Rock Management Plan

(Version 2.0)

October 2023

KENNADY NORTH PROJECT

SOUTH MACKENZIE DISTRICT, NT

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Summary

This Plan describes how different types of rock will be identified, used, and managed during construction, operations, and closure at the Kennady North Project.

Revision History

Advanced Exploration Project

- Version 1.0 of the Rock Management Plan was drafted in August 2016 for submission to the Mackenzie Valley Land and Water Board (MVLWB) in support of Kennady Diamonds Inc.'s (KDI's) application for advanced exploration activities.
- Version 1.1 was updated to add information regarding the geochemical characterization of quarry and decline rock. This version was submitted in September 2016 to the MVLWB in support of KDI's application for Advanced Exploration Project activities.

Kennady North Project

- Version 2.0 of Rock Management Plan (this version) is being submitted with the applications to consolidate AEP and REP activities under a single Kennady North Project, and has been updated in consideration of the following:
    - Recently acquired geochemical baseline data collection activities;
    - Inclusion of trenching activities, per the MVLWB Reasons for Decision on KDI's Regional Exploration Project Water Licence and Land Use Permit application on December 23rd, 2022;
    - information that is duplicated in other Management Plans was removed.

This plan will be revised again 90 days before and prior to construction of a quarry, a decline, or trenching per the requirements of Type B Water Licence MV2013L2-0005 and Type B Water Licence MV2022L2-0007.

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Abbreviations, Glossary, & Acronyms

Term	Meaning
AP	Acid Potential
ARD	Acid Rock Drainage
Company	Kennady Diamonds Inc.
Foundational Exploration	includes prospecting, bedrock and surficial mapping, geological, geophysical, and geochemical surveys, and diamond drilling, small- and large- reverse circulation drilling, and trenching to delineate kimberlite targets and help determine economic grade
GKJV	Gahcho Kué Mine Joint Venture
ha	hectare
KDI	Kennady Diamonds Inc., the applicant, the proponent
km	kilometer
m	metre
Ma	million years ago
Mitigation measure	An action taken to prevent or minimize a negative impact
MPVD	Mountain Province Diamonds Inc.
MVLWB	Mackenzie Valley Land and Water Board
NP	Neutralization Potential
OHWM	Ordinary High Water Mark
PAG	Potentially Acid Generating
PK	Processed kimberlite
Plan	Rock Management Plan
Project	Kennady North Project and all of its components
Quarry	An open pit blasted into the surface of bedrock to obtain aggregate for site Construction, also to be used as a Sump for deposit of Processed Kimberlite, Wastewater and Waste Rock, as described in the Quarry Management Plan in the Complete Application. "
RC	reverse circulation
t	Tonne

1 INTRODUCTION

Kennady Diamonds Inc. (KDI or the Company) is currently exploring for diamondiferous kimberlites in the Kennady North area, located in the Northwest Territories approximately 280 kilometers (km) east-northeast of Yellowknife, immediately adjacent to the Gahcho Kué Mine (Figure 1). KDI's interests in the Kennady North area consist of 99 mineral claims and 30 mineral leases totalling ~113,437 hectares (ha) of land (Figure 2). KDI is a wholly owned subsidiary of Mountain Province Diamonds Inc. (MPVD). MPVD holds a 49% interest in the Gahcho Kué Mine Joint Venture (GKJV) with De Beers Group, who holds 51% interest in the GKJV and is the operating partner.

The Rock Management Plan (the Plan) summarizes how different types of rock will be sourced, characterized, used, and stored on site during operations. Considerations for the management of processed kimberlite (PK) during operations are also included in this Plan.

1.1 Project Description

The scope of the Kennady North Project (KNP) includes:

- Construction, operation, maintenance, and Reclamation of exploration camps; and
- Water withdrawal for camp use, drilling, winter road and pad Construction and maintenance, and dust suppression;
- Deposit of treated Sewage and Greywater;
- Mineral exploration including diamond drilling, large diameter diamond drilling, and trenching;
- Deposit of Drill and core Cuttings into Sumps;
- Deposit of Processed Kimberlite and Wastewater into a Sump; and
- Use and storage of explosives;
- Use of equipment, vehicles and machinery;
- Fuel storage and use;
- Quarrying;
- Construction, operation, maintenance, and Reclamation of a sewage treatment facility, quarrying, up to two Declines, all-season site roads, an all-season airstrip, multi-purpose laydown areas, and a Bulk Sample Process Plant.
- Management of Potentially Acid Generating Rock.
- Discharge from Secondary Containment into the Receiving Environment; and
- Progressive Reclamation and associated Closure and Reclamation activities.

1.1.1 Foundational Exploration

Currently, Kennady North Project exploration activities consist of conducting foundational exploration assessment work on claims and mineral leases held by the Company, including prospecting, bedrock and surficial mapping, geological, geophysical, and geochemical surveys, diamond drilling, small- and large- reverse circulation drilling, and trenching to delineate kimberlite targets and to help determine economic grade. Samples are sorted and sent off site for analysis or processing. At its maximum scope, foundational exploration drilling activities may consist of a combination of up to seven (7) drills of any type (i.e., five (5) diamond or small reverse circulation (RC) drills and two (2) large RC drills) in use at any one time.

