	1.106	0.813	0.842	0.758	0.782
Cum. Volume (L)			0.707	1.503	2.609	3.422	4.264	5.022	5.804
Pore Volumes			0.5	1.1	1.9	2.5	3.2	3.7	4.3
pH (RGS Measurement)			9.37	9.28	9.55	9.43	9.33	9.49	9.35
pH (ALS Measurement)			9.46	9.37	9.73	9.69	9.42	9.61	9.03
EC (RGS Measurement) (µS/cm)			709	715	568	352	410	241	117
EC (ALS Measurement) (µS/cm)			744	742	642	337	386	243	113
Acidity (mg/L)*			<1	<1	<1	<1	<1	<1	<1
Alkalinity (mg/L)*			79	93	174	120	170	111	55
Net Alkalinity (mg/L)*			79	93	174	120	170	111	55
Major Ions (mg/L)	LoR	WQ Guidelines#	All units mg/L						
Calcium (Ca)	1	1,000	1	<1	<1	<1	<1	<1	<1
Potassium (K)	1	-	1	<1	<1	1	<1	<1	<1
Magnesium (Mg)	1	-	<1	<1	<1	<1	<1	<1	<1
Sodium (Na)	1	-	189	157	132	74	88	49	26
Chloride (Cl)	1	-	162	114	49	12	7	3	1
Sulfate (SO_4)	1	1,000	101	78	74	40	37	14	8
Trace metals/ metalloids (mg/L)	LoR	LoR	All units mg/L						
Aluminium (Al)	0.01	5	0.09	0.2	0.09	2.13	1.19	0.24	2.86
Arsenic (As)	0.001	0.5	0.007	0.014	0.037	0.02	0.002	0.006	<0.001
Boron (B)	0.05	5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium (Cd)	0.0001	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Chromium (Cr)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
Copper (Cu)	0.001	1	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001
Iron (Fe)	0.05	1	<0.05	0.07	<0.05	0.30	0.021	<0.05	<0.001
Manganese (Mn)	0.001	2	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001
Molybdenum (Mo)	0.001	0.15	0.034	0.102	0.036	0.044	0.034	0.006	0.017
Nickel (Ni)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.001	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony (Sb)	0.001	-	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
Selenium (Se)	0.01	0.02	0.05	0.07	0.02	0.02	0.02	<0.01	0.01
Vanadium	0.01	-	<0.01	0.01	<0.01	0.02	0.01	<0.01	0.01
Zinc (Zn)	0.005	20	<0.005	<0.005	<0.005	0.015	0.015	<0.005	<0.005
Calculations**									
SO_4 Release Rate			60	52	69	27	26	9	5
Cumulative SO_4 Release			60	52	69	27	26	9	5
Ca Release Rate			0.6	0.3	0.5	0.3	0.4	0.3	0.3
Cumulative Ca Release			0.6	0.3	0.5	0.3	0.4	0.3	0.3
Mg Release Rate			0.3	0.3	0.5	0.3	0.4	0.3	0.3
Cumulative Mg Release			0.3	0.3	0.5	0.3	0.4	0.3	0.3
Residual ANC (%)			99.99	99.99	99.98	99.98	99.97	99.97	99.97
Residual Sulfur (%)			98.5	97.1	95.3	94.6	94.0	93.7	93.6

< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg $CaCO_3$/L.

** SO_4, Ca and Mg release rates calculated in mg/kg/flush. * Results exptrapolated from data trends.

Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity.

MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

ANZECC & ARMCANZ (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy, 2000, ANZECC (Australian and New Zealand Environment Conservation Council) and ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand). Livestock Drinking Water Levels (Irrigation Levels used for Fe and Mn).

KLC 3 - Waste Rock (Sandstone)

Weight (kg)	2.05	Total S (%)	0.04	ANC	72.2
pH (1:5)	9.89	Scr (%)	0.040	NAPP	-70.9
EC (µS/cm)	597	MPA	1.2	ANC:MPA	58.9

Date			21/05/2012	04/06/2012	19/06/2012	03/07/2012	17/07/2012	31/07/2012	14/08/2012
Number of Weeks			0	2	4	6	8	10	12
Leach Number			1	2	3	4	5*	6	7
ALS Laboratory Number			EB1213922003	EB1214967003	EB1216330003	EB1213922003	EB1213922003	EB1213922003	EB1213922003
Volume On (L)			1.000	1.000	1.000	1.000	1.000	1.000	1.000
Volume Off (L)			0.701	0.862	0.745	0.759	0.684	0.691	0.682
Cum. Volume (L)			0.701	1.563	2.308	3.067	3.751	4.442	5.124
Pore Volumes			0.5	1.2	1.7	2.3	2.8	3.3	3.8
pH (RGS Measurement)			9.64	9.41	9.37	9.32	9.24	9.29	9.51
pH (ALS Measurement)			9.2	9.5	9.78	9.62	9.34	9.47	9.08
EC (RGS Measurement) (µS/cm)			533	663	662	941	585	713	324
EC (ALS Measurement) (µS/cm)			546	682	690	966	583	776	325
Acidity (mg/L)*			<1	<1	<1	<1	<1	<1	<1
Alkalinity (mg/L)*			127	68	95	163	184	328	130
Net Alkalinity (mg/L)*			127	68	95	163	184	328	130
Major Ions (mg/L)	**LoR**	**WQ Guidelines#**	All units mg/L						
Calcium (Ca)	1	1,000	1	1	<1	<1	<1	<1	<1
Potassium (K)	1	-	<1	<1	<1	2	<1	<1	<1
Magnesium (Mg)	1	-	<1	<1	<1	<1	<1	<1	<1
Sodium (Na)	1	-	146	137	134	208	127	166	75
Chloride (Cl)	1	-	127	131	103	138	40	27	8
Sulfate (SO_4)	1	1,000	45	57	84	100	45	42	24
Trace metals/ metalloids (mg/L)	**LoR**	**LoR**	All units mg/L						
Aluminium (Al)	0.01	5	0.27	0.21	0.04	0.23	0.17	1.12	0.52
Arsenic (As)	0.001	0.5	0.029	0.028	0.034	0.081	0.002	0.008	<0.001
Boron (B)	0.05	5	<0.05	<0.05	0.09	0.06	0.072	<0.05	<0.05
Cadmium (Cd)	0.0001	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (Cr)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Fe)	0.05	1	<0.05	0.06	<0.05	<0.05	0.012	0.17	<0.001
Manganese (Mn)	0.001	2	<0.001	<0.001	<0.001	0.001	0.001	0.001	<0.001
Molybdenum (Mo)	0.001	0.15	0.018	0.04	0.078	0.09	0.058	0.006	<0.005
Nickel (Ni)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.001	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony (Sb)	0.001	-	<0.001	<0.001	0.001	0.001	0.002	<0.001	<0.001
Selenium (Se)	0.01	0.02	<0.01	0.02	0.05	0.02	0.01	<0.01	<0.01
Vanadium	0.01	-	<0.01	<0.01	0.02	<0.01	0.02	<0.01	<0.01
Zinc (Zn)	0.005	20	<0.005	<0.005	<0.005	<0.005	0.005	0.005	<0.005
Calculations**									
SO_4 Release Rate			15	24	31	37	15	14	8
Cumulative SO_4 Release			15	24	31	37	15	14	8
Ca Release Rate			0.3	0.4	0.2	0.2	0.2	0.2	0.2
Cumulative Ca Release			0.3	0.4	0.2	0.2	0.2	0.2	0.2
Mg Release Rate			0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Mg Release			0.2	0.2	0.2	0.2	0.2	0.2	0.2
Residual ANC (%)			100.00	100.00	99.99	99.99	99.99	99.99	99.99
Residual Sulfur (%)			98.7	96.7	94.2	91.1	89.8	88.7	88.0

< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg $CaCO_3$/L.

** SO_4, Ca and Mg release rates calculated in mg/kg/flush. * Results exptrapolated from data trends.

Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity.

MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

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KLC 4 - Waste Rock (Carbonaceous Siltstone and Coal)

Weight (kg)	1.87	Total S (%)	0.16	ANC	54.56
pH (1:5)	9.77	Scr (%)	0.200	NAPP	-48.4
EC (µS/cm)	666	MPA	6.1	ANC:MPA	8.9

Date			21/05/2012	04/06/2012	19/06/2012	03/07/2012	17/07/2012	31/07/2012	14/08/2012
Number of Weeks			0	2	4	6	8	10	12
Leach Number			1	2	3	4	5*	6	7
ALS Laboratory Number			EB1213922004	EB1214967004	EB1216330004	EB1213922004	EB1213922004	EB1213922004	EB1213922004
Volume On (L)			1.000	1.000	1.000	1.000	1.000	1.000	1.000
Volume Off (L)			0.640	0.838	0.782	0.803	0.846	0.773	0.784
Cum. Volume (L)			0.640	1.478	2.260	3.063	3.909	4.682	5.466
Pore Volumes			0.5	1.1	1.7	2.3	2.9	3.5	4.0
pH (RGS Measurement)			9.40	8.89	8.99	8.81	8.74	9.21	9.18
pH (ALS Measurement)			9.34	8.61	9.05	8.95	8.12	8.79	8.12
EC (RGS Measurement) (µS/cm)			443	757	632	696	628	535	492
EC (ALS Measurement) (µS/cm)			455	781	654	710	628	543	497
Acidity (mg/L)*			<1	<1	<1	<1	<1	<1	<1
Alkalinity (mg/L)*			57	36	34	36	41	51	52
Net Alkalinity (mg/L)*			57	36	34	36	41	51	52
Major Ions (mg/L)	**LoR**	**WQ Guidelines#**	All units mg/L						
Calcium (Ca)	1	1,000	2	2	2	2	<1	<1	<1
Potassium (K)	1	-	<1	<1	<1	1	<1	<1	<1
Magnesium (Mg)	1	-	<1	1	<1	<1	<1	<1	<1
Sodium (Na)	1	-	140	160	126	142	123	107	105
Chloride (Cl)	1	-	104	112	76	69	54	35	18
Sulfate (SO_4)	1	1,000	69	129	150	162	138	141	142
Trace metals/ metalloids (mg/L)	**LoR**	**LoR**	All units mg/L						
Aluminium (Al)	0.01	5	0.13	0.07	0.15	0.24	0.38	0.51	0.19
Arsenic (As)	0.001	0.5	0.003	0.002	0.002	0.002	0.002	0.003	<0.001
Boron (B)	0.05	5	<0.05	<0.05	<0.05	<0.05	0.003	<0.05	<0.05
Cadmium (Cd)	0.0001	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (Cr)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper (Cu)	0.001	1	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Fe)	0.05	1	<0.05	<0.05	<0.05	0.05	0.003	0.11	<0.001
Manganese (Mn)	0.001	2	<0.001	0.004	0.004	0.004	0.001	0.002	<0.001
Molybdenum (Mo)	0.001	0.15	0.012	0.024	0.014	0.018	0.018	0.015	<0.005
Nickel (Ni)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Lead (Pb)	0.001	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony (Sb)	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (Se)	0.01	0.02	0.02	0.04	0.03	0.04	0.01	0.02	<0.01
Vanadium	0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc (Zn)	0.005	20	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Calculations**									
SO_4 Release Rate			25	62	67	75	67	63	64
Cumulative SO_4 Release			25	62	67	75	67	63	64
Ca Release Rate			0.7	1.0	0.9	0.9	0.2	0.2	0.2
Cumulative Ca Release			0.7	1.0	0.9	0.9	0.2	0.2	0.2
Mg Release Rate			0.2	0.5	0.2	0.2	0.2	0.2	0.2
Cumulative Mg Release			0.2	0.5	0.2	0.2	0.2	0.2	0.2
Residual ANC (%)			99.99	99.98	99.97	99.96	99.96	99.95	99.95
Residual Sulfur (%)			98.9	96.4	93.5	90.4	87.6	85.0	82.3

< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg $CaCO_3$/L.

** SO_4, Ca and Mg release rates calculated in mg/kg/flush. * Results exptrapolated from data trends.

Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity.

MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

ANZECC & ARMCANZ (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy, 2000, ANZECC (Australian and New Zealand Environment Conservation Council) and ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand). Livestock Drinking Water Levels (Irrigation Levels used for Fe and Mn).

KLC 5 - Potential Coal Reject (Carbonaceous Mudstone/Siltstone)

Weight (kg)	1.66	**Total S (%)**	0.06	**ANC**	22.55
pH (1:5)	9.22	**Scr (%)**	0.110	**NAPP**	-19.2
EC (µS/cm)	519	**MPA**	3.4	**ANC:MPA**	6.7

Date			21/05/2012	04/06/2012	19/06/2012	03/07/2012	17/07/2012	31/07/2012	14/08/2012
Number of Weeks			**0**	**2**	**4**	**6**	**8**	**10**	**12**
Leach Number			**1**	**2**	**3**	**4**	**5***	**6**	**7**
ALS Laboratory Number			EB1213922005	EB1214967005	EB1216330005	EB1213922005	EB1213922005	EB1213922005	EB1213922005
Volume On (L)			1.000	1.000	1.000	1.000	1.000	1.000	1.000
Volume Off (L)			0.651	0.829	0.703	0.766	0.838	0.719	0.732
Cum. Volume (L)			0.651	1.480	2.183	2.949	3.787	4.506	5.238
Pore Volumes			0.5	1.1	1.6	2.2	2.8	3.3	3.9
pH (RGS Measurement)			9.01	8.81	8.88	9.11	9.02	9.30	9.31
pH (ALS Measurement)			8.9	8.5	9.19	9.45	8.71	9.19	8.96
EC (RGS Measurement) (µS/cm)			848	867	1,004	441	309	275	321
EC (ALS Measurement) (µS/cm)			733	885	974	446	306	286	323
Acidity (mg/L)*			<1	2	<1	<1	<1	<1	<1
Alkalinity (mg/L)*			47	39	69	54	48	54	76
Net Alkalinity (mg/L)*			47	39	69	54	48	54	76
Major Ions (mg/L)	**LoR**	**WQ Guidelines#**	All units mg/L						
Calcium (Ca)	1	1,000	2	<1	<1	<1	<1	<1	<1
Potassium (K)	1	-	1	1	1	<1	<1	<1	<1
Magnesium (Mg)	1	-	2	1	<1	<1	<1	<1	<1
Sodium (Na)	1	-	235	189	194	91	64	57	69
Chloride (Cl)	1	-	194	136	120	36	21	16	12
Sulfate (SO_4)	1	1,000	119	142	197	86	50	46	55
Trace metals/ metalloids (mg/L)	**LoR**	**LoR**	All units mg/L						
Aluminium (Al)	0.01	5	0.05	0.04	0.17	1.15	1.35	1.54	0.81
Arsenic (As)	0.001	0.5	0.006	0.007	0.015	0.011	0.005	0.002	<0.001
Boron (B)	0.05	5	<0.05	<0.05	0.07	<0.05	0.009	<0.05	0.06
Cadmium (Cd)	0.0001	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (Cr)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001
Copper (Cu)	0.001	1	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Fe)	0.05	1	<0.05	<0.05	<0.05	0.16	0.01	0.23	<0.001
Manganese (Mn)	0.001	2	<0.001	0.001	0.001	0.001	0.001	0.001	<0.001
Molybdenum (Mo)	0.001	0.15	0.021	0.049	0.054	0.042	0.032	0.008	<0.005
Nickel (Ni)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead (Pb)	0.001	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony (Sb)	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (Se)	0.01	0.02	0.05	0.09	0.09	0.04	0.02	<0.01	0.01
Vanadium	0.01	-	<0.01	<0.01	<0.01	0.01	0.05	<0.01	0.01
Zinc (Zn)	0.005	20	<0.005	<0.005	<0.005	0.005	0.006	0.007	<0.005
Calculations**									
SO_4 Release Rate			44	68	80	38	24	19	23
Cumulative SO_4 Release			44	68	80	38	24	19	23
Ca Release Rate			0.7	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Ca Release			0.7	0.2	0.2	0.2	0.2	0.2	0.2
Mg Release Rate			0.7	0.5	0.2	0.2	0.2	0.2	0.2
Cumulative Mg Release			0.7	0.5	0.2	0.2	0.2	0.2	0.2
Residual ANC (%)			99.99	99.98	99.98	99.97	99.97	99.96	99.96
Residual Sulfur (%)			98.1	95.3	92.0	90.4	89.4	88.6	87.7

< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg $CaCO_3$/L.

** SO_4, Ca and Mg release rates calculated in mg/kg/flush. * Results exptrapolated from data trends.

Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity.

MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

ANZECC & ARMCANZ (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy, 2000, ANZECC (Australian and New Zealand Environment Conservation Council) and ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand). Livestock Drinking Water Levels (Irrigation Levels used for Fe and Mn).

KLC 6 - Potential Coal Reject (Coal, Mudstone, Siltstone and Sandstone)

Weight (kg)	1.74	**Total S (%)**	0.08	**ANC**	35.17
pH (1:5)	9.58	**Scr (%)**	0.130	**NAPP**	-31.2
EC (µS/cm)	536	**MPA**	4.0	**ANC:MPA**	8.8

Date			21/05/2012	04/06/2012	19/06/2012	03/07/2012	17/07/2012	31/07/2012	14/08/2012
Number of Weeks			**0**	**2**	**4**	**6**	**8**	**10**	**12**
Leach Number			**1**	**2**	**3**	**4**	**5***	**6**	**7**
ALS Laboratory Number			EB1213922006	EB1214967006	EB1216330006	EB1213922006	EB1213922006	EB1213922006	EB1213922006
Volume On (L)			1.000	1.000	1.000	1.000	1.000	1.000	1.000
Volume Off (L)			0.732	0.860	0.775	0.825	0.827	0.750	0.779
Cum. Volume (L)			0.732	1.592	2.367	3.192	4.019	4.769	5.548
Pore Volumes			0.5	1.2	1.8	2.4	3.0	3.5	4.1
pH (RGS Measurement)			9.53	9.16	9.29	9.22	9.26	9.44	9.45
pH (ALS Measurement)			9.61	9.16	9.56	9.48	9.11	9.43	9.18
EC (RGS Measurement) (µS/cm)			473	614	562	481	379	656	333
EC (ALS Measurement) (µS/cm)			459	633	583	493	377	628	325
Acidity (mg/L)*			<1	<1	<1	<1	<1	<1	<1
Alkalinity (mg/L)*			89	49	79	64	77	175	113
Net Alkalinity (mg/L)*			89	49	79	64	77	175	113
Major Ions (mg/L)	**LoR**	**WQ Guidelines#**	All units mg/L						
Calcium (Ca)	1	1,000	<1	<1	<1	<1	<1	<1	<1
Potassium (K)	1	-	<1	<1	<1	<1	<1	<1	<1
Magnesium (Mg)	1	-	<1	<1	<1	<1	<1	<1	<1
Sodium (Na)	1	-	73	129	113	101	79	129	73
Chloride (Cl)	1	-	60	126	85	60	34	35	7
Sulfate (SO_4)	1	1,000	41	52	81	68	47	79	37
Trace metals/ metalloids (mg/L)	**LoR**	**LoR**	All units mg/L						
Aluminium (Al)	0.01	5	0.21	0.14	0.93	1.33	1.15	1.07	1.12
Arsenic (As)	0.001	0.5	0.008	0.009	0.013	0.013	0.010	0.008	<0.001
Boron (B)	0.05	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium (Cd)	0.0001	0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium (Cr)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Copper (Cu)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Fe)	0.05	1	<0.05	0.05	0.12	0.20	0.025	0.17	<0.001
Manganese (Mn)	0.001	2	<0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001
Molybdenum (Mo)	0.001	0.15	0.02	0.061	0.058	0.063	0.057	<0.001	0.011
Nickel (Ni)	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead (Pb)	0.001	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Antimony (Sb)	0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (Se)	0.01	0.02	0.03	0.08	0.07	0.06	0.04	0.01	0.02
Vanadium	0.01	-	0.01	0.01	<0.01	<0.01	<0.01	0.01	0.02
Zinc (Zn)	0.005	20	<0.005	<0.005	0.006	0.014	0.012	0.01	0.011
Calculations**									
SO_4 Release Rate			17	26	36	32	22	34	17
Cumulative SO_4 Release			17	26	36	32	22	34	17
Ca Release Rate			0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Ca Release			0.2	0.2	0.2	0.2	0.2	0.2	0.2
Mg Release Rate			0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cumulative Mg Release			0.2	0.2	0.2	0.2	0.2	0.2	0.2
Residual ANC (%)			100.00	99.99	99.99	99.98	99.98	99.97	99.97
Residual Sulfur (%)			99.3	98.2	96.7	95.4	94.4	93.0	92.3

< indicates less than the analytical detection limit. * Acidity and alkalinity data calculated in mg $CaCO_3$/L.