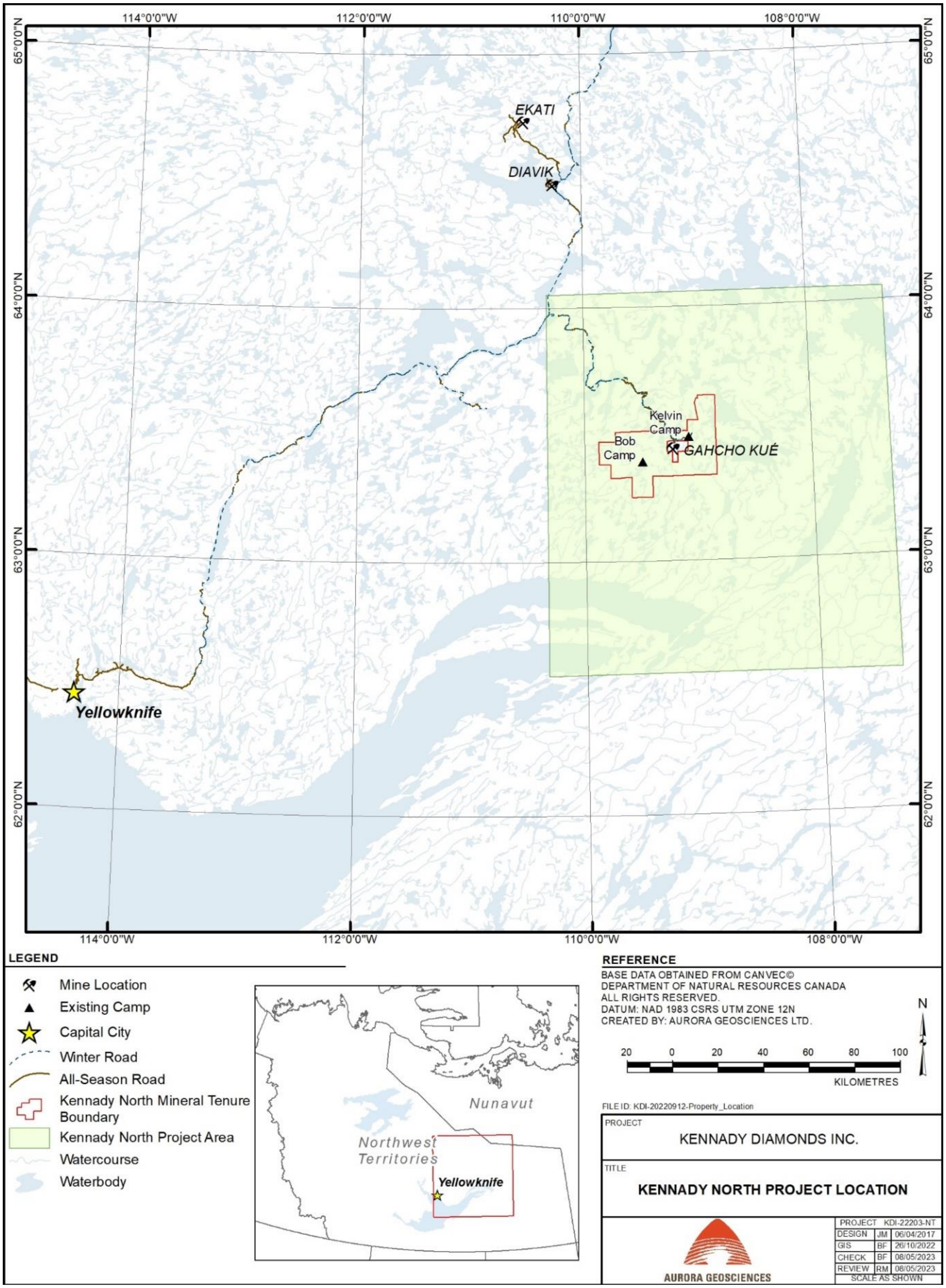


Figure 1: Kennady North Project Location

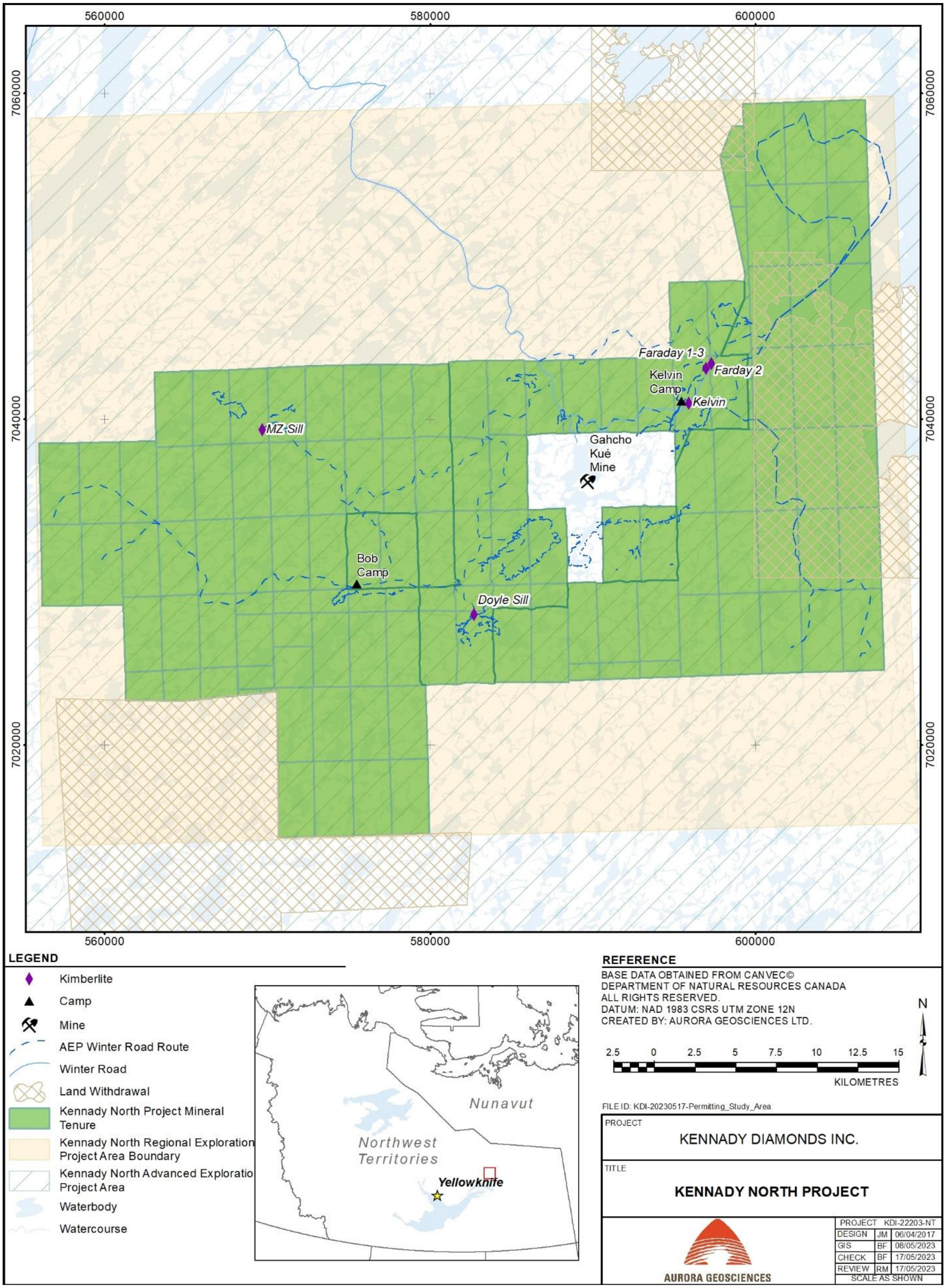


Figure 2: Kennady North Project

Exploration activities are conducted from the existing Bob and/or Kelvin camps, which host approximately 50 to 150 people, typically operate up to 10 months of the year, and are accessible by air and seasonal ice road. Winter access occurs either by air from Yellowknife, Bob Camp, or Kelvin Camp, with drill mobilization and demobilization via the existing Tibbitt to Contwoyto Winter Road, the Gahcho Kué spur road, and spur roads to Bob and Kelvin camps. Additional winter trails, including ice bridges and roads, may be used to move heavy- and light-duty vehicles, equipment, and personnel around the Project site in the winter. Summer access occurs by fixed wing on floats or helicopter from Yellowknife to Bob or Kelvin camps.

A small number of remote fuel caches are in place to support drilling and helicopter activity, with fuel stored in drums or equivalent. Temporary, remote fuel caches may also be established in areas proximal to active drilling areas. Field sampling and drilling sites are progressively reclaimed.

1.1.2 Advanced Exploration

In September 2016, KDI submitted Land Use Permit and Water Licence applications to the MVLWB to obtain authorizations for advanced exploration activities, which focus on obtaining a larger bulk kimberlite sample that can be used to assess the economic value of the mineral reserve (see Kennady Diamonds - Advanced Exploration Project Description[1]). The Advanced Exploration activities that were additionally authorized in 2016 included the following:

- increase in extraction from 1,200 to 5,000 t/a bulk sample;
- construction and operation of an underground decline to access the Kelvin and Faraday kimberlite deposits for bulk sampling;
- construction and operation of a multi-purpose laydown and camp area (approximately 5 ha);
- construction and operation of a pioneer all-season airstrip (approximately 1,650 m by 45 m) to accommodate larger aircraft for workers and resupply;
- construction and operation of limited all-season roads linking the winter road to the laydown, airstrip, declines, dock, and drilling locations at the Faraday and Kelvin deposits;
- construction and operation of a new 140-person mobile camp on the laydown area and consolidation of existing Kelvin Camp modules with this new camp (Kelvin Camp Expansion);
- quarrying and/or the use of cut and fill to obtain material for roads, laydown area and airstrip as necessary;
- increased use of explosives (including mixing and storage) for quarrying and construction of the decline;
- installation and operation of a portable Bulk Sample Processing Plant (< 100 t/day); and
- increase to the size and quantity of various types of equipment (e.g., trucks, loaders, underground equipment) as well as the amount of fuel storage allowed on site to accommodate the proposed activities.

Advanced exploration activities have not yet commenced but will be required to advance mine planning for known kimberlites in the coming years.

[1] https://registry.mvlwb.ca/Documents/MV2016C0030/MV2016C0030%20MV2013L2-0005%20-%20KDI%20-%20Project%20Description.pdf

1.2 Plan Objective and Scope

This Plan addresses testing, use, and storage of rock sourced from the quarry, the decline, and the ore bodies. The overall objective of this Plan is to minimize the potential for environmental effects through construction, operations, and closure by appropriately characterizing and managing the various types of rock on site. Some rock has the potential to generate acid when exposed to air and water and may contain metals that could leach if they come into contact with water. The development has been planned so that only rock with a low potential for acid generation and metal leaching will be used on site for surface development purposes and mitigation plans are in place in the event that rock of poor quality is encountered.

1.3 Related Management Plans

Other management plans prepared for the Project that are related to this Plan include:

- Quarry Management Plan;
- Waste Management Plan; and
- Closure and Reclamation Plan.

2 SITE GEOLOGY

The Project occurs in the Taiga Shield Ecozone, within the Mackay Upland High Subarctic Ecoregion (Ecosystem Classification Group 2008). Vegetation in the ecoregion is dominated by shrub tundra, which is characterized by a cover of dwarf birch, mountain cranberry, Labrador tea, red bearberry, crowberry, and lichens. Stunted black spruce grows in small clumps in sheltered locales and along lake shores. Small outwash terraces and eskers are common landforms throughout.

This ecoregion is characterized by level to gently rolling terrain with bedrock exposures common throughout. Thin, discontinuous covers of mineral soil, organic materials and glacial drift lie on top of shallowly buried bedrock.

The geological characteristics of rock types associated with construction and operations have been summarized in Sections 2.1 to 2.3. The geochemistry of different types of rock are described in Sections 4 and 5.

2.1 Country Rock

The Kennady North property occupies part of the southeastern Slave Geological Province. This is an Archean cratonic terrane that ranges in age from 4.03 billion years (Ga) to 2.55 Ga (Bleeker *et al.* 1999). The Kennady North Project area is composed of predominantly granodiorite intrusions, high metamorphic grade gneisses and migmatites, and accompanying volcanic and sedimentary supracrustal rocks typical of greenstone belts. A detailed analysis of the country rock geology can be found in Section 1.2.2 of Appendix B.

2.2 Overburden

Overburden material, mainly glacial drift, is extensive in places. Outcrop exposure may be as little as 5% of an area, however this can vary widely over the property. Outcrops are interspersed with numerous small ponds, lakes, and marshy depressions. Elongate, north–northeast trending outcrop expressions vary in height from a few metres up to 20 m. Locally, topographic relief may vary between 40 to 50 m.