** SO_4, Ca and Mg release rates calculated in mg/kg/flush. * Results exptrapolated from data trends.

Total S = Total Sulfur; Scr = Chromium Reducible Sulfur; and ANC = Acid Neutralising Capacity.

MPA = Maximum Potential Acidity, and NAPP = Net Acid Producing Potential.

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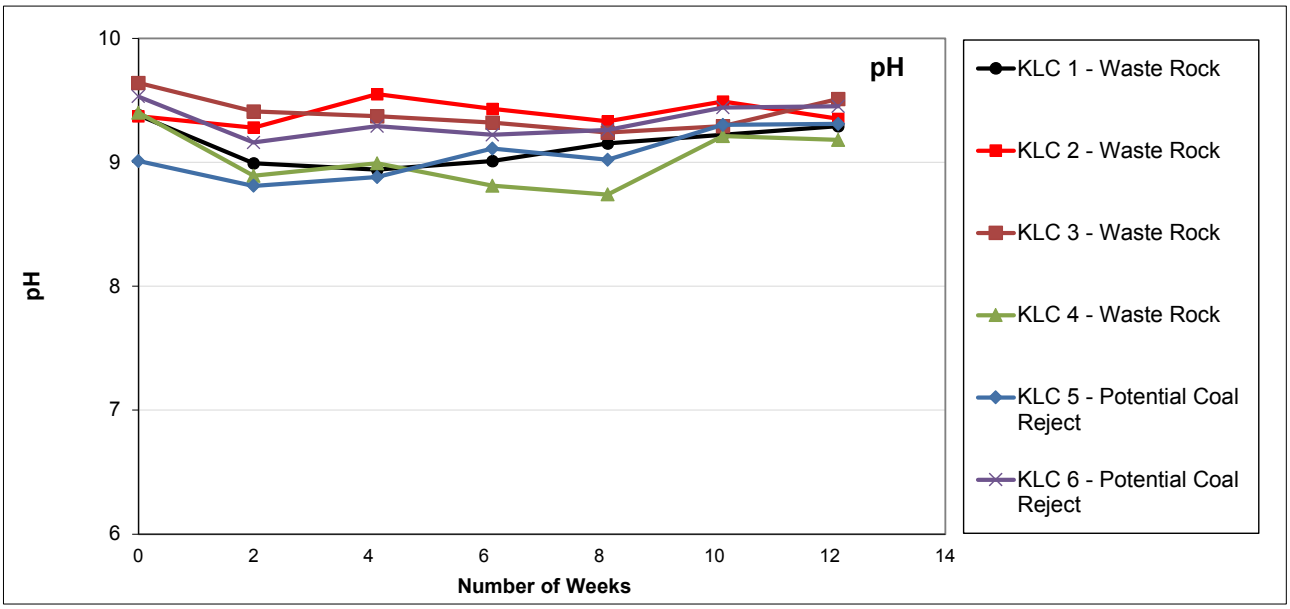
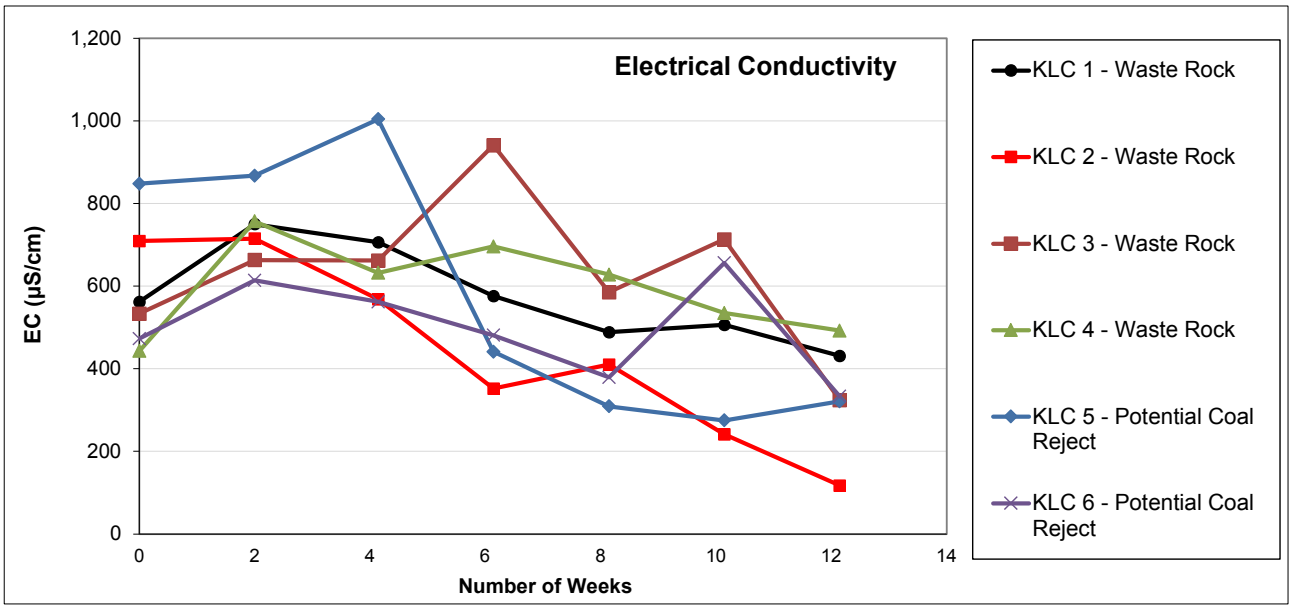
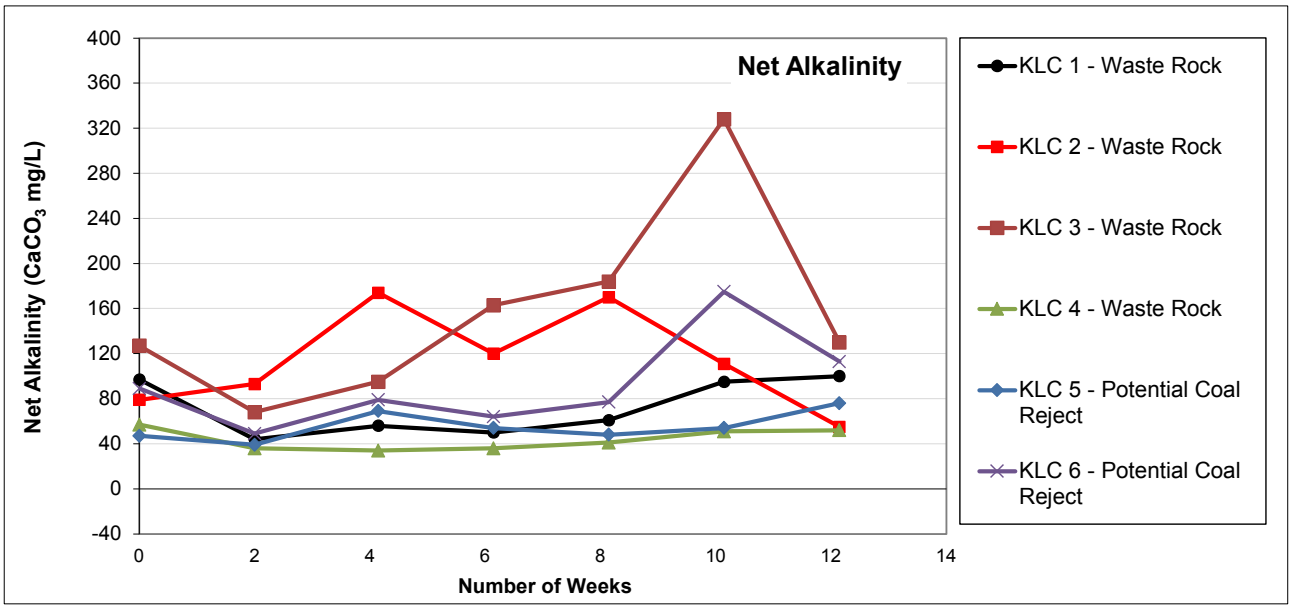
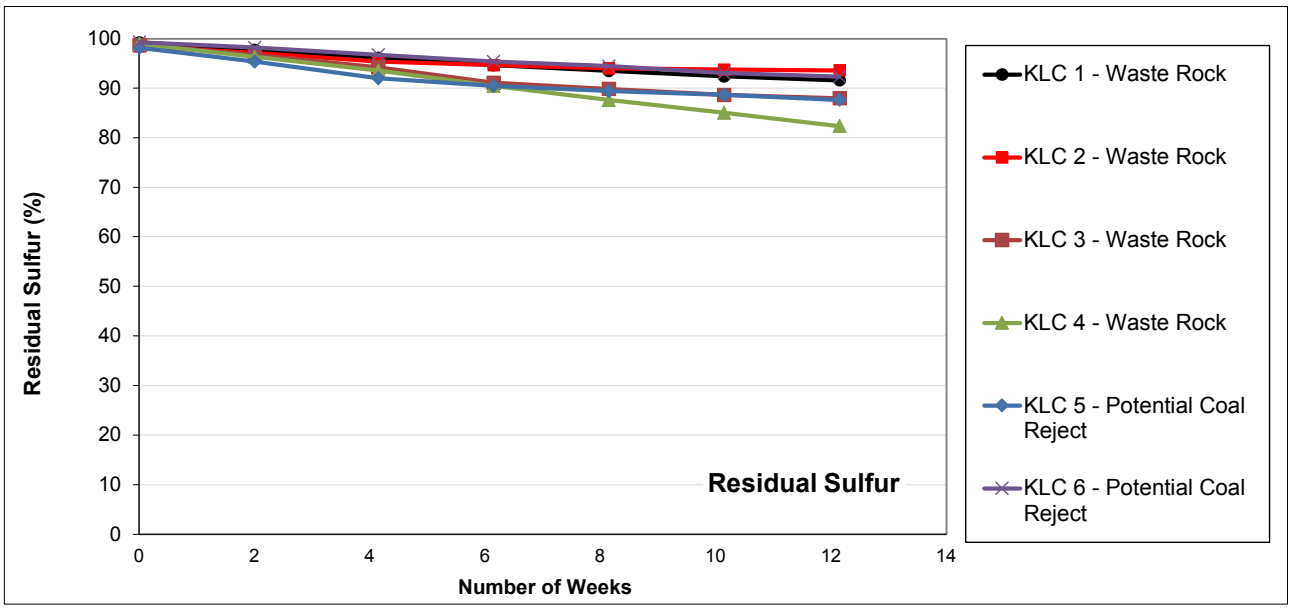
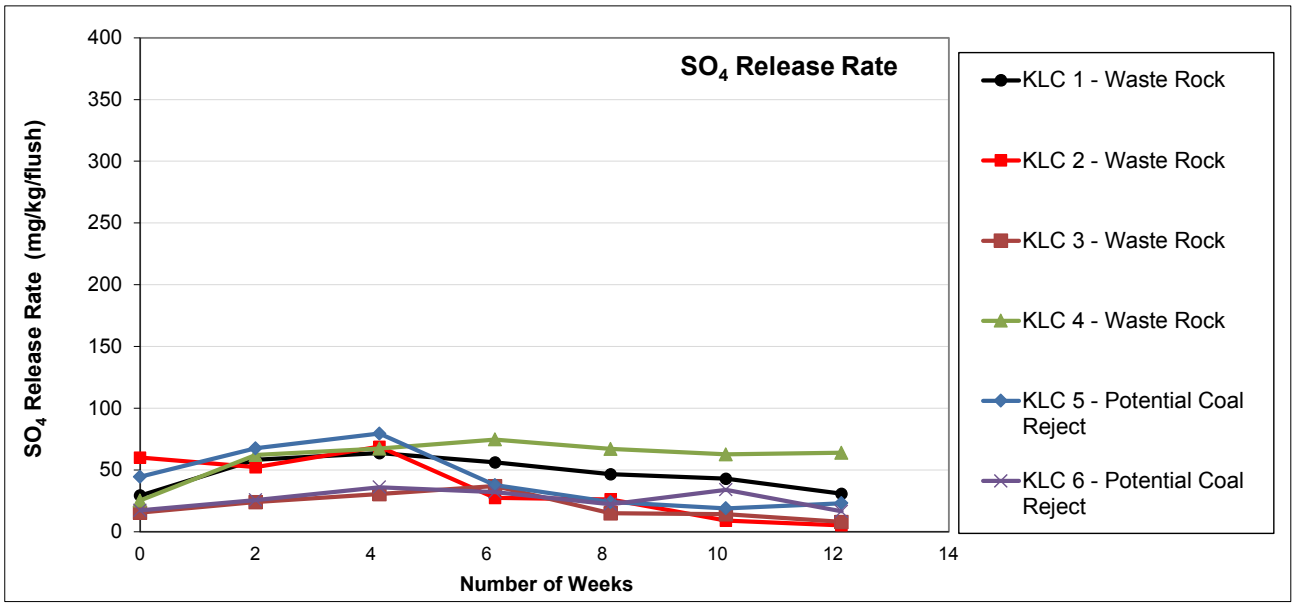
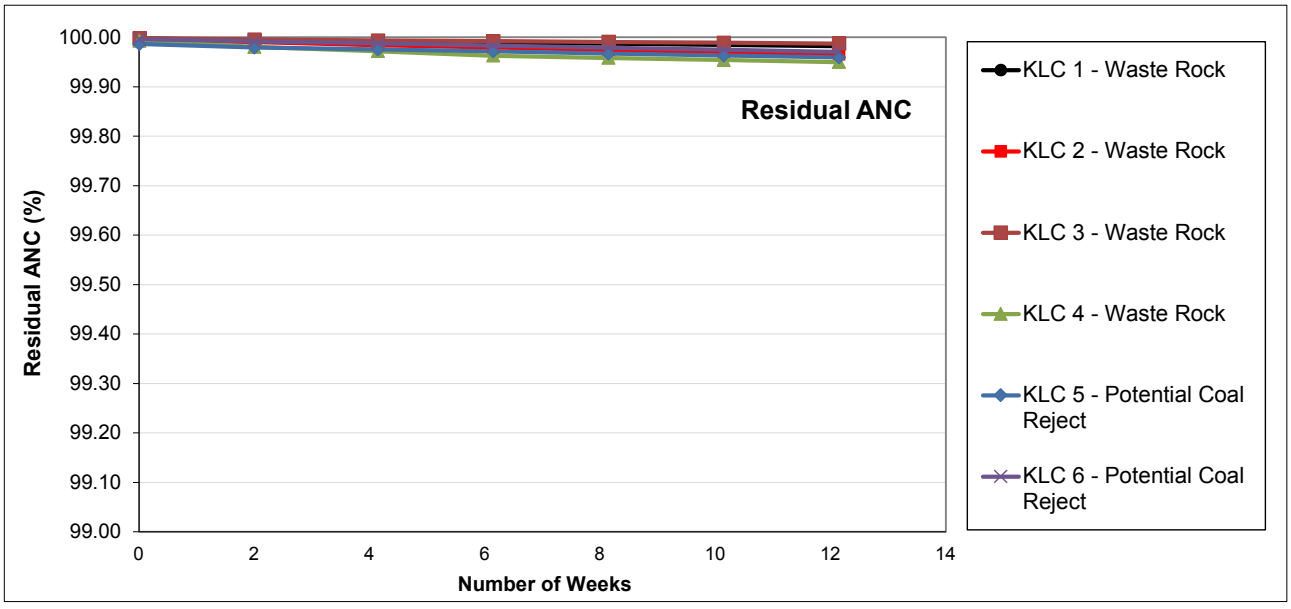

pH
pH
10
9
8
7
6
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

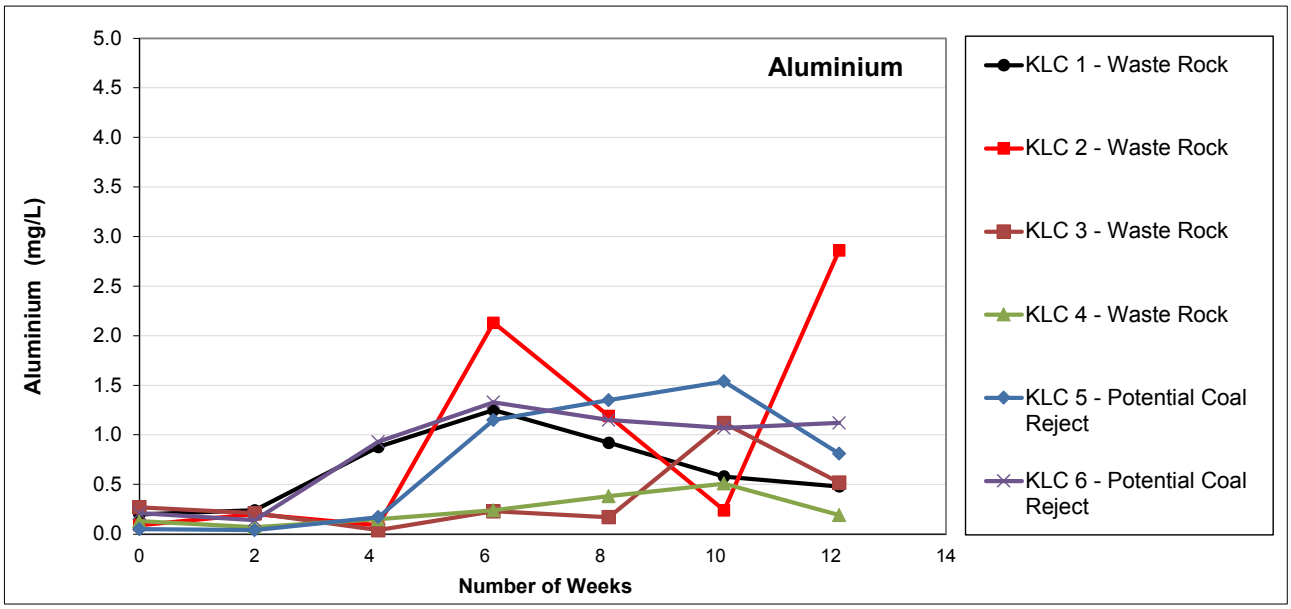

Electrical Conductivity
EC (µS/cm)
1,200
1,000
800
600
400
200
0
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

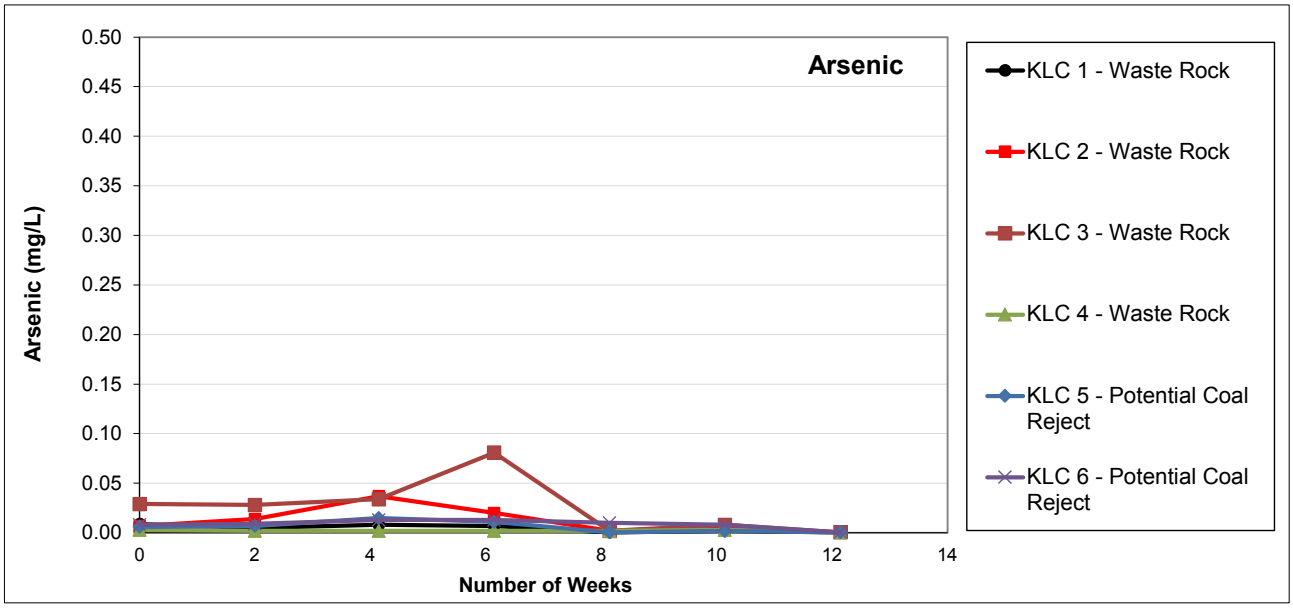

Net Alkalinity
Net Alkalinity (CaCO3 mg/L)
400
360
320
280
240
200
160
120
80
40
0
-40
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