2.3 Kimberlite

As shown in Figure 2, at present the Project hosts five known kimberlites: Kelvin, Faraday 2, Faraday 1-3, MZ, and Doyle. Kimberlite emplacement in the area is believed to have occurred approximately 542 million years ago (Ma) during the Cambrian geological period. 87Rb-87Sr isotopic age dating techniques indicate that the main 5034 kimberlite pipe in the Gahcho Kué cluster is 542.2 +/- 2.6 Ma in age (Heaman *et al.* 2003). Erosional processes subsequent to emplacement have stripped away the original surface crater expressions and subsurface diatreme structures down to the root zones, preserving the hypabyssal feeder dyke systems and only the lower portions of the diatreme zones remain.

Kimberlite ore consists primarily of kimberlite material typically pervasively altered to clay minerals, with trace amounts of chlorite, talc, and phlogopite, and a variable amount of country rock fragments. Olivine is the most abundant mineral present in all kimberlites, with minerals such as serpentine, calcite, monticellite, ilmenite and spinel present in the groundmass. Sulphide minerals such as pyrite, chalcopyrite, and pyrrhotite are rare.

3 GEOCHEMICAL CRITERIA FOR ROCK USE AND MANAGEMENT

KDI has committed to minimizing the environmental effects of the Project by ensuring that country rock that is potentially acid-generating (PAG) will not be used on-site for construction of infrastructure such as the all-season roads, airstrip, or laydown pads. The geochemical criterion for country rock classification is based on the ratio of neutralization potential (NP) to acid potential (AP) using geochemical analyses described in Appendix B (e.g., sulphide content, calcium carbonate content). A ratio of NP/AP less than 1 is considered PAG, a ratio between 1 and 3 is considered uncertain, and a ratio greater than 3 is considered non-PAG.

Project-related earthworks will make use of country rock that is blasted and/or crushed onsite. Borrow sources include two potential quarry locations and localized cut-and-fill activities. The use or storage of extracted country rock on-site will be based on geochemical classification as follows:

- Non-PAG rock will be used to construct site infrastructure including the airstrip, all-season roads, and laydown pads.
- PAG rock will be avoided to the extent practical or segregated and stored until closure either in the perimeter of the quarry or on constructed laydown areas. If the Project does not proceed to mining, the PAG rock will be sequestered to avoid long-term exposure to air and water using methods described in the Project's Closure and Reclamation Plan.
- Rock with an NP/AP ratio between 1 and 3 would be subject to additional characterization or would be treated as PAG rock.

4 COUNTRY ROCK MANAGEMENT BY SOURCE

4.1 Quarry

An on-site quarry will provide the crushed rock necessary to build the airstrip, all-season roads, and laydown pads. In the summer of 2016, a study was conducted to identify potential quarry sites containing rock that would be suitable for use in construction; the results of this study are presented in Appendix B.

The study's field survey identified five potential quarry locations based on the following criteria for acceptability:

- located in granitoid rocks (to avoid rocks that have the potential for ARD);
- avoided faults which may act as pathways for fluid migration/mineralization, contained surface outcrops, and had minimal overburden;
- suitable size; and
- located a minimum of 100 m from the Ordinary High Water Mark (OHWM) of any waterbody.

Samples of rock from these five locations were taken and subjected to acid potential and metal leaching analyses using static testing methods. The rock type at all five potential quarry locations was shown to be granite with negligible potential to generate acid. Based on the results of the 2016 study, KDI selected a preferred primary and secondary quarry sites; these locations are shown on the map in Appendix A. It is anticipated that a single quarry will provide sufficient construction materials for the Project. A second quarry location has been identified in case unexpected conditions are encountered in the primary quarry that make it difficult to extract a sufficient quantity of suitable material for site development.

In addition to providing borrow sources for construction, the quarry may be used during operations and closure as a storage location for PK and/or other rock as described in the Project's Quarry Management Plan. An overview of quarry closure is provided in the Closure and Reclamation Plan.

4.1.1 Geochemistry

Geochemical tests of representative rock samples taken at the potential quarry sites indicates the rock is granitic with a total sulphur content ranging from <0.01% to 0.04%. The measured neutralization potential of the rock samples ranged from 3 to 11 kilograms calcium carbonate/tonne (kg $CaCO_3$/t). The NP/AP ratio of the samples ranged from 8.8 to 9.6 which, based on the geochemical criteria given in Section 3, means that the rock from all locations can be classified as non-PAG.

Metal concentrations in the quarry rock samples are reported in Table 2 of Appendix B. A comparison of the metal concentrations in the granitic quarry rock to average granitic rock showed that, overall, metals are not elevated in the quarry samples. Based on the metal concentrations and the circumneutral pH conditions expected during weathering of the granite, the metal leaching potential of the quarry rock is considered to be low.

A full description of the geochemical testing procedures and results for quarry rock samples can be found in Appendix B. Overall, the granite in the potential quarry locations is considered suitable for construction and requires no special management procedures for the prevention of acid rock drainage and metal leaching.

4.1.2 Geochemical Testing and Monitoring

The proposed quarry locations lie within an area of granitoid rock west of Kelvin Lake (see Figure 1 of Appendix B). Geochemical testing has confirmed that rock from the proposed quarry locations will have negligible potential for metal leaching or acid rock drainage. Therefore, extensive testing of the rock during excavation or monitoring after placement of the rock should not be necessary. Rock characterization during the development of the quarry will include visual inspection of the blasted rock during excavation to confirm that sulphides are not present (if < 0.5% rock would be deemed suitable for construction), and limited sampling and testing to verify the geochemical characteristics of the quarry rock. If visible sulphides are less than 0.5 % the rock may be used for construction. Additional details about sample collection and analysis as well as monitoring will be provided in an update to this Plan prior to quarry development.

4.2 Decline

Materials for the bulk sample processing plant will be sourced primarily from underground. An approximately 4 X 4 m opening with a ~15% decline will be developed to access the Faraday and/or other deposits from underground. Decline development involves drilling and blasting using specialized underground mining equipment and will be performed by experienced operators. Thermistor data from boreholes in the area has shown that the decline will be constructed primarily within permafrost and that groundwater will likely not be encountered during bulk sampling operations.