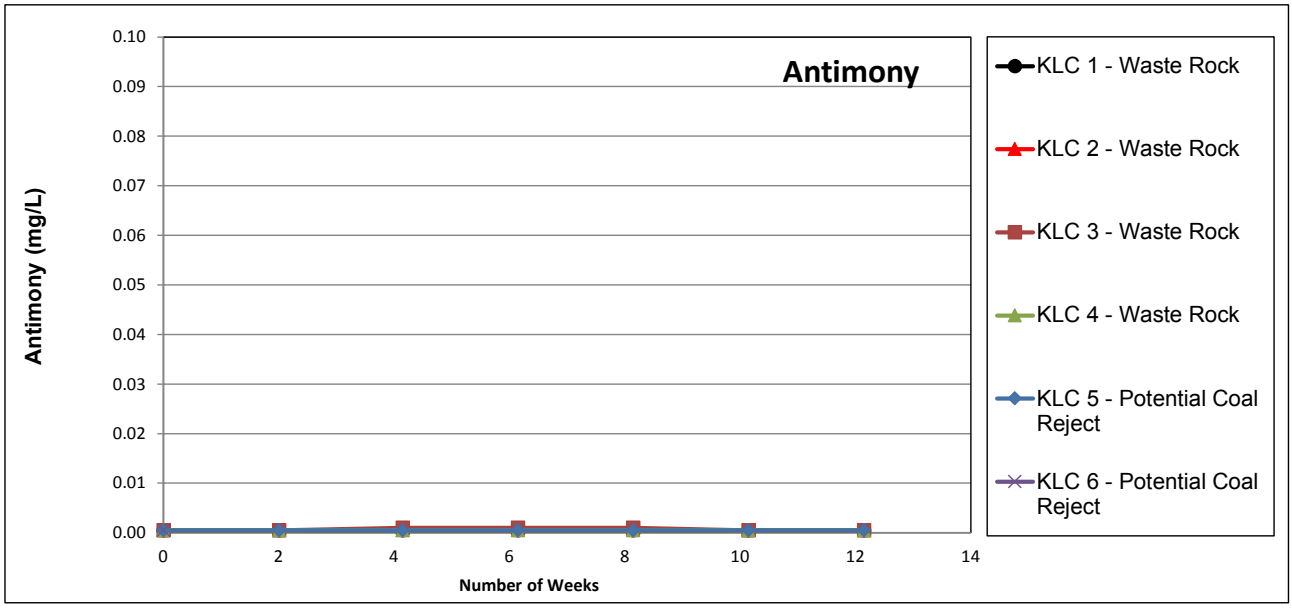

Residual Sulfur (%)
100
90
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
12
14
Number of Weeks
Residual Sulfur
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

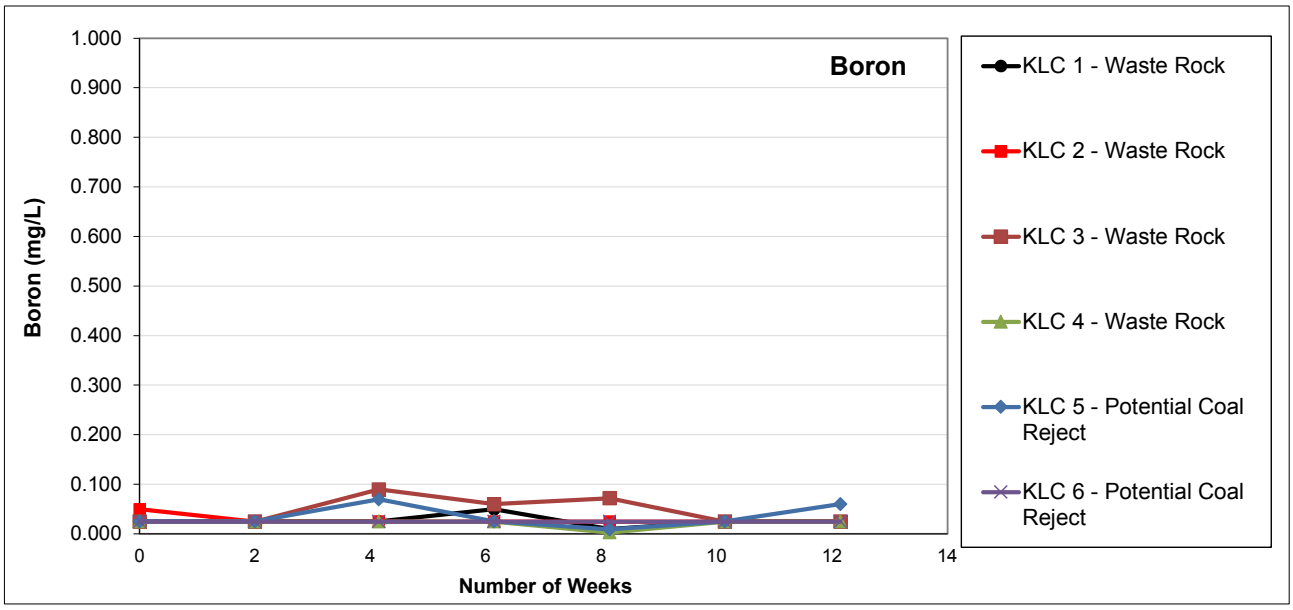

SO4 Release Rate (mg/kg/flush)
400
350
300
250
200
150
100
50
0
0
2
4
6
8
10
12
14
Number of Weeks
SO4 Release Rate
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

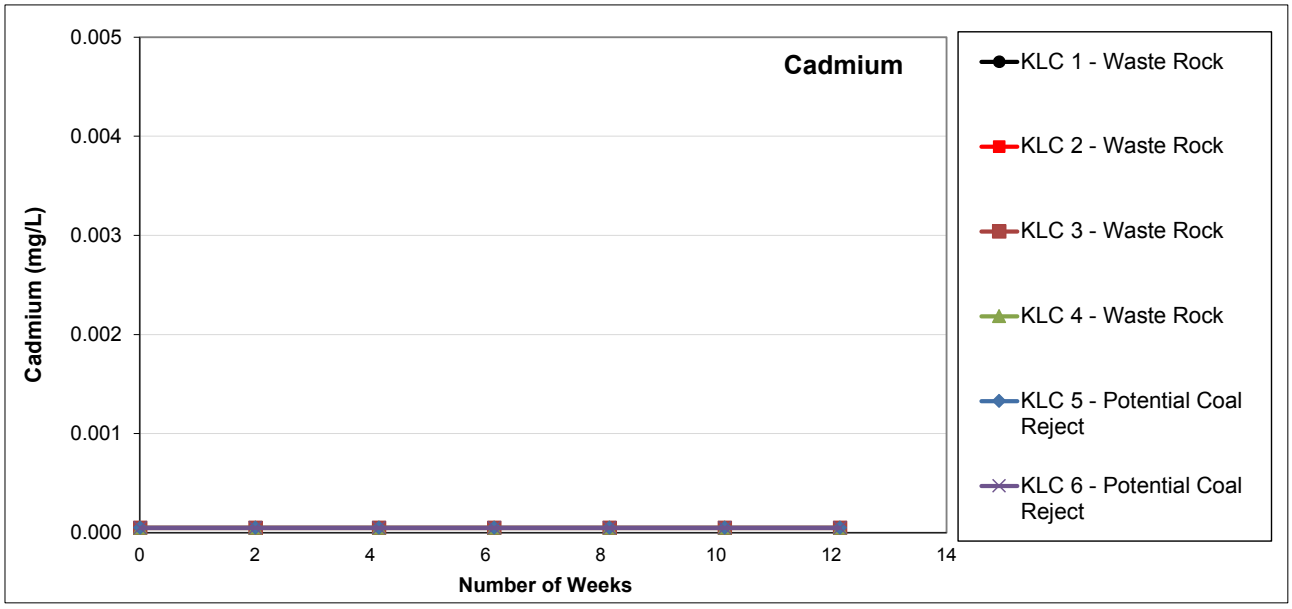

Residual ANC (%)
100.00
99.90
99.80
99.70
99.60
99.50
99.40
99.30
99.20
99.10
99.00
0
2
4
6
8
10
12
14
Number of Weeks
Residual ANC
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

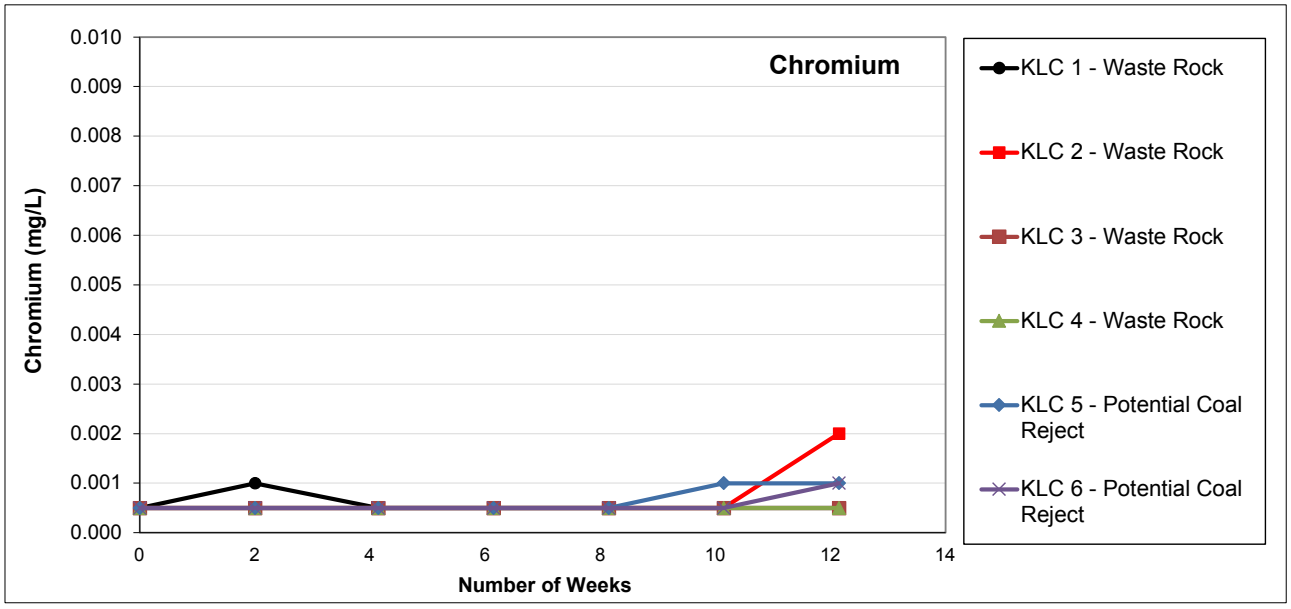

Aluminium
Aluminium (mg/L)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

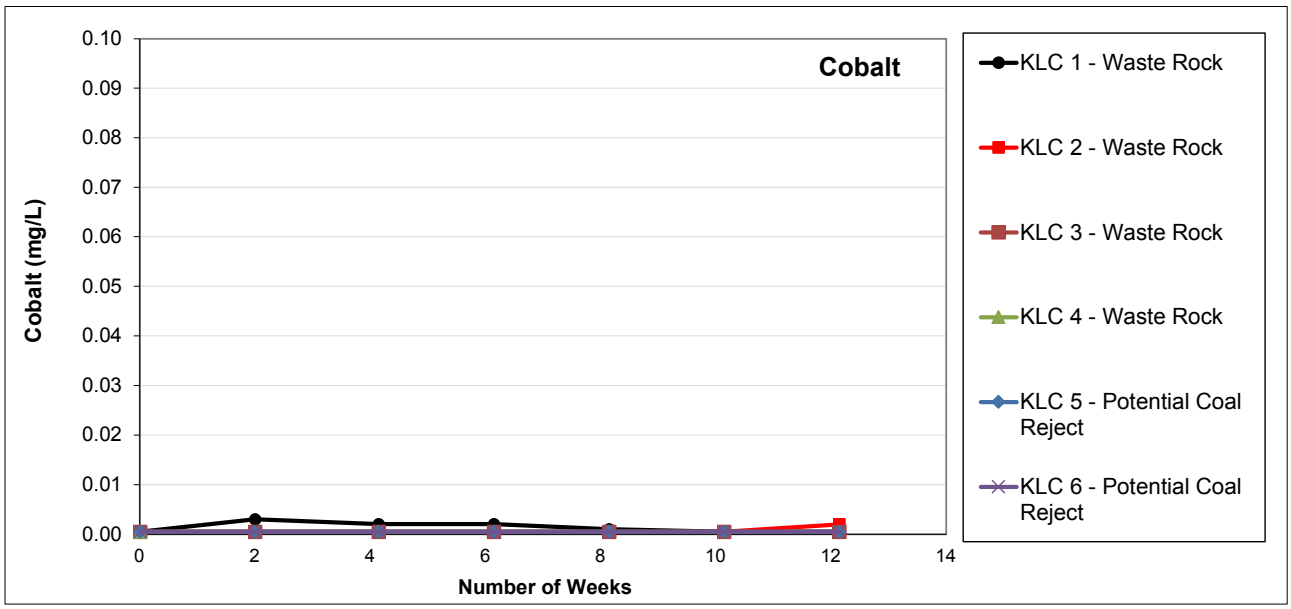

Arsenic
Arsenic (mg/L)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

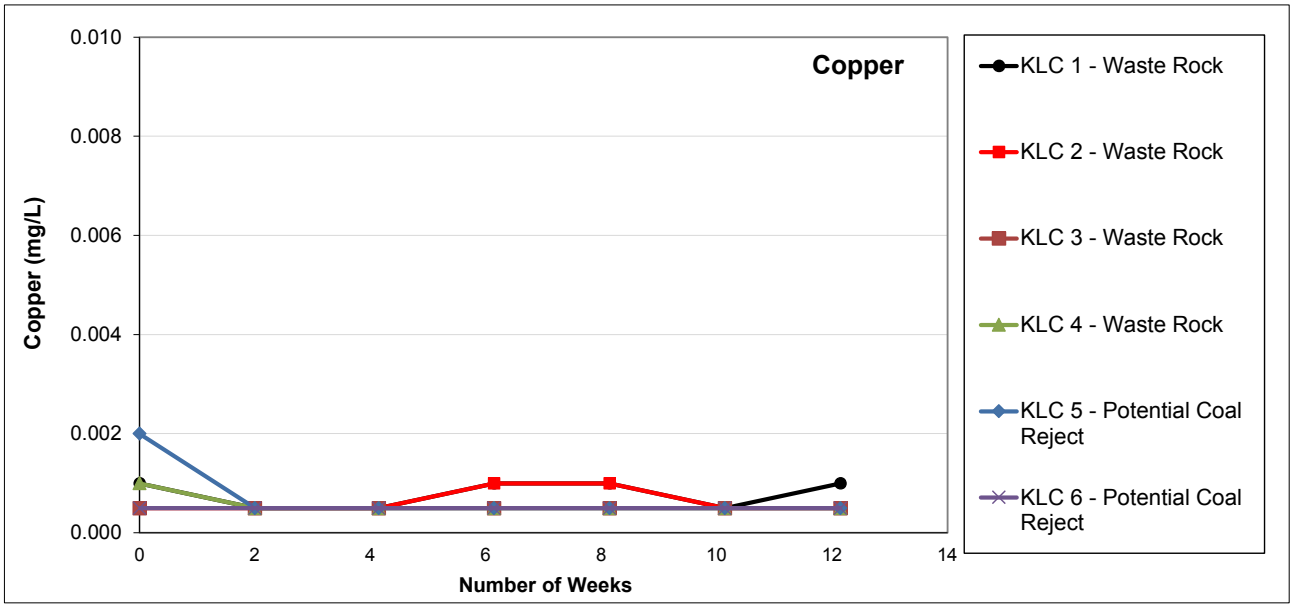

Antimony
Antimony (mg/L)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

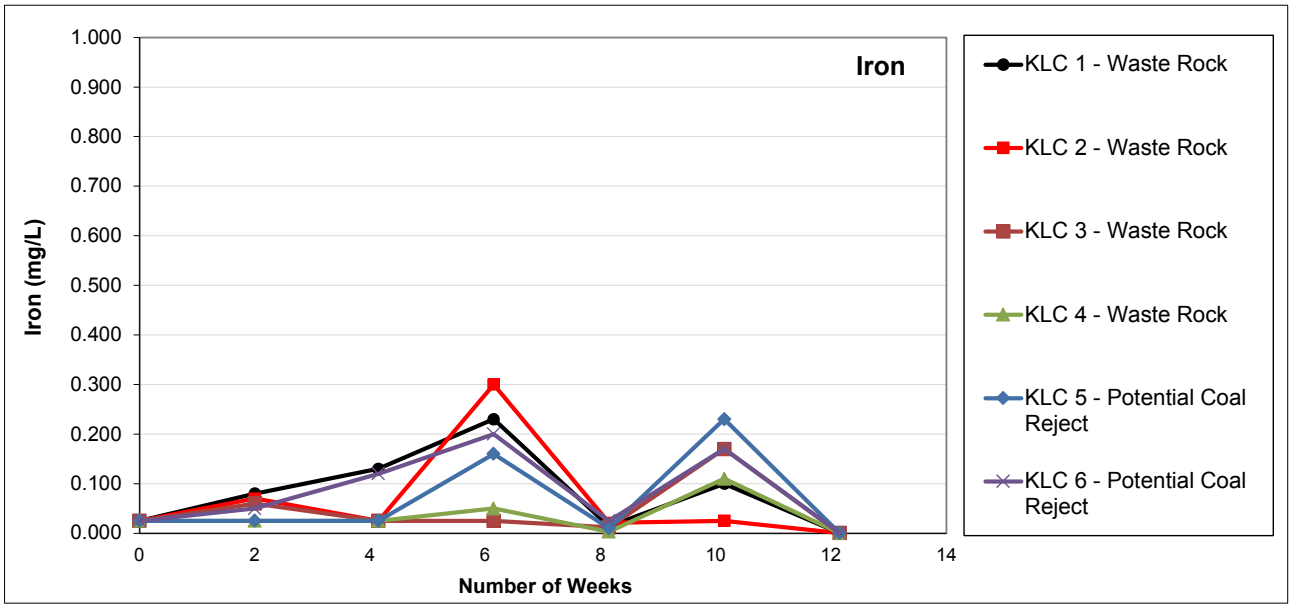

Boron
Boron (mg/L)
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

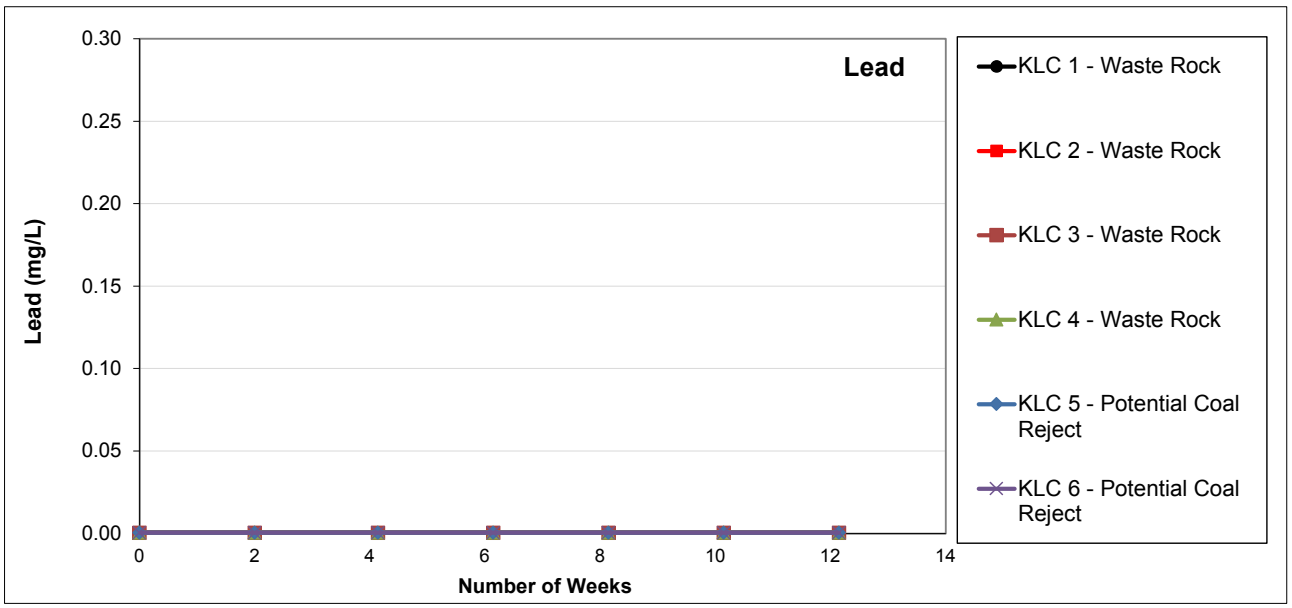

Cadmium
Cadmium (mg/L)
0.005
0.004
0.003
0.002
0.001
0.000
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