Drilling and blasting will exhume ~30,000 cubic metres (m^3) of rock. Subject to geochemical testing (as per Section 4.2.2) the rock will be classified as non-PAG or PAG. Non-PAG rock will be loaded, hauled and placed on surface for use in site development. PAG rock will be stored on an aggregate pad near the decline for the purpose of refilling the decline or would be relocated to the quarry for site closure, as described in the Closure and Reclamation Plan.

4.2.1 Geochemistry

Samples from the area of the proposed decline were collected and sent for analysis to evaluate the acid/base and metal leaching characteristics of the rock. Preliminary results indicated that some samples of country rock from the decline area may contain PAG rock (Appendix B). Additional waste rock characterization was undertaken to better understand geochemistry in the area (Appendix D). Waste rock samples have also been submitted for kinetic testing to better understand the potential for the development of acidic conditions and to quantify metal leaching potential. Kinetic testing of the rock will also provide insight into how long PAG waste rock may be stored on surface prior to encapsulation or saturation with water. Kinetic testing is ongoing at this time. This Plan will be updated with the results of kinetic testing prior to the development of the Decline.

4.2.2 Geochemical Testing and Monitoring

Geochemical study information is presented in Appendix B and Appendix D. Geochemical data studies are ongoing, and additional testing of rock during decline development will be undertaken to confirm the geochemical predictions. More details about sample collection and analysis as well as monitoring will be provided in an update to this Plan prior to the initiation of decline development.

5 BULK SAMPLE PROCESSING AND MANAGEMENT

The Advanced Exploration program intends to process up to 5,000 tonnes/yr of kimberlite through a portable bulk sample processing plant on-site. PK will be deposited into the quarry sump. Water collected in the quarry sump will be used to supply the portable process plant in a closed loop such that process water will not need to be discharged to the receiving environment. Further information on the management of the quarry sump can be found in the Waste Management Plan.

5.1 Geochemistry of Processed Kimberlite

Samples of PK from the Kelvin and Faraday area are subject to ongoing geochemical analysis. Results from the analysis are presented in Appendix D.

5.2 Geochemical Monitoring and Testing

Kimberlite and process water will be sampled during processing in the portable processing plant. Information from this analysis will inform a Feasibility Study in future should KDI's advanced exploration activities provide encouraging results. These same results will inform closure options related to the storage and monitoring of the PK and process water.

5.3 Other Earthworks

Trenching involves removing overburden to expose bedrock which is then sampled and sent off-site for further analysis. Typically, the top layer of overburden is removed mechanically (e.g., using a backhoe or dozer) and the underlying host rock, if present, is then blasted to expose the material to be sampled. Blasting produces small quantities of waste rock that are placed within the disturbed area, which slopes downward toward the area from which the rock is exposed to form a shallow crater that is ringed by the top layer of overburden. The small quantity of waste rock produced through trenching but not removed for testing is retained within the disturbed area until sampling is complete, after which it is returned to the deepest part of the area and covered with overburden.

Potential effects of trenching are small in scale, temporary, and can be effectively mitigated as follows:

- Minimize the footprint of the disturbed area;
- Minimize the use of explosives;
- Ensure all trenching activity is >100m from the Ordinary High Water Mark of the nearest waterbody or where there is an uphill slope between the trench and a waterbody, as approved by an Inspector;
- Ensure all waste rock is retained within the disturbed area and that any runoff will flow into and be contained by the trench and no seepage will occur; and
- When sampling is complete, place any remaining rock into the centre (i.e., deepest part) of the trench followed by any waste rock and cover with the top layer of overburden that was removed previously.

6 REPORTING

A summary of rock management activities will be reported annually to the MVLWB in accordance with the requirements outlined in the Water Licence, and will include information on:

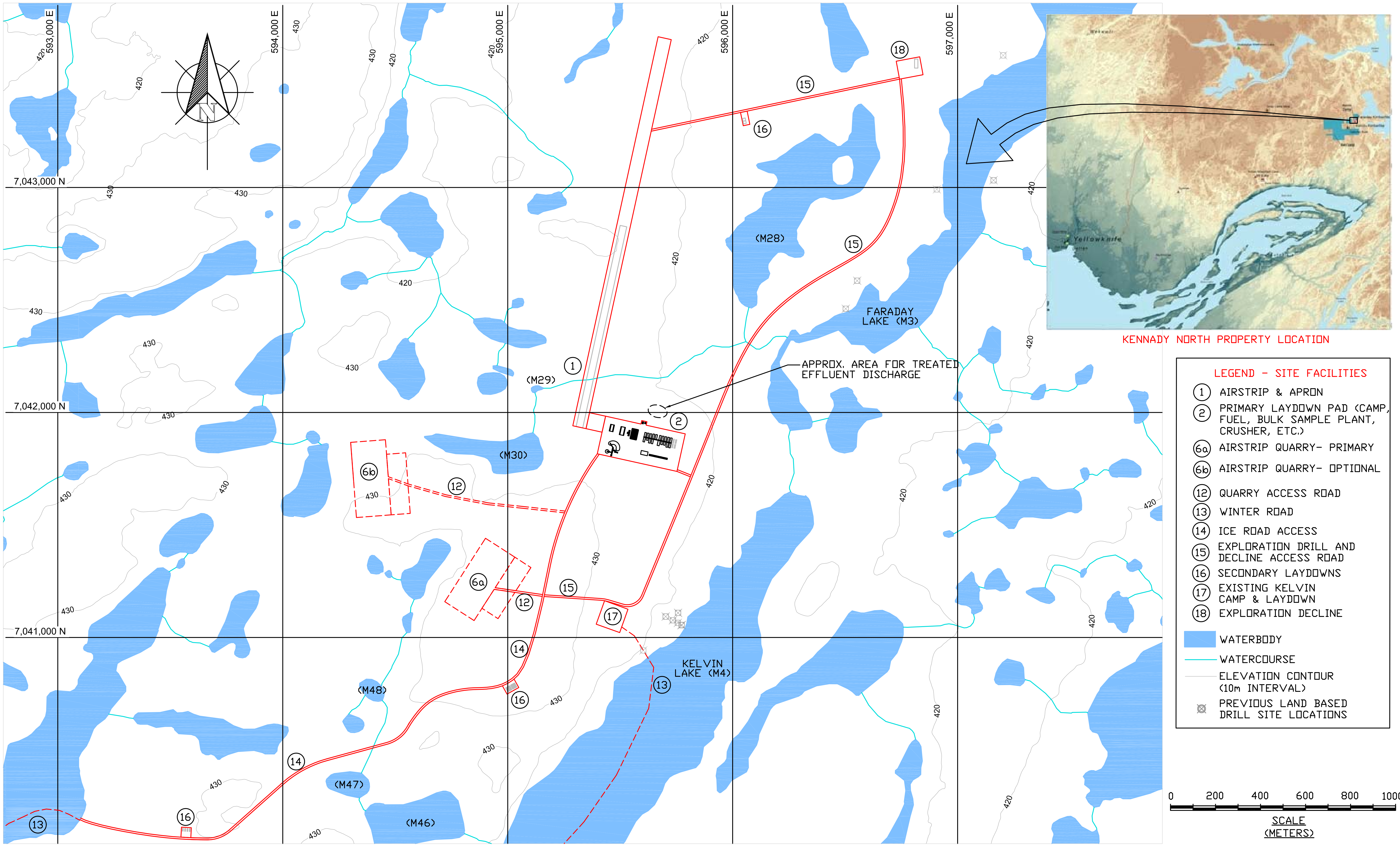
- A summary of revisions to this Plan
- approved updates or changes to the processes for characterizing and managing Acid Rock Drainage and/or Metal Leaching;
- Monthly and annual quantities and geochemical characteristics of all PAG and Metal Leaching Waste Rock, Quarry Rock, Processed Kimberlite, Soils and any other Mineral Materials deposited/managed, identified by location on a map;
- A summary of verification test work completed on constructed infrastructure;
- A summary and interpretation of monitoring results, including any Action Level exceedances; and
- A description of actions taken in response to any Action Level exceedances.