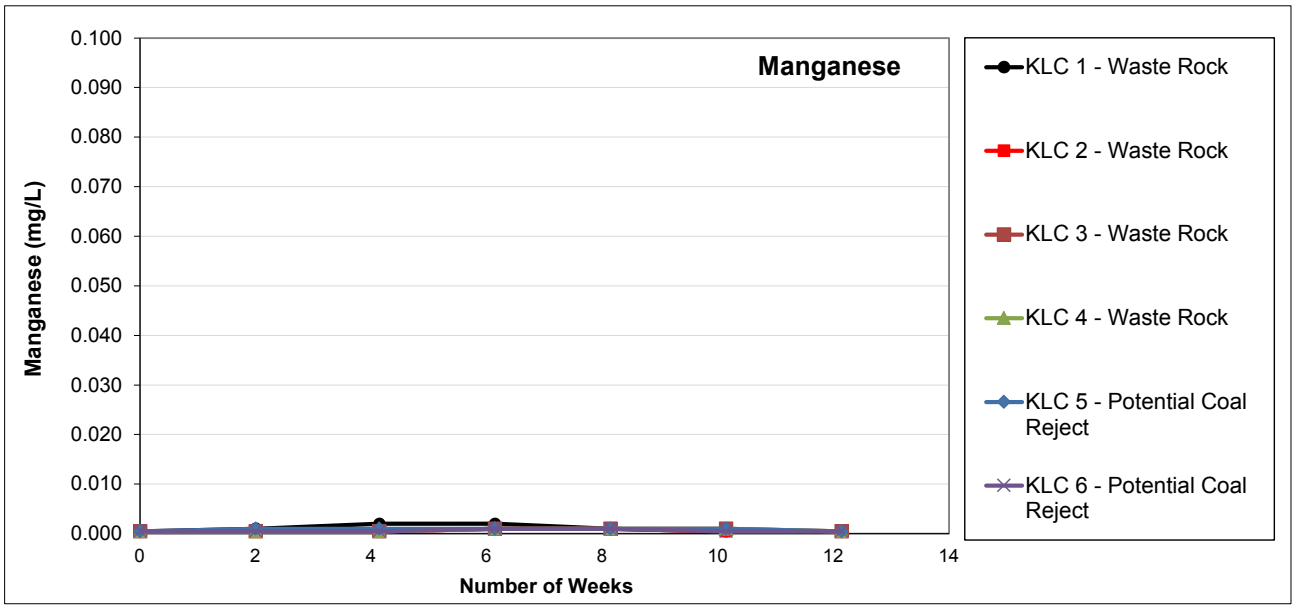

Chromium
Chromium (mg/L)
0.010
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

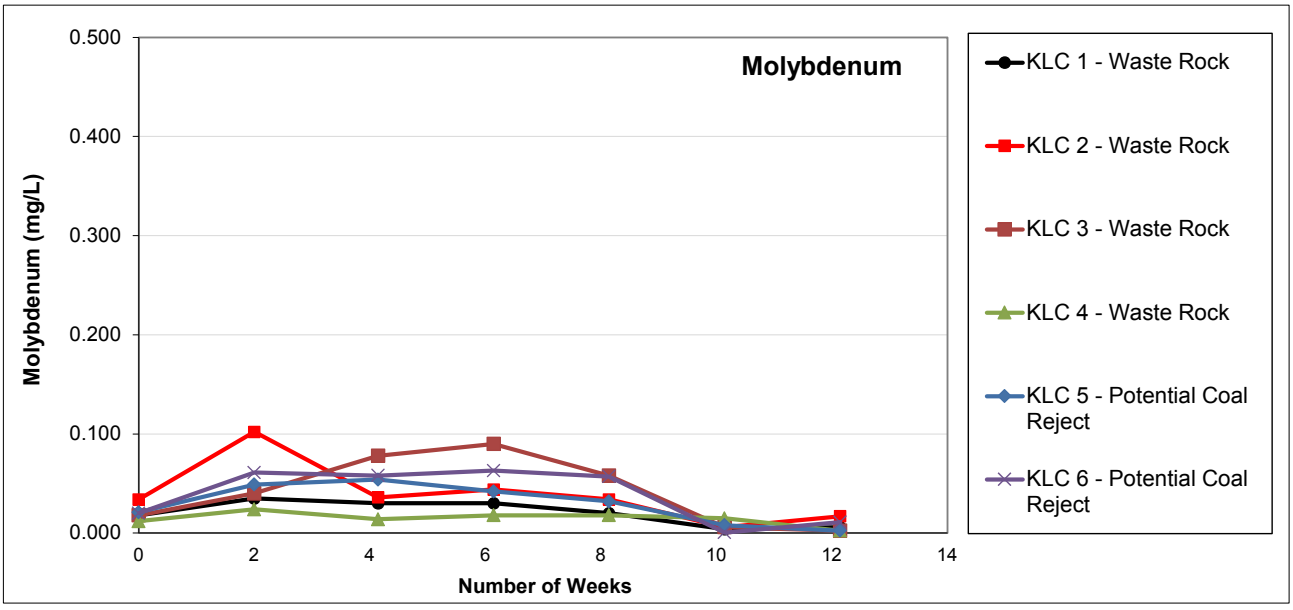

Cobalt
Cobalt (mg/L)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

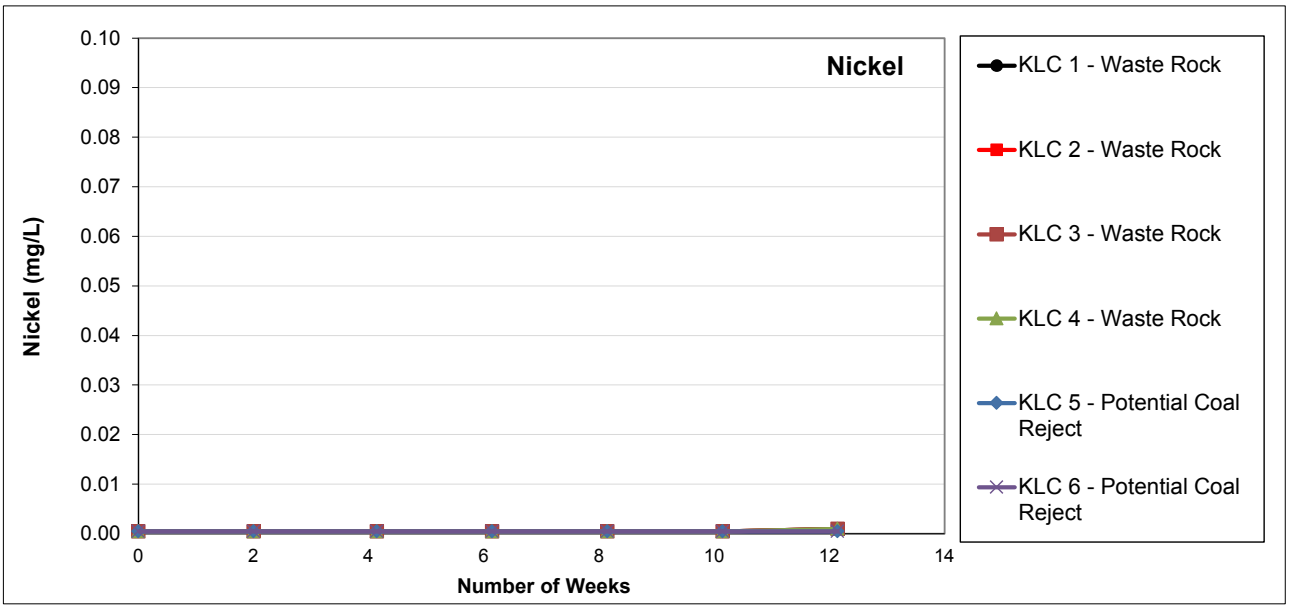

Copper
Copper (mg/L)
0.010
0.008
0.006
0.004
0.002
0.000
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

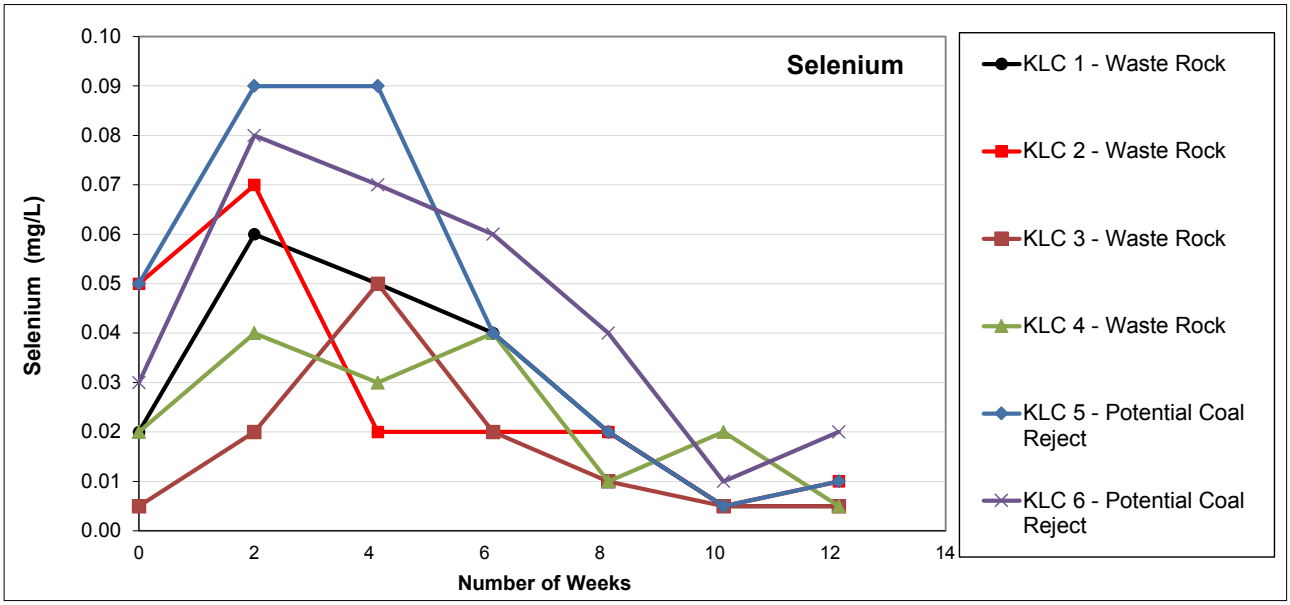

Iron
Iron (mg/L)
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

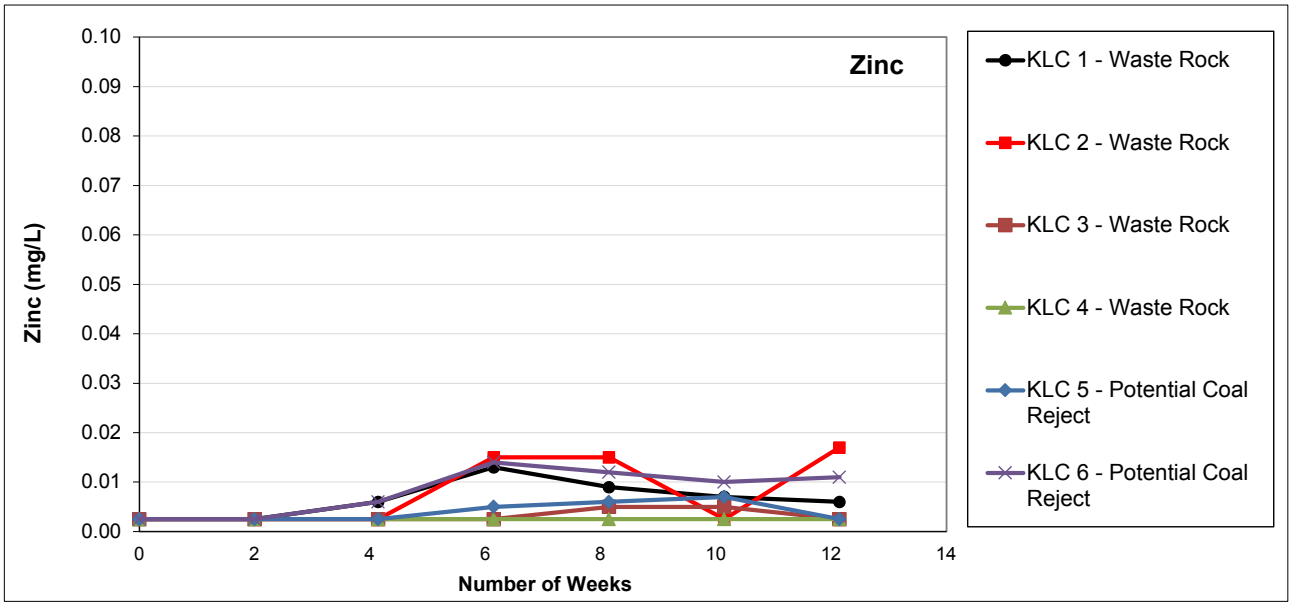

Lead
Lead (mg/L)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject


Manganese
Manganese (mg/L)
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject


Molybdenum
Molybdenum (mg/L)
0.500
0.400
0.300
0.200
0.100
0.000
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject


Nickel
Nickel (mg/L)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject


Selenium
Selenium (mg/L)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject


Zinc
Zinc (mg/L)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
2
4
6
8
10
12
14
Number of Weeks
KLC 1 - Waste Rock
KLC 2 - Waste Rock
KLC 3 - Waste Rock
KLC 4 - Waste Rock
KLC 5 - Potential Coal Reject
KLC 6 - Potential Coal Reject

Attachment C ALS Laboratory Results

(certificates of analysis)

ALS Group
Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1208605**	Page	: 1 of 37
Amendment	: **1**		
Client	: **QUEENSLAND NICKEL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Joy Morgan
Address	: Void - Not a Tax Invoice TOWNSVILLE QLD, AUSTRALIA 4818	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: joy.morgan@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: + 61 7 4796 060
Facsimile	: ----	Facsimile	: + 61 7 4796 0620
Project	: Styx River Coal Project	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: RGS Environmental Account		
C-O-C number	: ----	Date Samples Received	: 26-MAR-2012
Sampler	: ----	Issue Date	: 17-APR-2012
Site	: Styx River Coal Project		
		No. of samples received	: 174
Quote number	: BN/562/10	No. of samples analysed	: 174

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Stephen Hislop	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Stafford Minerals - AY

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.**
- **This WO has been amended to allow the reporting under the QLD Nickel client entry as per request from Tim Cameron rather than the RGS entry. All results as per previous WO with the addition of the ANC/APP.**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS001 24.40-24.70	RGS002 28.30-28.90	RGS003 34.20-34.85	RGS004 36.50-36-75	RGS005 38.55-39.15
			Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
				EB1208605-001	EB1208605-002	EB1208605-003	EB1208605-004	EB1208605-005
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.2**	**9.4**	**10.0**	**10.0**	**9.8**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**0.6**	**7.3**	**5.8**	**2.1**	**3.1**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-55.8**	**-36.8**	**-27.9**	**-50.0**	**-13.5**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**615**	**601**	**583**	**705**	**510**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**56.4**	**44.1**	**33.7**	**52.1**	**16.6**
ANC as CaCO3	----	0.1	% CaCO3	**5.8**	**4.5**	**3.4**	**5.3**	**1.7**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.02**	**0.24**	**0.19**	**0.07**	**0.10**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS006 42.75-43.15	RGS007 44.75-45.40	RGS008 48.75-49.45	RGS009 51.75-52.05	RGS010 57.75-58.05
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1208605-006	EB1208605-007	EB1208605-008	EB1208605-009	EB1208605-010
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**10.0**	**9.9**	**10.1**	**9.9**	**9.8**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		<0.5	**7.0**	**6.1**	**2.8**	**9.5**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-27.1**	**-21.6**	**-41.1**	**-55.4**	**-54.3**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**521**	**575**	**569**	**689**	**1100**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**27.1**	**28.6**	**47.2**	**58.2**	**63.8**
ANC as CaCO3	----	0.1	% CaCO3		**2.8**	**2.9**	**4.8**	**5.9**	**6.5**
Fizz Rating	----	0	Fizz Unit		**1**	**1**	**2**	**2**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		<0.01	**0.23**	**0.20**	**0.09**	**0.31**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS011 60.35-6.75	RGS012 63.75-64.20	RGS013 69.30-69.75	RGS014 78.75-78.95	RGS001 15.40-15.85
			Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
				EB1208605-011	EB1208605-012	EB1208605-013	EB1208605-014	EB1208605-015
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.0**	**10.2**	**10.1**	**10.2**	**9.8**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**1.2**	<0.5	<0.5	**0.6**	<0.5
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-38.6**	**-74.2**	**-157**	**-50.9**	**-105**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**342**	**658**	**658**	**523**	**544**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**39.8**	**74.2**	**157**	**51.5**	**105**
ANC as CaCO3	----	0.1	% CaCO3	**4.1**	**7.6**	**16.0**	**5.2**	**10.7**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**3**	**2**	**3**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.04**	<0.01	**0.01**	**0.02**	<0.01

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS002 20.60-20.90	RGS003 26.60-27.00	RGS004 32.60-33.00	RGS005 38.60-39.05	RGS006 44.24-44.64
			Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
				EB1208605-016	EB1208605-017	EB1208605-018	EB1208605-019	EB1208605-020
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.5**	**9.8**	**10.1**	**10.1**	**10.0**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	<0.5	**1.8**	**0.6**	**0.9**	**1.2**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-35.6**	**-44.2**	**-45.4**	**-45.7**	**-31.3**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**444**	**557**	**481**	**552**	**321**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**35.6**	**46.0**	**46.0**	**46.6**	**32.5**
ANC as CaCO3	----	0.1	% CaCO3	**3.6**	**4.7**	**4.7**	**4.8**	**3.3**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	**0.06**	**0.02**	**0.03**	**0.04**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS007 48.80-49.30	RGS008 53.60-53.97	RGS009 55.99-56.54	RGS010 61.00-61.54	RGS011 63.00-63.30
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1208605-021	EB1208605-022	EB1208605-023	EB1208605-024	EB1208605-025
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**10.1**	**10.2**	**10.1**	**10.1**	**10.1**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		**4.6**	**0.6**	**0.9**	**1.5**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-32.8**	**-35.6**	**-98.9**	**-53.1**	**-31.0**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**551**	**593**	**601**	**540**	**570**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**37.4**	**36.2**	**99.8**	**54.6**	**31.9**
ANC as CaCO3	----	0.1	% CaCO3		**3.8**	**3.7**	**10.2**	**5.6**	**3.2**
Fizz Rating	----	0	Fizz Unit		**2**	**2**	**3**	**2**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.15**	**0.02**	**0.03**	**0.05**	**0.03**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS012 65.60-66.05	RGS013 67.00-67.60	RGS014 70.70-71.20	RGS001 23.60-24.13	RGS002 29.60-30.08
			Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
				EB1208605-026	EB1208605-027	EB1208605-028	EB1208605-029	EB1208605-030
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.1**	**10.2**	**10.1**	**9.8**	**9.8**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**4.0**	**0.6**	**3.7**	**2.1**	**2.1**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-16.8**	**-46.6**	**-30.6**	**-46.8**	**-128**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**379**	**632**	**501**	**730**	**438**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**20.8**	**47.2**	**34.3**	**49.0**	**130**
ANC as CaCO3	----	0.1	% CaCO3	**2.1**	**4.8**	**3.5**	**5.0**	**13.2**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**2**	**2**	**3**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.13**	**0.02**	**0.12**	**0.07**	**0.07**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS003 32.08-32.60	RGS004 38.60-38.96	RGS005 47.60-48.14	RGS006 53.60-54.05	RGS007 50.60-51.00
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1208605-031	EB1208605-032	EB1208605-033	EB1208605-034	EB1208605-035
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**9.4**	**10.0**	**9.8**	**10.0**	**10.0**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		**2.4**	**1.8**	**7.3**	**4.0**	**4.6**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-35.6**	**-143**	**-27.6**	**-39.5**	**-26.7**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**505**	**530**	**571**	**512**	**460**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**38.0**	**145**	**34.9**	**43.5**	**31.3**
ANC as CaCO3	----	0.1	% CaCO3		**3.9**	**14.8**	**3.6**	**4.4**	**3.2**
Fizz Rating	----	0	Fizz Unit		**2**	**3**	**2**	**2**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.08**	**0.06**	**0.24**	**0.13**	**0.15**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS008 58.95-59.50	RGS009 60.30-60.60	RGS010 71.60-72.00	RGS011 75.90-76.20	RGS002 33.85-34.30
			Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	20-MAR-2012 15:00
				EB1208605-036	EB1208605-037	EB1208605-038	EB1208605-039	EB1208605-041
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.1**	**10.2**	**10.0**	**9.1**	**10.1**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**1.8**	**1.2**	<0.5	**15.0**	**1.2**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-60.7**	**-161**	**-43.2**	**-78.5**	**-26.1**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**597**	**631**	**457**	**718**	**460**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**62.5**	**162**	**43.5**	**93.5**	**27.3**
ANC as CaCO3	----	0.1	% CaCO3	**6.4**	**16.6**	**4.4**	**9.5**	**2.8**
Fizz Rating	----	0	Fizz Unit	**2**	**3**	**2**	**3**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.06**	**0.04**	**0.01**	**0.49**	**0.04**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS003 35.90-36.50	RGS004 43.40-43.90	RGS005 46.95-47.25	RGS006 48.35-48.65	RGS007 50.60-50.85
			Client sampling date / time	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00
				EB1208605-042	EB1208605-043	EB1208605-044	EB1208605-045	EB1208605-046
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.1**	**10.2**	**10.0**	**10.0**	**9.9**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**2.1**	**0.9**	**6.1**	**3.7**	**5.2**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-95.2**	**-49.4**	**-65.6**	**-91.1**	**-15.4**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**663**	**679**	**589**	**842**	**789**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**97.3**	**50.3**	**71.7**	**94.8**	**20.6**
ANC as CaCO3	----	0.1	% CaCO3	**9.9**	**5.1**	**7.3**	**9.7**	**2.1**
Fizz Rating	----	0	Fizz Unit	**3**	**2**	**2**	**3**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.07**	**0.03**	**0.20**	**0.12**	**0.17**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS008 53.50-53.85	RGS009 59.85-60.15	RGS010 71.85-72.50	RGS001 23.15-23.60	RGS002 29.60-29.90
			Client sampling date / time	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00
				EB1208605-047	EB1208605-048	EB1208605-049	EB1208605-050	EB1208605-051
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.1**	**10.1**	**10.1**	**9.9**	**10.1**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**0.6**	<0.5	**0.9**	**3.7**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-63.8**	**-142**	**-46.3**	**-46.6**	**-25.3**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**664**	**651**	**686**	**771**	**662**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**64.4**	**142**	**47.2**	**50.3**	**26.2**
ANC as CaCO3	----	0.1	% CaCO3	**6.6**	**14.4**	**4.8**	**5.1**	**2.7**
Fizz Rating	----	0	Fizz Unit	**2**	**3**	**2**	**2**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.02**	<0.01	**0.03**	**0.12**	**0.03**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS003 37.30-37.70	RGS004 33.20-33.60	RGS005 35.00-35.40	RGS006 74.60-78.10	RGS007 59.60-60.05
			Client sampling date / time	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00
				EB1208605-052	EB1208605-053	EB1208605-054	EB1208605-055	EB1208605-056
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.2**	**10.1**	**10.1**	**9.9**	**10.2**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	<0.5	**0.6**	**1.2**	**1.8**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-390**	**-95.4**	**-24.4**	**-39.3**	**-45.1**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**576**	**630**	**760**	**688**	**741**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**390**	**96.0**	**25.6**	**41.1**	**46.0**
ANC as CaCO3	----	0.1	% CaCO3	**39.8**	**9.8**	**2.6**	**4.2**	**4.7**
Fizz Rating	----	0	Fizz Unit	**4**	**3**	**1**	**2**	**2**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.01**	**0.02**	**0.04**	**0.06**	**0.03**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS008 62.20-62.60	RGS009 53.60-54.00	RGS010 62.60-64.00	RGS011 74.10-74.50	RGS003 24.20-24.60
			Client sampling date / time	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00
				EB1208605-057	EB1208605-058	EB1208605-059	EB1208605-060	EB1208605-063
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.0**	**10.2**	**10.2**	**9.9**	**9.6**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**0.6**	<0.5	<0.5	**6.7**	**2.4**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-27.6**	**-76.3**	**-66.2**	**-10.6**	**-27.6**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**644**	**687**	**686**	**579**	**685**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**28.2**	**76.6**	**66.2**	**17.3**	**30.0**
ANC as CaCO3	----	0.1	% CaCO3	**2.9**	**7.8**	**6.8**	**1.8**	**3.1**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**2**	**1**	**2**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.02**	**0.01**	<0.01	**0.22**	**0.08**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS004 27.40-27.90	RGS006 39.20-39.65	RGS007 47.45-48.00	RGS008 53.25-53.70	RGS009 67.10-67.60
			Client sampling date / time	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00
				EB1208605-064	EB1208605-066	EB1208605-067	EB1208605-068	EB1208605-069
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.4**	**9.9**	**10.0**	**9.8**	**9.2**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**8.3**	**0.6**	**2.4**	**14.4**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-14.0**	**-45.4**	**-49.0**	**-28.5**	**-158**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**677**	**547**	**595**	**486**	**185**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**22.3**	**46.0**	**51.5**	**42.9**	**159**
ANC as CaCO3	----	0.1	% CaCO3	**2.3**	**4.7**	**5.2**	**4.4**	**16.2**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**2**	**2**	**3**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.27**	**0.02**	**0.08**	**0.47**	**0.03**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS010 74.60-75.00	RGS001 20.50-21.00	RGS002 26.60-27.00	RGS003 30.47-30.77	RGS004 35.10-35.60
			Client sampling date / time	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00
				EB1208605-070	EB1208605-071	EB1208605-072	EB1208605-073	EB1208605-074
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.7**	**9.4**	**9.9**	**9.6**	**9.5**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**4.6**	**1.2**	**0.9**	**0.9**	**1.5**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-25.4**	**-32.5**	**-41.4**	**-32.8**	**-35.9**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**242**	**602**	**673**	**497**	**596**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**30.0**	**33.7**	**42.3**	**33.7**	**37.4**
ANC as CaCO3	----	0.1	% CaCO3	**3.1**	**3.4**	**4.3**	**3.4**	**3.8**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.15**	**0.04**	**0.03**	**0.03**	**0.05**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS005 41.10-41.60	RGS006 44.20-44.60	RGS007 51.20-51.50	RGS008 56.10-56.60	RGS009 62.60-63.00
				Client sampling date / time	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00	20-MAR-2012 15:00
					EB1208605-075	EB1208605-076	EB1208605-077	EB1208605-078	EB1208605-079
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**10.0**	**10.1**	**9.8**	**9.8**	**10.2**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		<0.5	<0.5	**6.4**	**0.9**	<0.5
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-62.8**	**-63.1**	**-5.4**	**-34.0**	**-92.6**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**673**	**693**	**407**	**535**	**731**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**63.1**	**63.1**	**11.8**	**34.9**	**92.6**
ANC as CaCO3	----	0.1	% CaCO3		**6.4**	**6.4**	**1.2**	**3.6**	**9.4**
Fizz Rating	----	0	Fizz Unit		**2**	**2**	**1**	**2**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.01**	<0.01	**0.21**	**0.03**	<0.01

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS010 65.60-65.94	RGS011 68.60-69.00	RGS001 30.22-30.54	RGS002 81.23-81.70	RGS003 87.00-87.44
			Client sampling date / time	20-MAR-2012 15:00	20-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-080	EB1208605-081	EB1208605-082	EB1208605-083	EB1208605-084
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.7**	**9.7**	**9.6**	**10.1**	**9.6**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**1.5**	**15.3**	**1.8**	**0.6**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-35.9**	**-24.5**	**-47.8**	**-37.4**	**-34.0**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**788**	**683**	**598**	**685**	**551**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**37.4**	**39.8**	**49.6**	**38.0**	**34.9**
ANC as CaCO3	----	0.1	% CaCO3	**3.8**	**4.1**	**5.1**	**3.9**	**3.6**
Fizz Rating	----	0	Fizz Unit	**2**	**2**	**2**	**2**	**2**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.05**	**0.50**	**0.06**	**0.02**	**0.03**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS004 97.45-98.10	RGS001 22.00-22.50	RGS002 25.20-25.60	RGS003 28.90-29.30	RGS004 36.40-37.00
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-085	EB1208605-086	EB1208605-087	EB1208605-088	EB1208605-089
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.9**	**9.6**	**9.6**	**10.1**	**9.5**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**1.5**	**2.1**	**8.6**	**1.8**	**16.5**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-33.4**	**-24.8**	**-37.4**	**-218**	**-8.3**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**449**	**635**	**769**	**620**	**903**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**34.9**	**27.0**	**46.0**	**220**	**24.8**
ANC as CaCO3	----	0.1	% CaCO3	**3.6**	**2.7**	**4.7**	**22.4**	**2.5**
Fizz Rating	----	0	Fizz Unit	**2**	**1**	**2**	**3**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.05**	**0.07**	**0.28**	**0.06**	**0.54**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS005 39.60-40.00	RGS006 44.60-45.20	RGS007 53.60-53.90	RGS008 57.25-57.70	RGS009 61.74-62.18
				Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
					EB1208605-090	EB1208605-091	EB1208605-092	EB1208605-093	EB1208605-094
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**9.8**	**10.1**	**10.0**	**9.8**	**10.0**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		**4.6**	**0.9**	<0.5	**7.3**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-15.1**	**-19.9**	**-51.2**	**-35.0**	**-42.6**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**696**	**716**	**680**	**409**	**685**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**19.7**	**20.8**	**51.5**	**42.3**	**43.5**
ANC as CaCO3	----	0.1	% CaCO3		**2.0**	**2.1**	**5.2**	**4.3**	**4.4**
Fizz Rating	----	0	Fizz Unit		**1**	**1**	**2**	**2**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.15**	**0.03**	**0.01**	**0.24**	**0.03**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS010 67.32-67.58	RGS011 74.55-75.05	RGS001 13.97-14.60	RGS002 20.30-20.60	RGS003 23.60-24.10
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-095	EB1208605-096	EB1208605-097	EB1208605-098	EB1208605-099
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.9**	**9.8**	**9.5**	**9.9**	**9.4**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**5.8**	**1.2**	<0.5	**0.9**	**0.6**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-12.0**	**-10.3**	**-65.0**	**-68.4**	**-16.7**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**753**	**709**	**749**	**743**	**635**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**17.8**	**11.5**	**65.0**	**69.3**	**17.3**
ANC as CaCO3	----	0.1	% CaCO3	**1.8**	**1.2**	**6.6**	**7.1**	**1.8**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**2**	**2**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.19**	**0.04**	<0.01	**0.03**	**0.02**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS004 26.80-27.30	RGS005 35.60-36.10	RGS006 44.60-44.94	RGS007 49.50-49.90	RGS008 61.30-61.80
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-100	EB1208605-101	EB1208605-102	EB1208605-103	EB1208605-104
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.4**	**10.0**	**10.2**	**9.5**	**9.9**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**7.3**	<0.5	<0.5	**3.4**	**4.3**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-3.4**	**-92.6**	**-85.8**	**-12.1**	**-28.2**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**422**	**656**	**704**	**560**	**761**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**10.8**	**92.6**	**85.8**	**15.5**	**32.5**
ANC as CaCO3	----	0.1	% CaCO3	**1.1**	**9.4**	**8.8**	**1.6**	**3.3**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**2**	**1**	**2**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.24**	<0.01	<0.01	**0.11**	**0.14**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS009 64.00-64.50	RGS010 72.00-72.50	RGS011 76.50-76.85	RGS012 82.50-82.85	RGS013 83.90-84.25
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-105	EB1208605-106	EB1208605-107	EB1208605-108	EB1208605-109
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.0**	**9.7**	**9.7**	**9.8**	**10.0**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**21.1**	**1.2**	**2.1**	**1.5**	**2.4**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**4.3**	**-15.1**	**-8.4**	**-8.5**	**-15.6**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**768**	**604**	**510**	**509**	**440**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**16.8**	**16.3**	**10.5**	**10.0**	**18.0**
ANC as CaCO3	----	0.1	% CaCO3	**1.7**	**1.7**	**1.1**	**1.0**	**1.8**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**1**	**1**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.69**	**0.04**	**0.07**	**0.05**	**0.08**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS014 95.60-95.95	RGS015 101.90-102.50	RGS016 119.00-119.60	RGS017 128.10-128.60	RGS001 25.97-26.49
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-110	EB1208605-111	EB1208605-112	EB1208605-113	EB1208605-114
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.3**	**10.1**	**9.6**	**9.7**	**9.9**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**0.9**	<0.5	**1.5**	**1.5**	**1.2**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-6.0**	**-48.4**	**-7.5**	**-34.7**	**-53.4**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**145**	**639**	**307**	**690**	**688**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**6.9**	**48.4**	**9.0**	**36.2**	**54.6**
ANC as CaCO3	----	0.1	% CaCO3	**0.7**	**4.9**	**0.9**	**3.7**	**5.6**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**1**	**2**	**2**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.03**	<0.01	**0.05**	**0.05**	**0.04**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS002 30.27-31.00	RGS003 36.19-36.84	RGS004 41.74-42.53	RGS005 45.00-45.67	RGS006 50.74-51.49
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-115	EB1208605-116	EB1208605-117	EB1208605-118	EB1208605-119
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.7**	**9.9**	**9.8**	**9.9**	**10.1**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**4.0**	**1.2**	**0.6**	**0.6**	<0.5
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-12.6**	**-39.9**	**-18.0**	**-16.4**	**-162**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**654**	**682**	**502**	**463**	**691**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**16.6**	**41.1**	**18.6**	**17.0**	**162**
ANC as CaCO3	----	0.1	% CaCO3	**1.7**	**4.2**	**1.9**	**1.7**	**16.5**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**1**	**1**	**3**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.13**	**0.04**	**0.02**	**0.02**	<0.01

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS007 53.74-54.39	RGS008 61.41-61.74	RGS009 65.74-66.16	RGS010 68.74-69.21	RGS001 59.60-60.00
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-120	EB1208605-121	EB1208605-122	EB1208605-123	EB1208605-124
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.9**	**9.9**	**10.1**	**9.8**	**9.8**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**0.6**	**0.6**	<0.5	**0.6**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-21.5**	**-29.4**	**-61.3**	**-13.9**	**-24.9**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**664**	**568**	**709**	**488**	**471**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**22.1**	**30.0**	**61.3**	**14.5**	**25.8**
ANC as CaCO3	----	0.1	% CaCO3	**2.2**	**3.1**	**6.2**	**1.5**	**2.6**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**2**	**1**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.02**	**0.02**	<0.01	**0.02**	**0.03**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS002 62.60-63.00	RGS003 64.00-64.47	RGS004 71.20-71.60	RGS005 78.70-79.00	RGS006 87.80-88.20
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-125	EB1208605-126	EB1208605-127	EB1208605-128	EB1208605-129
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.9**	**9.9**	**10.0**	**9.8**	**8.1**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**8.0**	**0.9**	<0.5	**19.6**	**20.8**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-11.7**	**-22.0**	**-93.2**	**-1.6**	**9.3**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**342**	**464**	**475**	**465**	**503**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**19.7**	**22.9**	**93.2**	**21.2**	**11.5**
ANC as CaCO3	----	0.1	% CaCO3	**2.0**	**2.3**	**9.5**	**2.2**	**1.2**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**2**	**1**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.26**	**0.03**	<0.01	**0.64**	**0.68**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS007 89.60-90.00	RGS008 95.60-96.05	RGS009 116.60-117.15	RGS010 131.05-131.60	RGS011 146.60-147.00
				Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
					EB1208605-130	EB1208605-131	EB1208605-132	EB1208605-133	EB1208605-134
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**4.8**	**8.7**	**9.6**	**9.8**	**9.8**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		**24.2**	**2.4**	**3.1**	**4.6**	**5.5**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**18.9**	**-5.4**	**-12.4**	**-40.2**	**-50.9**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**437**	**202**	**106**	**357**	**458**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**5.3**	**7.9**	**15.5**	**44.8**	**56.4**
ANC as CaCO3	----	0.1	% CaCO3		**0.5**	**0.8**	**1.6**	**4.6**	**5.8**
Fizz Rating	----	0	Fizz Unit		**1**	**1**	**1**	**2**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.79**	**0.08**	**0.10**	**0.15**	**0.18**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS001 13.96-14.42	RGS002 17.60-18.00	RGS003 20.35-20.60	RGS004 29.20-29.60	RGS005 37.60-38.10
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-135	EB1208605-136	EB1208605-137	EB1208605-138	EB1208605-139
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.5**	**9.8**	**6.8**	**9.6**	**9.8**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	<0.5	<0.5	**250**	**0.9**	**4.6**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-29.5**	**-136**	**214**	**-24.2**	**-19.0**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**649**	**517**	**2780**	**536**	**563**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**29.5**	**136**	**36.2**	**25.1**	**23.6**
ANC as CaCO3	----	0.1	% CaCO3	**3.0**	**13.9**	**3.7**	**2.6**	**2.4**
Fizz Rating	----	0	Fizz Unit	**1**	**3**	**2**	**1**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	<0.01	**8.18**	**0.03**	**0.15**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS006 50.60-51.02	RGS007 51.96-52.30	RGS008 59.80-60.22	RGS009 62.70-63.10	RGS010 71.60-72.20
				Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
					EB1208605-140	EB1208605-141	EB1208605-142	EB1208605-143	EB1208605-144
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**9.7**	**9.6**	**10.1**	**9.9**	**10.0**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		**1.8**	**0.6**	<0.5	**0.6**	**0.6**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-17.3**	**-15.8**	**-117**	**-167**	**-49.7**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**425**	**337**	**626**	**573**	**652**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**19.1**	**16.4**	**117**	**168**	**50.3**
ANC as CaCO3	----	0.1	% CaCO3		**1.9**	**1.7**	**11.9**	**17.2**	**5.1**
Fizz Rating	----	0	Fizz Unit		**1**	**1**	**2**	**3**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.06**	**0.02**	<0.01	**0.02**	**0.02**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS011 74.00-74.60	RGS001 11.60-12.10	RGS002 22.00-22.50	RGS003 31.25-31.58	RGS004 35.50-36.15
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-145	EB1208605-146	EB1208605-147	EB1208605-148	EB1208605-149
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.0**	**8.8**	**9.5**	**9.9**	**9.8**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**1.8**	<0.5	**4.3**	**0.6**	**6.1**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-23.3**	**-11.0**	**-19.5**	**-247**	**-95.9**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**676**	**1110**	**870**	**681**	**648**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**25.1**	**11.0**	**23.8**	**248**	**102**
ANC as CaCO3	----	0.1	% CaCO3	**2.6**	**1.1**	**2.4**	**25.3**	**10.4**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**1**	**3**	**3**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.06**	<0.01	**0.14**	**0.02**	**0.20**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS005 37.55-37.95	RGS006 42.00-42.50	RGS007 50.00-50.60	RGS008 56.60-57.10	RGS009 59.60-60.10
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-150	EB1208605-151	EB1208605-152	EB1208605-153	EB1208605-154
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**9.4**	**9.7**	**10.1**	**10.0**	**9.9**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**1.5**	**3.7**	<0.5	**5.5**	**1.2**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-18.1**	**-29.7**	**-50.3**	**-32.9**	**-22.9**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**499**	**559**	**633**	**572**	**568**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**19.6**	**33.4**	**50.3**	**38.4**	**24.1**
ANC as CaCO3	----	0.1	% CaCO3	**2.0**	**3.4**	**5.1**	**3.9**	**2.4**
Fizz Rating	----	0	Fizz Unit	**1**	**1**	**2**	**1**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.05**	**0.12**	<0.01	**0.18**	**0.04**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID: RGS010 70.00-70.35	RGS001 19.55-20.05	RGS002 21.59-21.89	RGS003 23.13-23.75	RGS004 27.85-28.17
			Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
				EB1208605-155	EB1208605-156	EB1208605-157	EB1208605-158	EB1208605-159
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	**10.0**	**9.5**	**8.9**	**9.1**	**9.3**
EA009: Nett Acid Production Potential								
Acid Production Potential (APP)	----	0.5	kg H2SO4/t	**0.9**	**1.8**	**0.9**	**0.9**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t	**-22.9**	**-51.5**	**-19.2**	**-19.4**	**-16.7**
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	**626**	**639**	**541**	**493**	**407**
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	**23.8**	**53.3**	**20.1**	**20.3**	**17.6**
ANC as CaCO3	----	0.1	% CaCO3	**2.4**	**5.4**	**2.0**	**2.1**	**1.8**
Fizz Rating	----	0	Fizz Unit	**1**	**2**	**1**	**1**	**1**
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	**0.03**	**0.06**	**0.03**	**0.03**	**0.03**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS005 28.57-28.97	RGS006 35.70-36.01	RGS007 38.85-39.20	RGS008 41.60-42.10	RGS009 42.10-42.36
				Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
					EB1208605-160	EB1208605-161	EB1208605-162	EB1208605-163	EB1208605-164
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**8.8**	**9.0**	**9.7**	**9.2**	**9.3**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		**2.4**	**15.0**	**1.2**	**3.4**	**8.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-11.8**	**-42.0**	**-37.4**	**-14.6**	**-80.6**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**488**	**971**	**648**	**475**	**326**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**14.3**	**57.0**	**38.6**	**18.0**	**89.5**
ANC as CaCO3	----	0.1	% CaCO3		**1.4**	**5.8**	**3.9**	**1.8**	**9.1**
Fizz Rating	----	0	Fizz Unit		**1**	**2**	**2**	**1**	**2**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.08**	**0.49**	**0.04**	**0.11**	**0.29**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS010 42.36-42.56	RGS011 43.60-44.00	RGS012 50.54-50.85	RGS013 52.72-52.92	RGS014 53.85-54.05
				Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
					EB1208605-165	EB1208605-166	EB1208605-167	EB1208605-168	EB1208605-169
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**9.5**	**9.6**	**10.0**	**9.7**	**9.4**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		**4.3**	**6.7**	**0.6**	**1.5**	**2.1**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-15.8**	**-17.1**	**-202**	**-49.4**	**-13.2**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**627**	**651**	**640**	**615**	**466**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**20.1**	**23.8**	**203**	**50.9**	**15.3**
ANC as CaCO3	----	0.1	% CaCO3		**2.0**	**2.4**	**20.7**	**5.2**	**1.6**
Fizz Rating	----	0	Fizz Unit		**1**	**1**	**4**	**2**	**1**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.14**	**0.22**	**0.02**	**0.05**	**0.07**