7 References

Bleeker, W., Ketchum, J.W.F. and Davis, W.J., 1999. The Central Slave Basement Complex, Part I: Its structural topology and autochthonous cover: Canadian Journal of Earth Sciences, vol. 36, p.1083-1109.

Heaman, L.M., Kjarsgaard, B. & Creaser, R.A., 2003. The timing of kimberlite magmatism in North America: Implications for global kimberlite genesis and diamond exploration. *Lithos.* Vol. 71, p. 153-184.

APPENDIX A : Advanced Exploration Schematic/Site Map of Kelvin and Faraday Kimberlite Areas



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						D	ISSUED FOR PERMIT APPLICATION	20/09/16	C.K.

SECTION:
SCALE:
DESIGN. BY: C.Goldschmidt 20/09/16
DRAWN BY: B.Wong 20/09/16
CHECK. BY
APP. BY:

Kennady Diamonds Inc.
Kennady North Exploration

JDS ENERGY & MINING INC.

ADVANCED EXPLORATION PROGRAM
PRELIMINARY SITE LAYOUT

PROJECT NUMBER	DRAWING NUMBER	REVISION No.
KENKNP-06E	AEP-SITE	D

APPENDIX B: Geochemical Characterization of Rock from Faraday Decline and Quarry Locations – September 2016

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Memo

To:	Chris Hrkac, Aurora Geosciences	**Client:**	Aurora Geosciences
From:	Kirsty Ketchum, Kelly Sexsmith	**Project No:**	2CA039.001
Cc:	Kathy Racher, KRacher Consulting Calvin Goldschmidt, JDS Energy and Mining Inc.	**Date:**	September 19, 2016
Subject:	Geochemical characterization of waste rock from the Faraday decline and quarry rock from infrastructure development		

1 Introduction

1.1 Scope of Work

SRK Consulting Canada Inc. (SRK) was retained by Aurora Geosciences to characterize the metal leaching and acid rock drainage (ML/ARD) potential of quarry rock and waste rock associated with infrastructure development and advanced exploration activities at the Kennady North exploration project (the Project), NT. The characterization work has been conducted to support Kennady Diamonds Inc. application for a Type B water licence to the Mackenzie Valley Land and Water Board (MVLWB).

Following a review of the available geological and geochemical information a set of samples was collected from the Project site for static testing. The results are provided in this memo along with an evaluation of the suitability of the material for construction, and recommendations for management of the material.

1.2 Background Information

1.2.1 Project Information and Development Quantities

The Kennady North exploration Project is located 280 km ENE of Yellowknife, close to the Gahcho Kué Diamond Mine. Exploration has been focussed on four areas with diamond-bearing kimberlites including the Kelvin kimberlite adjacent to Kelvin Camp and the Faraday kimberlites to the NE of Kelvin Camp (Figure 1). As part of advanced exploration activities, KDI plans to quarry rock to obtain fill for developing infrastructure at Kelvin Camp (e.g. roads, airstrip), and develop an underground decline to access the Faraday kimberlite bodies for bulk sampling.

Approximately 400,000 bench cubic metres of fill are required from the quarry excavation for infrastructure development.