Analytical Results

Sub-Matrix: **ROCK**

Compound	CAS Number	LOR	Unit	Client sample ID	RGS015 59.85-60.15	RGS016 60.25-60.65	RGS017 67.90-68.18	RGS018 70.94-71.34	RGS019 71.85-72.10
				Client sampling date / time	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00	18-MAR-2012 15:00
					EB1208605-170	EB1208605-171	EB1208605-172	EB1208605-173	EB1208605-174
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**10.1**	**9.8**	**9.8**	**9.9**	**10.1**
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		<0.5	**7.3**	**9.8**	**0.6**	**0.9**
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-48.1**	**-10.2**	**-12.6**	**-26.2**	**-319**
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**560**	**482**	**612**	**540**	**637**
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**48.4**	**17.6**	**22.4**	**26.8**	**320**
ANC as CaCO3	----	0.1	% CaCO3		**4.9**	**1.8**	**2.3**	**2.7**	**32.6**
Fizz Rating	----	0	Fizz Unit		**2**	**1**	**1**	**1**	**4**
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.01**	**0.24**	**0.32**	**0.02**	**0.03**

Analytical Results

Sub-Matrix: ROCK				Client sample ID	RGS020 73.30-73.65	RGS001 12.1-12.55	RGS002 17.70-18.10	RGS005 38.50-38.90	----
				Client sampling date / time	18-MAR-2012 15:00	20-MAR-2012 12:55	20-MAR-2012 12:55	20-MAR-2012 12:55	----
Compound	CAS Number	LOR	Unit		EB1208605-175	EB1208605-176	EB1208605-177	EB1208605-178	----
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit		**9.8**	**7.6**	**8.7**	**9.6**	----
EA009: Nett Acid Production Potential									
Acid Production Potential (APP)	----	0.5	kg H2SO4/t		**2.1**	<0.5	<0.5	**3.4**	----
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-20.0**	**-9.9**	**-13.2**	**-20.2**	----
EA010: Conductivity									
Electrical Conductivity @ 25°C	----	1	µS/cm		**542**	**801**	**920**	**479**	----
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**22.1**	**9.9**	**13.5**	**23.6**	----
ANC as CaCO3	----	0.1	% CaCO3		**2.2**	**1.0**	**1.4**	**2.4**	----
Fizz Rating	----	0	Fizz Unit		**1**	**1**	**1**	**1**	----
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.07**	<0.01	**0.01**	**0.11**	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1210778**	Page	: 1 of 18
Client	: **QUEENSLAND NICKEL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Joy Morgan
Address	: PMB 5, MAIL CENTRE TOWNSVILLE QLD, AUSTRALIA 4818	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: joy.morgan@alsglobal.com
Telephone	: +61 07 47206200	Telephone	: + 61 7 4796 060
Facsimile	: +61 07 47206251	Facsimile	: + 61 7 4796 0620
Project	: Styx River	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: RGS Environmental Account		
C-O-C number	: ----	Date Samples Received	: 20-APR-2012
Sampler	: Alan Robertson	Issue Date	: 10-MAY-2012
Site	: ----		
		No. of samples received	: 189
Quote number	: BN/138/12	No. of samples analysed	: 65

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jonathon Angell	Inorganic Coordinator	Brisbane Inorganics
Myles.Clark	Acid Sulfate Soils Supervisor	Brisbane Acid Sulphate Soils
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **(ADD METHOD): NATA accreditation does not cover performance of this service.**
- **Insufficient sample to complete the CRS testing on EB1210778 -002.**

Analytical Results

Sub-Matrix: **PULP**

	Client sample ID	EB1208605010 RGS010 STX095 57.75-58.05	EB1208605028 RGS014 STX103C 70.70-71.20	EB1208605060 RGS011 STX134C 74.10-74.50	EB1208605039 RGS011 STX124 75.90-76.20	EB1208605081 RGS011 STX099C 68.60-69.00
	Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
Compound / CAS Number	LOR / Unit	EB1210778-007	EB1210778-012	EB1210778-013	EB1210778-014	EB1210778-018
EA026 : Chromium Reducible Sulfur						
Chromium Reducible Sulphur ----	0.005 %	**0.141**	**0.019**	**0.178**	**0.370**	**0.490**

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID	EB1208605165 RGS010 STX101C 42.36-42.56	EB1208605163 RGS008 STX101C 41.60-42.10	EB1208605089 RGS004 STX122C 36.40-37.00	EB1208605095 RGS010 STX122C 67.32-67.58	EB1208605164 RGS009 STX101C 42.10-42.36
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1210778-026	EB1210778-027	EB1210778-029	EB1210778-032	EB1210778-039
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.114**	**0.111**	**0.439**	**0.111**	**0.056**

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID	EB1208605147 RGS002 STX135C 22.00-22.50	EB1208605100 RGS004 STX145C 26.80-27.30	EB1208605090 RGS005 STX122C 39.60-40.00	EB1208605151 RGS006 STX135C 42.00-42.50	EB1208605153 RGS008 STX135C 56.60-57.10
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1210778-040	EB1210778-042	EB1210778-043	EB1210778-044	EB1210778-045
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.080**	**0.082**	**0.063**	**0.008**	**0.008**

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID	EB1208605171 RGS016 STX101C 60.25-60.65	EB1208605125 RGS002 STX148C 62.60-63.00	EB1208605093 RGS008 STX122C 57.25-57.70	EB1208605087 RGS002 STX122C 25.20-25.60	EB1208605139 RGS005 STX136C 37.60-38.10
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1210778-046	EB1210778-048	EB1210778-052	EB1210778-053	EB1210778-054
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.086**	**0.007**	**0.022**	**0.207**	**0.038**

Analytical Results

Sub-Matrix: **PULP**

	Client sample ID	EB1208605166 RGS011 STX101C 43.60-44.00	EB1208605035 RGS007 STX124 50.60-51.00	EB1208605033 RGS005 STX124 47.60-48.14	EB1208605046 RGS007 STX139C 50.60-50.85	EB1208605026 RGS012 STX103C 65.60-66.05
	Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
Compound / CAS Number / LOR / Unit		EB1210778-056	EB1210778-057	EB1210778-063	EB1210778-064	EB1210778-068
EA026 : Chromium Reducible Sulfur						
Chromium Reducible Sulphur	---- 0.005 %	**0.123**	**0.017**	**0.063**	**0.069**	**0.006**

Analytical Results

Sub-Matrix: **PULP**

	Client sample ID	EB1208605103 RGS007 STX145C 49.50-49.90	EB1208605149 RGS004 STX135C 35.50-36.15	EB1208605002 RGS002 STX095 28.30-28.90	EB1208605105 RGS009 STX145C 64.00-64.50	EB1208605104 RGS008 STX145C 61.30-61.80
	Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
Compound / CAS Number / LOR / Unit		EB1210778-072	EB1210778-074	EB1210778-077	EB1210778-078	EB1210778-079
EA026 : Chromium Reducible Sulfur						
Chromium Reducible Sulphur ---- 0.005 %		**0.070**	**0.192**	**0.050**	**0.602**	**0.126**

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID	EB1208605115 RGS002 STX105 30.27-31.00	EB1208605044 RGS005 STX139C 46.95-47.25	EB1208605077 RGS007 STX099C 51.20-51.50	EB1208605137 RGS003 STX136C 20.35-20.60	EB1208605130 RGS007 STX148C 89.60-90.00
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1210778-089	EB1210778-100	EB1210778-103	EB1210778-127	EB1210778-128
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.044**	**0.058**	**0.017**	**7.62**	**0.498**

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID	EB1208605003 RGS003 STX095 34.20-34.85	EB1208605050 RGS001 STX134C 23.15-23.60	EB1208605161 RGS006 STX101C 35.50-36.01	EB1208605178 RGS005 STX083 38.50-38.90	EB1208605045 RGS006 STX139C 48.35-48.65
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1210778-129	EB1210778-135	EB1210778-141	EB1210778-142	EB1210778-147
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.123**	**0.052**	**0.414**	**0.031**	**0.107**

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID	EB1208605021 RGS007 STX103C 48.80-49.30	EB1208605068 RGS008 STX083 53.25-53.70	EB1208605034 RGS006 STX124 53.60-54.05	EB1208605070 RGS010 STX083 74.60-75.00	EB1208605128 RGS005 STX148C 78.70-79.00
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1210778-148	EB1210778-149	EB1210778-151	EB1210778-157	EB1210778-158
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.027**	**0.484**	**0.028**	**0.139**	**0.660**

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID	EB1208605129 RGS006 STX148C 87.80-88.20	EB1208605133RGS010 STX148C 131.05-131.60	EB1208605134 RGS011 STX148C 146.60-147.00	EB1208605007 RGS007 STX095 44.75-45.40	EB1208605008 RGS008 STX095 48.75-49.45
				Client sampling date / time	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00	21-MAR-2012 15:00
					EB1210778-160	EB1210778-163	EB1210778-164	EB1210778-172	EB1210778-173
EA026 : Chromium Reducible Sulfur									
Chromium Reducible Sulphur	----	0.005	%		**0.615**	**0.149**	**0.056**	**0.087**	**0.133**

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID: COMPOSITE 1 Client sampling date / time: 23-APR-2012 15:00 EB1210778-175	COMPOSITE 2 23-APR-2012 15:00 EB1210778-176	COMPOSITE 3 23-APR-2012 15:00 EB1210778-177	COMPOSITE 4 23-APR-2012 15:00 EB1210778-178	COMPOSITE 5 23-APR-2012 15:00 EB1210778-179
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	30.3	42.8	16.3	38.4	33.0
Exchangeable Magnesium	----	0.1	meq/100g	13.2	4.1	19.1	5.7	5.8
Exchangeable Potassium	----	0.1	meq/100g	1.5	1.6	1.5	1.7	1.1
Exchangeable Sodium	----	0.1	meq/100g	23.9	31.7	21.0	32.9	18.5
Cation Exchange Capacity	----	0.1	meq/100g	69.0	80.2	57.9	78.7	58.4
Exchangeable Sodium Percent	----	0.1	%	34.6	39.5	36.3	41.8	31.7
ED037: Alkalinity								
Total Alkalinity as CaCO3	----	1	mg/kg	1360	1670	1190	1650	1150
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/kg	727	789	1020	789	533
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/kg	636	882	164	861	615
ED040: Sulfur as SO4 2-								
Sulfate as SO4 2-	14808-79-8	100	mg/kg	1360	350	500	250	190
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	10	mg/kg	220	130	240	100	120
ED093S: Soluble Major Cations								
Calcium	7440-70-2	10	mg/kg	<10	<10	<10	<10	<10
Magnesium	7439-95-4	10	mg/kg	<10	<10	<10	<10	<10
Sodium	7440-23-5	10	mg/kg	730	820	620	740	650
Potassium	7440-09-7	10	mg/kg	10	<10	<10	<10	<10
ED093T: Total Major Cations								
Sodium	7440-23-5	50	mg/kg	2320	2870	2070	2810	1950
Potassium	7440-09-7	50	mg/kg	820	660	630	680	550
Calcium	7440-70-2	50	mg/kg	5770	14200	2490	19600	7310
Magnesium	7439-95-4	50	mg/kg	3430	4100	3540	3020	2100
EG005S : Soluble Metals by ICPAES								
Aluminium	7429-90-5	1	mg/kg	<1	<1	<1	<1	<1
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	7440-38-2	0.1	mg/kg	0.3	0.3	0.2	0.2	0.4
Boron	7440-42-8	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	7440-50-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	7439-89-6	1	mg/kg	<1	<1	<1	<1	<1
Lead	7439-92-1	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese	7439-96-5	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID: COMPOSITE 1	COMPOSITE 2	COMPOSITE 3	COMPOSITE 4	COMPOSITE 5
				Client sampling date / time: 23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00
				EB1210778-175	EB1210778-176	EB1210778-177	EB1210778-178	EB1210778-179
EG005S : Soluble Metals by ICPAES - Continued								
Molybdenum	7439-98-7	0.1	mg/kg	**0.1**	**0.2**	**0.1**	**0.2**	**0.2**
Nickel	7440-02-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	7782-49-2	0.1	mg/kg	**0.2**	**0.1**	**0.2**	**0.1**	**0.1**
Vanadium	7440-62-2	0.1	mg/kg	**0.2**	**0.2**	**0.1**	**0.3**	**0.3**
Zinc	7440-66-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphorus	7723-14-0	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**8730**	**6940**	**7850**	**6140**	**4860**
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	**6**	<5	**6**	<5
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**14**	**11**	**12**	**11**	**7**
Cobalt	7440-48-4	2	mg/kg	**9**	**12**	**8**	**13**	**8**
Copper	7440-50-8	5	mg/kg	**21**	**24**	**27**	**20**	**19**
Iron	7439-89-6	50	mg/kg	**17200**	**53000**	**16600**	**38000**	**36100**
Lead	7439-92-1	5	mg/kg	**10**	**11**	**12**	**10**	**8**
Manganese	7439-96-5	5	mg/kg	**239**	**1100**	**242**	**1030**	**823**
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	**11**	**14**	**12**	**14**	**9**
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**22**	**28**	**24**	**26**	**19**
Zinc	7440-66-6	5	mg/kg	**450**	**189**	**228**	**99**	**136**
Phosphorus	7723-14-0	50	mg/kg	**180**	**530**	**160**	**500**	**160**
EG035S: Soluble Mercury by FIMS								
Mercury	7439-97-6	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	**0.1**	**0.1**	**0.1**	<0.1

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID: COMPOSITE 6	COMPOSITE 7	COMPOSITE 8	COMPOSITE 9	COMPOSITE 10
				Client sampling date / time: 23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00
				EB1210778-180	EB1210778-181	EB1210778-182	EB1210778-183	EB1210778-184
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	28.7	28.4	37.7	40.8	39.7
Exchangeable Magnesium	----	0.1	meq/100g	15.4	5.4	7.8	11.4	8.4
Exchangeable Potassium	----	0.1	meq/100g	1.5	1.4	1.8	1.4	1.3
Exchangeable Sodium	----	0.1	meq/100g	24.3	26.5	27.2	21.8	23.5
Cation Exchange Capacity	----	0.1	meq/100g	70.0	61.8	74.5	75.4	72.9
Exchangeable Sodium Percent	----	0.1	%	34.7	42.8	36.6	28.9	32.2
ED037: Alkalinity								
Total Alkalinity as CaCO3	----	1	mg/kg	943	697	1270	1190	1390
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/kg	471	123	676	492	369
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/kg	472	574	595	697	1020
ED040: Sulfur as SO4 2-								
Sulfate as SO4 2-	14808-79-8	100	mg/kg	260	170	360	240	230
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	10	mg/kg	310	40	220	220	170
ED093S: Soluble Major Cations								
Calcium	7440-70-2	10	mg/kg	<10	<10	<10	<10	<10
Magnesium	7439-95-4	10	mg/kg	<10	<10	<10	<10	<10
Sodium	7440-23-5	10	mg/kg	720	620	760	690	740
Potassium	7440-09-7	10	mg/kg	10	<10	<10	<10	<10
ED093T: Total Major Cations								
Sodium	7440-23-5	50	mg/kg	2450	2510	2660	1860	2320
Potassium	7440-09-7	50	mg/kg	780	640	770	610	610
Calcium	7440-70-2	50	mg/kg	6410	4940	7310	20100	16200
Magnesium	7439-95-4	50	mg/kg	4400	3190	3380	4480	4000
EG005S : Soluble Metals by ICPAES								
Aluminium	7429-90-5	1	mg/kg	<1	1	<1	<1	<1
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	7440-38-2	0.1	mg/kg	0.1	0.1	0.2	0.3	0.5
Boron	7440-42-8	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	7440-50-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	7439-89-6	1	mg/kg	<1	<1	<1	<1	<1
Lead	7439-92-1	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese	7439-96-5	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID: COMPOSITE 6	COMPOSITE 7	COMPOSITE 8	COMPOSITE 9	COMPOSITE 10
				Client sampling date / time: 23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00
				EB1210778-180	EB1210778-181	EB1210778-182	EB1210778-183	EB1210778-184
EG005S : Soluble Metals by ICPAES - Continued								
Molybdenum	7439-98-7	0.1	mg/kg	**0.1**	<0.1	**0.2**	**0.2**	**0.2**
Nickel	7440-02-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	7782-49-2	0.1	mg/kg	**0.2**	<0.1	**0.1**	**0.1**	<0.1
Vanadium	7440-62-2	0.1	mg/kg	**0.1**	**0.1**	**0.2**	**0.1**	**0.2**
Zinc	7440-66-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphorus	7723-14-0	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**9070**	**6220**	**7890**	**8630**	**6670**
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	<5	**8**	<5	<5
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**12**	**10**	**14**	**16**	**14**
Cobalt	7440-48-4	2	mg/kg	**12**	**14**	**14**	**15**	**9**
Copper	7440-50-8	5	mg/kg	**24**	**22**	**25**	**15**	**16**
Iron	7439-89-6	50	mg/kg	**34600**	**37900**	**31300**	**49100**	**28300**
Lead	7439-92-1	5	mg/kg	**11**	**10**	**11**	**9**	**8**
Manganese	7439-96-5	5	mg/kg	**688**	**526**	**605**	**1120**	**674**
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	**15**	**14**	**16**	**17**	**11**
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**24**	**22**	**26**	**27**	**23**
Zinc	7440-66-6	5	mg/kg	**330**	**170**	**286**	**164**	**120**
Phosphorus	7723-14-0	50	mg/kg	**300**	**230**	**300**	**500**	**480**
EG035S: Soluble Mercury by FIMS								
Mercury	7439-97-6	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	<0.1	**0.1**	<0.1	<0.1

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID: COMPOSITE 11 Client sampling date / time: 23-APR-2012 15:00 EB1210778-185	COMPOSITE 12 23-APR-2012 15:00 EB1210778-186	COMPOSITE 13 23-APR-2012 15:00 EB1210778-187	COMPOSITE 14 23-APR-2012 15:00 EB1210778-188	COMPOSITE 15 23-APR-2012 15:00 EB1210778-189
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	40.8	34.2	30.4	31.8	31.7
Exchangeable Magnesium	----	0.1	meq/100g	3.0	14.4	5.6	2.2	9.3
Exchangeable Potassium	----	0.1	meq/100g	1.3	1.5	1.5	2.2	1.5
Exchangeable Sodium	----	0.1	meq/100g	22.3	26.0	28.0	19.0	27.4
Cation Exchange Capacity	----	0.1	meq/100g	67.4	76.1	65.5	55.2	70.0
Exchangeable Sodium Percent	----	0.1	%	33.1	34.2	42.7	34.4	39.2
ED037: Alkalinity								
Total Alkalinity as CaCO3	----	1	mg/kg	1190	1370	1460	1310	1390
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/kg	451	759	205	492	656
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/kg	738	615	1250	820	738
ED040: Sulfur as SO4 2-								
Sulfate as SO4 2-	14808-79-8	100	mg/kg	110	520	160	230	200
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	10	mg/kg	90	250	160	60	180
ED093S: Soluble Major Cations								
Calcium	7440-70-2	10	mg/kg	<10	<10	<10	<10	<10
Magnesium	7439-95-4	10	mg/kg	<10	<10	<10	<10	<10
Sodium	7440-23-5	10	mg/kg	590	640	700	630	670
Potassium	7440-09-7	10	mg/kg	<10	<10	<10	10	<10
ED093T: Total Major Cations								
Sodium	7440-23-5	50	mg/kg	2150	2560	2640	2010	2590
Potassium	7440-09-7	50	mg/kg	570	1610	660	1120	630
Calcium	7440-70-2	50	mg/kg	13600	6630	6660	5760	6320
Magnesium	7439-95-4	50	mg/kg	2810	4140	4000	3570	3100
EG005S : Soluble Metals by ICPAES								
Aluminium	7429-90-5	1	mg/kg	2	<1	<1	1	<1
Antimony	7440-36-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	7440-38-2	0.1	mg/kg	0.5	0.2	0.6	0.2	0.3
Boron	7440-42-8	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	7440-47-3	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Cobalt	7440-48-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	7440-50-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	7439-89-6	1	mg/kg	<1	<1	<1	<1	<1
Lead	7439-92-1	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese	7439-96-5	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: **PULP**

Compound	CAS Number	LOR	Unit	Client sample ID: COMPOSITE 11	COMPOSITE 12	COMPOSITE 13	COMPOSITE 14	COMPOSITE 15
				Client sampling date / time: 23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00	23-APR-2012 15:00
				EB1210778-185	EB1210778-186	EB1210778-187	EB1210778-188	EB1210778-189
EG005S : Soluble Metals by ICPAES - Continued								
Molybdenum	7439-98-7	0.1	mg/kg	**0.1**	**0.1**	**0.2**	**0.2**	**0.1**
Nickel	7440-02-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	7782-49-2	0.1	mg/kg	<0.1	<0.1	**0.1**	**0.2**	**0.2**
Vanadium	7440-62-2	0.1	mg/kg	**0.2**	<0.1	**0.3**	**0.3**	**0.2**
Zinc	7440-66-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosphorus	7723-14-0	10	mg/kg	<10	<10	<10	<10	<10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**5770**	**11500**	**8150**	**12100**	**7840**
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	**6**	<5	<5	**6**	<5
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<3	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**19**	**16**	**11**	**20**	**11**
Cobalt	7440-48-4	2	mg/kg	**12**	**14**	**12**	**10**	**8**
Copper	7440-50-8	5	mg/kg	**13**	**21**	**23**	**20**	**23**
Iron	7439-89-6	50	mg/kg	**27100**	**42600**	**35100**	**32800**	**18600**
Lead	7439-92-1	5	mg/kg	**8**	**11**	**10**	**14**	**10**
Manganese	7439-96-5	5	mg/kg	**568**	**908**	**621**	**575**	**285**
Molybdenum	7439-98-7	2	mg/kg	<2	<5	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	**13**	**16**	**14**	**16**	**10**
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	**18**	**30**	**25**	**28**	**22**
Zinc	7440-66-6	5	mg/kg	**115**	**595**	**144**	**87**	**204**
Phosphorus	7723-14-0	50	mg/kg	**380**	**390**	**310**	**520**	**170**
EG035S: Soluble Mercury by FIMS								
Mercury	7439-97-6	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.3	<0.1	<0.1	<0.1

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1213922**	Page	: 1 of 6
Amendment	: **1**		
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 2012 blanket quote	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 24-MAY-2012
Sampler	: Alan Robertson	Issue Date	: 08-JUN-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/413/12	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **This report has been amended following the adjustment to the billing entity.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
Client sample ID				Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
Client sampling date / time				21-MAY-2012 15:00	21-MAY-2012 15:00	21-MAY-2012 15:00	21-MAY-2012 15:00	21-MAY-2012 15:00
				EB1213922-001	EB1213922-002	EB1213922-003	EB1213922-004	EB1213922-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.52	9.46	9.20	9.34	8.90
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	638	744	546	455	733
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	24	24	40	16	8
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	73	55	87	41	39
Total Alkalinity as CaCO3	----	1	mg/L	97	79	127	57	47
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	<1	<1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	86	101	45	69	119
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	90	162	127	104	194
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	1	1	1	2	2
Magnesium	7439-95-4	1	mg/L	<1	<1	<1	<1	2
Sodium	7440-23-5	1	mg/L	143	189	146	140	235
Potassium	7440-09-7	1	mg/L	1	1	<1	<1	1
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.20	0.09	0.27	0.13	0.05
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.009	0.007	0.029	0.003	0.006
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.001	<0.001	<0.001	0.001	0.002
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	0.018	0.034	0.018	0.012	0.021
Selenium	7782-49-2	0.01	mg/L	0.02	0.05	<0.01	0.02	0.05
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
Client sample ID				**Styx KLC 1**	**Styx KLC 2**	**Styx KLC 3**	**Styx KLC 4**	**Styx KLC 5**
Client sampling date / time				21-MAY-2012 15:00	21-MAY-2012 15:00	21-MAY-2012 15:00	21-MAY-2012 15:00	21-MAY-2012 15:00
				EB1213922-001	**EB1213922-002**	**EB1213922-003**	**EB1213922-004**	**EB1213922-005**
EG020F: Dissolved Metals by ICP-MS - Continued								
Boron	7440-42-8	0.05	mg/L	<0.05	**0.05**	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 6	----	----	----	----
				Client sampling date / time: 21-MAY-2012 15:00	----	----	----	----
				EB1213922-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.61**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**459**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**32**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**57**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**89**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**41**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**60**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**73**	----	----	----	----
Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.21**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.008**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.020**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	**0.03**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	**0.01**	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 6	----	----	----	----
				Client sampling date / time: 21-MAY-2012 15:00	----	----	----	----
				EB1213922-006	**----**	**----**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS - Continued								
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1214967**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 111204	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 05-JUN-2012
Sampler	: M Matheson	Issue Date	: 19-JUN-2012
Site	: Styx River		
		No. of samples received	: 6
Quote number	: BN/413/12	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **LEACHATE**

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 1 Client sampling date / time: 04-JUN-2012 15:00 EB1214967-001	Styx KLC 2 04-JUN-2012 15:00 EB1214967-002	Styx KLC 3 04-JUN-2012 15:00 EB1214967-003	Styx KLC 4 04-JUN-2012 15:00 EB1214967-004	Styx KLC 5 04-JUN-2012 15:00 EB1214967-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.87**	**9.37**	**9.50**	**8.61**	**8.50**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**781**	**742**	**682**	**781**	**885**
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**16**	**37**	**32**	**10**	**7**
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**30**	**56**	**36**	**26**	**32**
Total Alkalinity as CaCO3	----	1	mg/L	**46**	**93**	**68**	**36**	**39**
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	**2**	<1	<1	<1	**2**
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**127**	**78**	**57**	**129**	**142**
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**108**	**114**	**131**	**112**	**136**
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**1**	<1	**1**	**2**	<1
Magnesium	7439-95-4	1	mg/L	<1	<1	<1	**1**	**1**
Sodium	7440-23-5	1	mg/L	**156**	**157**	**137**	**160**	**189**
Potassium	7440-09-7	1	mg/L	<1	<1	<1	<1	**1**
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.24**	**0.20**	**0.21**	**0.07**	**0.04**
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	**0.005**	**0.014**	**0.028**	**0.002**	**0.007**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	**0.001**	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	**0.003**	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	**0.001**	<0.001	<0.001	**0.004**	**0.001**
Molybdenum	7439-98-7	0.001	mg/L	**0.035**	**0.102**	**0.040**	**0.024**	**0.049**
Selenium	7782-49-2	0.01	mg/L	**0.06**	**0.07**	**0.02**	**0.04**	**0.09**
Vanadium	7440-62-2	0.01	mg/L	<0.01	**0.01**	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: **LEACHATE**

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
				Client sampling date / time: 04-JUN-2012 15:00	04-JUN-2012 15:00	04-JUN-2012 15:00	04-JUN-2012 15:00	04-JUN-2012 15:00
				EB1214967-001	EB1214967-002	EB1214967-003	EB1214967-004	EB1214967-005
EG020F: Dissolved Metals by ICP-MS - Continued								
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	**0.08**	**0.07**	**0.06**	<0.05	<0.05

Analytical Results

Sub-Matrix: **LEACHATE**

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 6	----	----	----	----
				Client sampling date / time: 04-JUN-2012 15:00	----	----	----	----
				EB1214967-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.16**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**633**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**19**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**30**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**49**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**52**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**126**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**129**	----	----	----	----
Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.14**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.009**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.061**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	**0.08**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----

Analytical Results

Sub-Matrix: **LEACHATE**				Client sample ID	**Styx KLC 6**	----	----	----	----
				Client sampling date / time	04-JUN-2012 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB1214967-006**	**----**	**----**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS - Continued									
Boron	7440-42-8	0.05	mg/L		<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L		**0.05**	----	----	----	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1216330**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR MARC WALKER	Contact	: Customer Services
Address	: 193 FERRY ROAD SOUTHPORT QLD, AUSTRALIA 4215	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: Marc.Walker@yeats.com.au	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 5571 2232	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 5503 1672	Facsimile	: +61 7 3243 7218
Project	: 111204 Styx River	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 20-JUN-2012
Sampler	: ----	Issue Date	: 29-JUN-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/413/12	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jonathon Angell	Inorganic Coordinator	Brisbane Inorganics
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 1 Client sampling date / time: 19-JUN-2012 15:00 EB1216330-001	Styx KLC 2 19-JUN-2012 15:00 EB1216330-002	Styx KLC 3 19-JUN-2012 15:00 EB1216330-003	Styx KLC 4 19-JUN-2012 15:00 EB1216330-004	Styx KLC 5 19-JUN-2012 15:00 EB1216330-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.34**	**9.73**	**9.78**	**9.05**	**9.19**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**727**	**642**	**690**	**654**	**974**
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**22**	**91**	**50**	**9**	**19**
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**34**	**83**	**46**	**25**	**50**
Total Alkalinity as CaCO3	----	1	mg/L	**56**	**174**	**95**	**34**	**69**
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	<1	<1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**156**	**74**	**84**	**150**	**197**
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**82**	**49**	**103**	**76**	**120**
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	<1	<1	**2**	<1
Magnesium	7439-95-4	1	mg/L	<1	<1	<1	<1	<1
Sodium	7440-23-5	1	mg/L	**142**	**132**	**134**	**126**	**194**
Potassium	7440-09-7	1	mg/L	<1	<1	<1	<1	**1**
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.88**	**0.09**	**0.04**	**0.15**	**0.17**
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	**0.001**	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	**0.008**	**0.037**	**0.034**	**0.002**	**0.015**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	**0.002**	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	**0.006**	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	**0.002**	<0.001	<0.001	**0.004**	**0.001**
Molybdenum	7439-98-7	0.001	mg/L	**0.030**	**0.036**	**0.078**	**0.014**	**0.054**
Selenium	7782-49-2	0.01	mg/L	**0.05**	**0.02**	**0.05**	**0.03**	**0.09**
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	**0.02**	<0.01	<0.01

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 1 Client sampling date / time: 19-JUN-2012 15:00 EB1216330-001	Styx KLC 2 19-JUN-2012 15:00 EB1216330-002	Styx KLC 3 19-JUN-2012 15:00 EB1216330-003	Styx KLC 4 19-JUN-2012 15:00 EB1216330-004	Styx KLC 5 19-JUN-2012 15:00 EB1216330-005
EG020F: Dissolved Metals by ICP-MS - Continued								
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	**0.09**	<0.05	**0.07**
Iron	7439-89-6	0.05	mg/L	**0.13**	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER				Client sample ID	Styx KLC 6	----	----	----	----
				Client sampling date / time	19-JUN-2012 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1216330-006	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**9.56**	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**583**	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		**30**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		**49**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		**79**	----	----	----	----
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L		<1	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**81**	----	----	----	----
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L		**85**	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L		<1	----	----	----	----
Sodium	7440-23-5	1	mg/L		**113**	----	----	----	----
Potassium	7440-09-7	1	mg/L		<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		**0.93**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		**0.013**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.006**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		**0.058**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		**0.07**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	----	----	----	----

Analytical Results

Sub-Matrix: WATER								
			Client sample ID	**Styx KLC 6**	----	----	----	----
			Client sampling date / time	19-JUN-2012 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB1216330-006**	**----**	**----**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS - Continued								
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.12**	----	----	----	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1217381**	Page	: 1 of 6
Amendment	: **1**		
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: Styx River	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: 111204		
C-O-C number	: ----	Date Samples Received	: 03-JUL-2012
Sampler	: M Matheson	Issue Date	: 16-JUL-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/413/12	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **LEACHATE** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
				Client sampling date / time	03-JUL-2012 15:00	03-JUL-2012 15:00	03-JUL-2012 15:00	03-JUL-2012 15:00	03-JUL-2012 15:00
					EB1217381-001	EB1217381-002	EB1217381-003	EB1217381-004	EB1217381-005
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**9.38**	**9.69**	**9.62**	**8.95**	**9.45**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**585**	**337**	**966**	**710**	**446**
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		**18**	**58**	**83**	**9**	**20**
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		**32**	**62**	**80**	**27**	**34**
Total Alkalinity as CaCO3	----	1	mg/L		**50**	**120**	**163**	**36**	**54**
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L		<1	<1	<1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		**128**	**40**	**100**	**162**	**86**
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L		**59**	**12**	**138**	**69**	**36**
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	<1	<1	**2**	<1
Magnesium	7439-95-4	1	mg/L		<1	<1	<1	<1	<1
Sodium	7440-23-5	1	mg/L		**120**	**74**	**208**	**142**	**91**
Potassium	7440-09-7	1	mg/L		**1**	**1**	**2**	**1**	<1
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		**1.25**	**2.13**	**0.23**	**0.24**	**1.15**
Antimony	7440-36-0	0.001	mg/L		<0.001	<0.001	**0.001**	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L		**0.007**	**0.020**	**0.081**	**0.002**	**0.011**
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		**0.001**	**0.001**	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L		**0.002**	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		**0.013**	**0.015**	<0.005	<0.005	**0.005**
Manganese	7439-96-5	0.001	mg/L		**0.002**	**0.001**	**0.001**	**0.004**	**0.001**
Molybdenum	7439-98-7	0.001	mg/L		**0.030**	**0.044**	**0.090**	**0.018**	**0.042**
Selenium	7782-49-2	0.01	mg/L		**0.04**	**0.02**	**0.02**	**0.04**	**0.04**
Vanadium	7440-62-2	0.01	mg/L		<0.01	**0.02**	<0.01	<0.01	**0.01**
Boron	7440-42-8	0.05	mg/L		**0.05**	<0.05	**0.06**	<0.05	<0.05

Analytical Results

Sub-Matrix: LEACHATE (Matrix: WATER)			Client sample ID	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
			Client sampling date / time	03-JUL-2012 15:00	03-JUL-2012 15:00	03-JUL-2012 15:00	03-JUL-2012 15:00	03-JUL-2012 15:00
Compound	CAS Number	LOR	Unit	EB1217381-001	EB1217381-002	EB1217381-003	EB1217381-004	EB1217381-005
EG020F: Dissolved Metals by ICP-MS - Continued								
Iron	7439-89-6	0.05	mg/L	**0.23**	**0.30**	<0.05	**0.05**	**0.16**