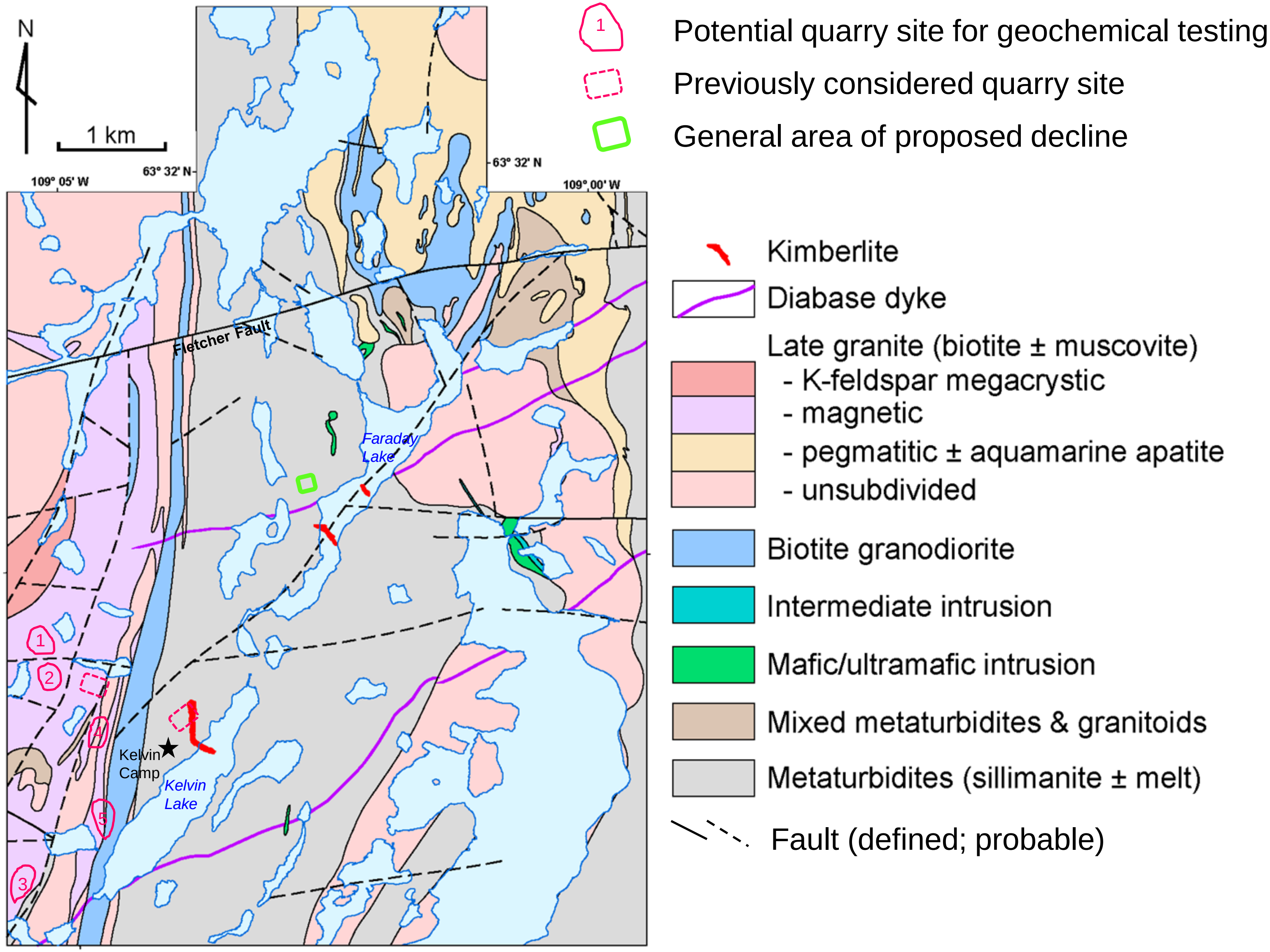

Figure 1. Simplified geology of the Kelvin-Faraday area from Stubley Geoscience Ltd (2015). Also shown are the current location of the Kelvin Camp, the approximate location of potential quarry sites and the general area of the proposed exploration decline.

The decline will be approximately 4 m by 4 m with a 15° slope, reaching a depth of 150 m and a length of approximately 1.5 km. Approximately 30,000 cubic meters of rock will be removed. The exact location of the decline is still to be determined based on the results of current exploration activities; however, the portal will likely be north of the southern end of Faraday Lake with the decline extending to the NE (Figure 1).

1.2.2 Geology

Stubley Geoscience Ltd and Aurora Geosciences conducted bedrock geological mapping at 1:5,000 scale of the Kelvin-Faraday area during 2015. This section is a brief summary of the key map units (relevant to the infrastructure development) from the resulting geological map and report (Figure 1; Stubley and Gibson 2015; Stubley Geoscience Ltd. 2015).

The Kelvin-Faraday kimberlites are hosted by metamorphosed clastic sedimentary rocks that originally comprised a turbidite sequence of greywacke-mudstones[1]. The sequence is widespread in the NWT comprising more than 25% of the exposed Slave Craton. In the Kelvin-Faraday area, the metaturbidite greywacke-mudstone sequence underwent recrystallization at high temperature and pressure to develop gneissic fabrics; and variable partial melting to develop migmatites containing segregations of light (leucocratic) and dark (melanocratic) minerals on a cm-scale. These migmatites contain complex irregular folded textures and are thought to represent the mudstone portions of the turbidites. The migmatites are interlayered with more homogenous un-melted components that are thought to represent greywacke portions of the turbidites. Original sedimentary features such as bedding are locally preserved. The metaturbidites are biotite-rich with sillimanite, quartz, feldspar, muscovite and garnet.

To the west of the metaturbidite sequence intersecting the south end of Kelvin Lake are granitoid rocks, which in the map area trend north-south and include host rocks to the Gahcho Kué Diamond Mine several km to the south. The granitoid rocks include grey-white granodiorite dominated by quartz, plagioclase, and biotite; and pink granite dominated by quartz, alkali feldspar, plagioclase feldspar and biotite. Both granodiorite and granite have been subdivided into non-magnetic and magnetic varieties.

The metaturbidite sequence and graniotoid rocks are cut by numerous defined and probable faults. The most significant fault in the area (Fletcher Fault) is associated with quartz veining and local occurrences of hematite and pyrite.