Analytical Results

Sub-Matrix: **LEACHATE** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 6	----	----	----	----
				Client sampling date / time: 03-JUL-2012 15:00	----	----	----	----
				EB1217381-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.48**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**493**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**24**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**40**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**64**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**68**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**60**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**101**	----	----	----	----
Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**1.33**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.013**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.014**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.001**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.063**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	**0.06**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **LEACHATE** (Matrix: **WATER**)				Client sample ID	**Styx KLC 6**	----	----	----	----
				Client sampling date / time	03-JUL-2012 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB1217381-006**	**----**	**----**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS - Continued									
Iron	7439-89-6	0.05	mg/L		**0.20**	----	----	----	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1218648**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 111204 Styx River	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2012
Sampler	: Mandie Matheson	Issue Date	: 30-JUL-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/413/12	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Metals Production Chemist	Brisbane Inorganics
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
Client sample ID								
Client sampling date / time				17-JUL-2012 15:00	17-JUL-2012 15:00	17-JUL-2012 15:00	17-JUL-2012 15:00	17-JUL-2012 15:00
				EB1218648-001	EB1218648-002	EB1218648-003	EB1218648-004	EB1218648-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.84	9.42	9.34	8.12	8.71
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	487	386	583	628	306
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	13	60	56	<1	6
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	48	110	128	41	41
Total Alkalinity as CaCO3	----	1	mg/L	61	170	184	41	48
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	<1	<1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	104	37	45	138	50
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	33	7	40	54	21
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	<1	<1	<1	<1
Magnesium	7439-95-4	1	mg/L	<1	<1	<1	<1	<1
Sodium	7440-23-5	1	mg/L	96	88	127	123	64
Potassium	7440-09-7	1	mg/L	<1	<1	<1	<1	<1
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	40.0	110	0.17	7.43	32.9
Antimony	7440-36-0	0.001	mg/L	<0.001	0.002	0.002	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.010	0.029	0.072	0.003	0.009
Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0002	<0.0001	<0.0001	0.0001
Chromium	7440-47-3	0.001	mg/L	0.032	0.069	0.048	0.005	0.038
Copper	7440-50-8	0.001	mg/L	0.016	0.030	0.014	0.003	0.018
Cobalt	7440-48-4	0.001	mg/L	0.015	0.020	0.012	0.002	0.007
Nickel	7440-02-0	0.001	mg/L	0.014	0.021	0.012	0.003	0.010
Lead	7439-92-1	0.001	mg/L	0.009	0.014	0.008	0.001	0.008
Zinc	7440-66-6	0.005	mg/L	0.403	0.572	0.170	0.043	0.164
Manganese	7439-96-5	0.001	mg/L	0.067	0.048	0.047	0.024	0.042
Molybdenum	7439-98-7	0.001	mg/L	0.026	0.034	0.058	0.018	0.032
Selenium	7782-49-2	0.01	mg/L	0.03	0.02	0.01	0.03	0.02
Vanadium	7440-62-2	0.01	mg/L	0.09	0.20	0.12	0.01	0.09
Boron	7440-42-8	0.05	mg/L	<0.05	0.10	0.06	<0.05	0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
			Client sampling date / time	17-JUL-2012 15:00	17-JUL-2012 15:00	17-JUL-2012 15:00	17-JUL-2012 15:00	17-JUL-2012 15:00
Compound	CAS Number	LOR	Unit	EB1218648-001	EB1218648-002	EB1218648-003	EB1218648-004	EB1218648-005
EG020F: Dissolved Metals by ICP-MS - Continued								
Iron	7439-89-6	0.05	mg/L	**11.2**	**16.6**	**8.90**	**1.99**	**8.48**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Styx KLC 6	----	----	----	----
			Client sampling date / time	17-JUL-2012 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1218648-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.11**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**377**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**20**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**57**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**77**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**47**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**34**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**79**	----	----	----	----
Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**56.8**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.019**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.057**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.026**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	**0.023**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.025**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.014**	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.636**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.060**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.057**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	**0.05**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	**0.15**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.06**	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)								
			Client sample ID	**Styx KLC 6**	----	----	----	----
			Client sampling date / time	17-JUL-2012 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB1218648-006**	**----**	**----**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS - Continued								
Iron	7439-89-6	0.05	mg/L	**15.4**	----	----	----	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1220315**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 111204 Styx River	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 01-AUG-2012
Sampler	: M Matheson	Issue Date	: 08-AUG-2012
Site	: ----		
		No. of samples received	: 6
Quote number	: BN/413/12	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Andrew Epps	Metals Production Chemist	Brisbane Inorganics
Stephen Hislop	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **LEACHATE** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
				Client sampling date / time: 31-JUL-2012 15:00	31-JUL-2012 15:00	31-JUL-2012 15:00	31-JUL-2012 15:00	31-JUL-2012 15:00
				EB1220315-001	EB1220315-002	EB1220315-003	EB1220315-004	EB1220315-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.28**	**9.61**	**9.47**	**8.79**	**9.19**
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**526**	**243**	**776**	**543**	**286**
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**28**	**49**	**136**	**9**	**17**
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**68**	**62**	**192**	**42**	**36**
Total Alkalinity as CaCO3	----	1	mg/L	**95**	**111**	**328**	**51**	**54**
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	<1	<1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**105**	**14**	**42**	**141**	**46**
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**26**	**3**	**27**	**35**	**16**
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	<1	<1	<1	<1
Magnesium	7439-95-4	1	mg/L	<1	<1	<1	<1	<1
Sodium	7440-23-5	1	mg/L	**105**	**49**	**166**	**107**	**57**
Potassium	7440-09-7	1	mg/L	<1	<1	<1	<1	<1
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.58**	**0.24**	**1.12**	**0.51**	**1.54**
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.006**	**0.008**	**0.003**	**0.002**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	**0.001**
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	**0.007**	<0.005	**0.005**	<0.005	**0.007**
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	**0.001**	**0.002**	**0.001**
Molybdenum	7439-98-7	0.001	mg/L	**0.004**	**0.006**	**0.006**	**0.015**	**0.008**
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	**0.02**	<0.01
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: **LEACHATE** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
				Client sampling date / time	31-JUL-2012 15:00	31-JUL-2012 15:00	31-JUL-2012 15:00	31-JUL-2012 15:00	31-JUL-2012 15:00
					EB1220315-001	**EB1220315-002**	**EB1220315-003**	**EB1220315-004**	**EB1220315-005**
EG020F: Dissolved Metals by ICP-MS - Continued									
Iron	7439-89-6	0.05	mg/L		**0.10**	<0.05	**0.17**	**0.11**	**0.23**

Analytical Results

Sub-Matrix: **LEACHATE** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 6	----	----	----	----
				Client sampling date / time: 31-JUL-2012 15:00	----	----	----	----
				EB1220315-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.43**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**628**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**67**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**108**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**175**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**79**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**35**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**129**	----	----	----	----
Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**1.07**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.008**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.010**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.020**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	**0.01**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **LEACHATE** (Matrix: **WATER**)				Client sample ID	**Styx KLC 6**	----	----	----	----
				Client sampling date / time	31-JUL-2012 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB1220315-006**	**----**	**----**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS - Continued									
Iron	7439-89-6	0.05	mg/L		**0.17**	----	----	----	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB1221413**	Page	: 1 of 6
Client	: **RGS ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR ALAN ROBERTSON	Contact	: Customer Services
Address	: 18 INGLIS STREET GRANGE QLD, AUSTRALIA 4051	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: alan@rgsenv.com	E-mail	: Brisbane.Enviro.Services@alsglobal.com
Telephone	: +61 07 3856 5591	Telephone	: +61 7 3243 7222
Facsimile	: +61 07 3856 5591	Facsimile	: +61 7 3243 7218
Project	: 111204 Styx River	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 14-AUG-2012
Sampler	: M Matheson	Issue Date	: 23-AUG-2012
Site	: Styx River		
		No. of samples received	: 6
Quote number	: BN/413/12	No. of samples analysed	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jonathon Angell	Inorganic Coordinator	Brisbane Inorganics
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
				Client sampling date / time	14-AUG-2012 15:00	14-AUG-2012 15:00	14-AUG-2012 15:00	14-AUG-2012 15:00	14-AUG-2012 15:00
					EB1221413-001	EB1221413-002	EB1221413-003	EB1221413-004	EB1221413-005
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		9.01	9.03	9.08	8.12	8.96
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		431	113	325	497	323
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		22	14	30	<1	16
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		78	41	100	52	60
Total Alkalinity as CaCO3	----	1	mg/L		100	55	130	52	76
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L		<1	<1	<1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		74	8	24	142	55
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L		13	1	8	18	12
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	<1	<1	<1	<1
Magnesium	7439-95-4	1	mg/L		<1	<1	<1	<1	<1
Sodium	7440-23-5	1	mg/L		89	26	75	105	69
Potassium	7440-09-7	1	mg/L		<1	<1	<1	<1	<1
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.48	2.86	0.52	0.19	0.81
Antimony	7440-36-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L		0.012	0.008	0.035	0.004	0.013
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	0.002	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	0.002	<0.001	<0.001	0.001
Cobalt	7440-48-4	0.001	mg/L		0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		0.006	0.017	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L		0.001	0.001	0.001	0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L		0.027	0.010	0.029	0.018	0.040
Selenium	7782-49-2	0.01	mg/L		0.02	<0.01	<0.01	0.02	0.02
Vanadium	7440-62-2	0.01	mg/L		<0.01	0.01	<0.01	<0.01	0.01
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	0.06

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID	Styx KLC 1	Styx KLC 2	Styx KLC 3	Styx KLC 4	Styx KLC 5
				Client sampling date / time	14-AUG-2012 15:00	14-AUG-2012 15:00	14-AUG-2012 15:00	14-AUG-2012 15:00	14-AUG-2012 15:00
					EB1221413-001	EB1221413-002	EB1221413-003	EB1221413-004	EB1221413-005
EG020F: Dissolved Metals by ICP-MS - Continued									
Iron	7439-89-6	0.05	mg/L		**0.08**	**0.43**	**0.07**	<0.05	**0.13**
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L		**3.91**	**1.29**	**3.32**	**4.50**	**3.00**
Total Cations	----	0.01	meq/L		**3.87**	**1.13**	**3.26**	**4.57**	**3.00**
Ionic Balance	----	0.01	%		**0.50**	----	**0.98**	**0.65**	**0.07**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Client sample ID: Styx KLC 6	----	----	----	----
				Client sampling date / time: 14-AUG-2012 15:00	----	----	----	----
				EB1221413-006	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**9.18**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**325**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**29**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**84**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**113**	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**37**	----	----	----	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1	mg/L	**7**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
Sodium	7440-23-5	1	mg/L	**73**	----	----	----	----
Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**1.12**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.024**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.011**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.049**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	**0.03**	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	**0.02**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)								
			Client sample ID	**Styx KLC 6**	----	----	----	----
			Client sampling date / time	14-AUG-2012 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**EB1221413-006**	**----**	**----**	**----**	**----**
EG020F: Dissolved Metals by ICP-MS - Continued								
Iron	7439-89-6	0.05	mg/L	**0.18**	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**3.23**	----	----	----	----
Total Cations	----	0.01	meq/L	**3.18**	----	----	----	----
Ionic Balance	----	0.01	%	**0.85**	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1820723**	Page	: 1 of 12
Client	: **ACIRL PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR GREG VANGESTEL	Contact	: Customer Services EB
Address	: 478 FREEMAN RD RICHLANDS QLD, AUSTRALIA 4077	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 38105216	Telephone	: +61-7-3243 7222
Project	: ----	Date Samples Received	: 27-Aug-2018 11:50
Order number	:	Date Analysis Commenced	: 28-Aug-2018
C-O-C number	: ----	Issue Date	: 31-Aug-2018 09:20
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 21		
No. of samples analysed	: 21		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA013 (ANC) Fizz Rating: 0- None; 1- Slight; 2- Moderate; 3- Strong; 4- Very Strong; 5- Lime.

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	A1 S1.50	A2 S1.50	A3 S1.50	A4 S1.50	A5 S1.50
			Client sampling date / time	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]
Compound	CAS Number	LOR	Unit	EB1820723-001	EB1820723-002	EB1820723-003	EB1820723-004	EB1820723-005
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	9.6	9.0	10.0	9.9	9.5
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-70.5	-113	-48.2	-237	-271
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	742	764	563	378	137
EA011: Net Acid Generation								
pH (OX)	----	0.1	pH Unit	8.8	8.9	8.3	10.3	9.2
NAG (pH 4.5)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
NAG (pH 7.0)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	91.0	131	58.6	248	287
ANC as CaCO3	----	0.1	% CaCO3	9.3	13.4	6.0	25.3	29.3
Fizz Rating	----	0	Fizz Unit	2	2	2	3	4
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.67	0.60	0.34	0.36	0.51
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1890	1440	2920	1250	1150
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	50	570	160	100	130
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	<2	2	3	<2	<2
Cobalt	7440-48-4	2	mg/kg	4	2	4	<2	<2
Copper	7440-50-8	5	mg/kg	16	12	25	8	6
Lead	7439-92-1	5	mg/kg	6	6	8	<5	6
Manganese	7439-96-5	5	mg/kg	108	185	40	135	177
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	<2	2	3	<2	<2
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	8	5	11	6	6
Zinc	7440-66-6	5	mg/kg	13	10	13	14	22
EG035T: Total Recoverable Mercury by FIMS								

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)				Client sample ID	A1 S1.50	A2 S1.50	A3 S1.50	A4 S1.50	A5 S1.50
				Client sampling date / time	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]
Compound	CAS Number	LOR	Unit		EB1820723-001	EB1820723-002	EB1820723-003	EB1820723-004	EB1820723-005
					Result	Result	Result	Result	Result
EG035T: Total Recoverable Mercury by FIMS - Continued									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	A6 S1.50	A7 S1.50	A8 S1.50	A9 S1.50	A10 S1.50
			Client sampling date / time	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]
Compound	CAS Number	LOR	Unit	EB1820723-006	EB1820723-007	EB1820723-008	EB1820723-009	EB1820723-010
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	9.3	9.0	10.1	10.0	10.0
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-323	-120	-61.8	-39.4	-85.2
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	566	521	690	423	470
EA011: Net Acid Generation								
pH (OX)	----	0.1	pH Unit	11.1	9.6	8.5	8.8	8.3
NAG (pH 4.5)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
NAG (pH 7.0)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	349	160	69.8	52.9	93.8
ANC as CaCO3	----	0.1	% CaCO3	35.6	16.4	7.1	5.4	9.6
Fizz Rating	----	0	Fizz Unit	4	3	2	2	2
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.86	1.30	0.26	0.44	0.28
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2260	1680	6060	2010	1580
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	570	190	130	70	120
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	5	2	6	<2	2
Cobalt	7440-48-4	2	mg/kg	3	3	9	<2	4
Copper	7440-50-8	5	mg/kg	17	15	27	15	14
Lead	7439-92-1	5	mg/kg	8	6	8	7	8
Manganese	7439-96-5	5	mg/kg	1070	442	103	530	54
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	3	4	5	3	3
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	10	15	15	9	15
Zinc	7440-66-6	5	mg/kg	47	21	47	48	32
EG035T: Total Recoverable Mercury by FIMS								

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)				Client sample ID	A6 S1.50	A7 S1.50	A8 S1.50	A9 S1.50	A10 S1.50
				Client sampling date / time	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]
Compound	CAS Number	LOR	Unit		EB1820723-006	EB1820723-007	EB1820723-008	EB1820723-009	EB1820723-010
					Result	Result	Result	Result	Result
EG035T: Total Recoverable Mercury by FIMS - Continued									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	**0.2**	**0.1**	**0.1**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	A11 S1.50	B1 S1.50	B2 S1.50	B3 S1.50	B4 S1.50
			Client sampling date / time	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]
Compound	CAS Number	LOR	Unit	EB1820723-011	EB1820723-012	EB1820723-013	EB1820723-014	EB1820723-015
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	10.0	10.0	10.0	9.3	10.1
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-51.4	-102	-29.8	-219	-26.0
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	401	437	699	548	626
EA011: Net Acid Generation								
pH (OX)	----	0.1	pH Unit	8.5	8.7	8.9	10.6	7.9
NAG (pH 4.5)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
NAG (pH 7.0)	----	0.1	kg H2SO4/t	<0.1	<0.1	<0.1	<0.1	<0.1
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	64.3	112	39.3	242	34.0
ANC as CaCO3	----	0.1	% CaCO3	6.6	11.4	4.0	24.6	3.5
Fizz Rating	----	0	Fizz Unit	2	2	1	3	1
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.42	0.34	0.31	0.76	0.26
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1520	1390	3410	2080	4180
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	70	30	580	350	180
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	<2	3	2	10	4
Cobalt	7440-48-4	2	mg/kg	4	4	3	7	5
Copper	7440-50-8	5	mg/kg	10	7	28	8	20
Lead	7439-92-1	5	mg/kg	8	<5	9	8	11
Manganese	7439-96-5	5	mg/kg	47	158	76	1210	62
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	3	2	4	4	5
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	12	6	10	44	14
Zinc	7440-66-6	5	mg/kg	10	10	10	28	66
EG035T: Total Recoverable Mercury by FIMS								

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)				Client sample ID	A11 S1.50	B1 S1.50	B2 S1.50	B3 S1.50	B4 S1.50
				Client sampling date / time	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]
Compound	CAS Number	LOR	Unit		EB1820723-011	EB1820723-012	EB1820723-013	EB1820723-014	EB1820723-015
					Result	Result	Result	Result	Result
EG035T: Total Recoverable Mercury by FIMS - Continued									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	**0.1**	**0.2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)			Client sample ID	C1	C2	C3	C4	C5
			Client sampling date / time	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]
Compound	CAS Number	LOR	Unit	EB1820723-016	EB1820723-017	EB1820723-018	EB1820723-019	EB1820723-020
				Result	Result	Result	Result	Result
EA002: pH 1:5 (Soils)								
pH Value	----	0.1	pH Unit	10.0	9.5	10.0	9.8	10.1
EA009: Nett Acid Production Potential								
Net Acid Production Potential	----	0.5	kg H2SO4/t	-16.7	4.2	-17.0	-15.5	-14.3
EA010: Conductivity (1:5)								
Electrical Conductivity @ 25°C	----	1	µS/cm	579	610	593	518	678
EA011: Net Acid Generation								
pH (OX)	----	0.1	pH Unit	8.2	3.3	8.7	7.4	7.2
NAG (pH 4.5)	----	0.1	kg H2SO4/t	<0.1	3.8	<0.1	<0.1	<0.1
NAG (pH 7.0)	----	0.1	kg H2SO4/t	<0.1	8.6	<0.1	<0.1	<0.1
EA013: Acid Neutralising Capacity								
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t	19.8	11.4	21.3	20.4	17.4
ANC as CaCO3	----	0.1	% CaCO3	2.0	1.2	2.2	2.1	1.8
Fizz Rating	----	0	Fizz Unit	1	1	1	1	1
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	0.10	0.51	0.14	0.16	0.10
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	6240	4860	4530	8090	6850
Arsenic	7440-38-2	5	mg/kg	6	<5	<5	<5	<5
Barium	7440-39-3	10	mg/kg	80	230	150	310	170
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	5	4	5	10	7
Cobalt	7440-48-4	2	mg/kg	9	13	20	11	10
Copper	7440-50-8	5	mg/kg	28	31	30	37	38
Lead	7439-92-1	5	mg/kg	12	17	14	14	15
Manganese	7439-96-5	5	mg/kg	54	38	66	170	46
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	9	14	19	14	10
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	13	14	15	20	18
Zinc	7440-66-6	5	mg/kg	76	99	69	80	92
EG035T: Total Recoverable Mercury by FIMS								

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)				Client sample ID	C1	C2	C3	C4	C5
				Client sampling date / time	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]	[27-Aug-2018]
Compound	CAS Number	LOR	Unit		EB1820723-016	EB1820723-017	EB1820723-018	EB1820723-019	EB1820723-020
					Result	Result	Result	Result	Result
EG035T: Total Recoverable Mercury by FIMS - Continued									
Mercury	7439-97-6	0.1	mg/kg		**0.2**	**0.3**	**0.2**	**0.1**	**0.2**

Analytical Results

Sub-Matrix: PULP (Matrix: SOIL)				Client sample ID	C6	----	----	----	----
				Client sampling date / time	[27-Aug-2018]	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1820723-021	--------	--------	--------	--------
					Result	----	----	----	----
EA002: pH 1:5 (Soils)									
pH Value	----	0.1	pH Unit		**9.7**	----	----	----	----
EA009: Nett Acid Production Potential									
Net Acid Production Potential	----	0.5	kg H2SO4/t		**-6.9**	----	----	----	----
EA010: Conductivity (1:5)									
Electrical Conductivity @ 25°C	----	1	µS/cm		**393**	----	----	----	----
EA011: Net Acid Generation									
pH (OX)	----	0.1	pH Unit		**7.8**	----	----	----	----
NAG (pH 4.5)	----	0.1	kg H2SO4/t		<0.1	----	----	----	----
NAG (pH 7.0)	----	0.1	kg H2SO4/t		<0.1	----	----	----	----
EA013: Acid Neutralising Capacity									
ANC as H2SO4	----	0.5	kg H2SO4 equiv./t		**15.5**	----	----	----	----
ANC as CaCO3	----	0.1	% CaCO3		**1.6**	----	----	----	----
Fizz Rating	----	0	Fizz Unit		**1**	----	----	----	----
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.28**	----	----	----	----
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		**2540**	----	----	----	----
Arsenic	7440-38-2	5	mg/kg		<5	----	----	----	----
Barium	7440-39-3	10	mg/kg		**120**	----	----	----	----
Beryllium	7440-41-7	1	mg/kg		<1	----	----	----	----
Boron	7440-42-8	50	mg/kg		<50	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		**4**	----	----	----	----
Cobalt	7440-48-4	2	mg/kg		**4**	----	----	----	----
Copper	7440-50-8	5	mg/kg		**25**	----	----	----	----
Lead	7439-92-1	5	mg/kg		**8**	----	----	----	----
Manganese	7439-96-5	5	mg/kg		**773**	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg		**4**	----	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	----	----	----	----
Vanadium	7440-62-2	5	mg/kg		**11**	----	----	----	----
Zinc	7440-66-6	5	mg/kg		**41**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									

Analytical Results

Sub-Matrix: **PULP** (Matrix: **SOIL**)				Client sample ID	**C6**	----	----	----	----
				Client sampling date / time	[27-Aug-2018]	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB1820723-021**	--------	--------	--------	--------
					Result	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS - Continued									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----

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