1.2.3 Geochemistry

As part of development of the Gahcho Kué project, granitoid rocks from Kennady Lake several kilometers to the south of the Kelvin-Faraday area were characterized for ML/ARD potential (Golder 2014). The granitoid rocks are continuous between the two areas and therefore may have similar ML/ARD potential. Golder (2014) summarized acid base accounting (ABA) data from 1242 samples of predominantly granite (1189 samples) with a small proportion of samples of granodiorite and diabase. Sulphide content ranged from <0.01 to 2.2% with a median of 0.01%

[1] By definition, greywackes and mudstones differ with respect to their grain size. Mudstones are dominated by clay-sized grains and typically contain clay minerals, organic matter, iron oxides and hydroxides. Greywackes are dominated by sand-sized grains, however they contain greater than 15% fine-grained matrix. Greywackes are typically dominated by quartz-feldspathic fragments, in a clay-rich matrix.

and acid rock drainage (ARD) potential was generally low with 17% of samples classified as potentially acid generating (PAG) or uncertain potential to generate acid based on NP/AP ratio, and 83% of samples classified as not potentially acid generating. Based on kinetic testing, ML potential was low from non-PAG rock and in most samples sulphide minerals were predicted to be depleted before neutralizing minerals. One sample of granite with 0.1% sulphide and uncertain potential for ARD (based on NP/AP=2.4) generated acidic leachate and higher rates of metal leaching during kinetic testing.

2 Methods

2.1 Selection of Potential Quarry Sites

SRK reviewed the available geology and geochemistry information (which has been summarized above in Section 1.2), and information on overburden depth, outcrop locations, and aerial photographs. In addition, Kirsty Ketchum had previously examined drill core in metaturbidites in the vicinity of the proposed Kelvin pit, particularly for sulphide and carbonate content. Based on this information, SRK determined that the granitoid rocks to the west of the Kelvin-Faraday area were likely to have lower potential for ARD than the metaturbidite sequence and would therefore be preferable for construction material. Overburden depth was also thinner above the granitoid rocks; therefore, excavating the quarry in granitoid rocks would greatly reduce the volume of overburden to be removed compared to excavating a quarry in metaturbidites. SRK subsequently selected five potential quarry sites for sampling that met the following criteria:

- Were located in granitoid rocks, avoiding metaturbidites;
- Avoided faults which may have acted as pathways for fluid migration/mineralization;
- Contained surface outcrop and minimal overburden;
- Were a suitable size; and
- Were a minimum of 100 m from waterbodies.

The five potential quarry sites selected for geochemical testing are outlined on Figure 1. Two quarry sites which had been considered previously for the Project (Figure 1) were rejected because they did not meet all of the first three criteria.

2.2 Selection of Drill Core to Represent the Decline

Using the approximate location of the decline and its proposed dimensions, superimposed on the available drill holes, SRK selected a drill hole and approximate depth which would represent the metaturbidite sequence in the vicinity of the decline.

2.3 Sampling

Kirsty Ketchum visited the Kelvin camp on July 13 and 14, 2016 to conduct sampling for geochemical testing of quarry and decline rock.

2.3.1 Quarry

High resolution Lidar data from the five potential quarry sites was used to identify outcrops to inspect and sample at each site. Outcrop was generally limited, but two locations were identified for examination at each potential quarry site with the exception of quarry site 5 which contained insufficient outcrop to examine multiple locations.

At each outcrop, fresh and weathered surfaces were examined to confirm rock type, multiple surfaces were tested for “fizz” with a few drops of 10% hydrochloric acid to identify presence of carbonate minerals, and the presence of any sulphide minerals was noted. 2 to 4 kg samples were collected using a sledge hammer from two or three spots at the outcrop. As much as possible, weathered and lichen covered surfaces were removed during sampling with a trimming hammer. A total of nine samples were collected from the potential quarry sites. A typical sample is shown in Figure 2. The GPS location of samples is shown in Attachment A.

Figure 2. A typical sample collected for geochemical testing at the potential quarry sites.

2.3.2 Decline

Drill hole KDI15-073 was sampled at a depth between 75 and 123 m. Each core box contained approximately 3 m of core and samples were collected from alternate core boxes. For each core box sampled, if only one rock type was present then a composite was taken from the entire core box by selecting several pieces of core to represent that approximately 3 m section. For example, sample KD02 shown in Figure 3 comprises pieces of core representative of drill hole interval 81.05 to 84.03 m that all contained the same rock type. Where two rock types were present in a core box then either just the dominant rock type was sampled, or both rock types were sampled separately to create two samples from a core box. No more than two rock types were identified in the core. Samples were broken from longer pieces of core using a hammer. A total of 11 samples were collected to represent the decline. The drill hole intervals for each sample are shown in Attachment A.

For each sample the rock type was noted, multiple surfaces were tested for “fizz” with a few drops of 10% hydrochloric acid to identify presence of carbonate minerals, and the presence of any sulphide minerals was noted.

Figure 3. A typical sample collected for geochemical testing from drill core representing the proposed decline.

2.4 Analytical Methods

Samples were taken to ALS Minerals in Yellowknife for crushing and creating pulps. Pulps were shipped to ALS Minerals in North Vancouver for the following analyses (results in Attachment B):

- Acid base accounting using the MEND (1991) method for modified neutralization potential (ALS method ABA-PK05B)
- Total carbon (decline samples; ALS method C-IR07)
- Metals analysis following aqua regia digestion (ALS method code ME-MS41).

2.5 Quality Control

One quarry sample and one decline sample were analysed in duplicate. Blanks and standards were analysed with the samples. The QC samples passed all of ALS's QC criteria.

2.6 Data Calculation and Interpretation Methods

Sulphate and total sulphur content were determined by analysis. Sulphate was analysed by an HCl leach method, which dissolves the most soluble sulphates, and a Na_2CO_3 leach method, which dissolves less soluble sulphates.

Sulphur as sulphide was calculated from total sulphur minus sulphate from carbonate leach analysis. Where sulphate was below the detection limit (DL), sulphide content was assumed to be equal to total sulphur.

Acid potential (AP) was calculated from sulphide content. Where sulphide was below detection, the detection limit (DL) value was used.

Acid rock drainage (ARD) potential was quantified by considering the ratio of neutralization potential to acid potential (NP/AP). A ratio of NP/AP of less than 1 is considered potentially acid generating (PAG), a ratio between 1 and 3 is considered uncertain, and a ratio greater than 3 is considered non-acid generating (non-PAG).

A screening-level assessment of the metal leaching (ML) potential was completed by identifying concentrations of elements in the rocks that were elevated with respect to global average values for similar rock types. This was refined by plotting results on geochemical diagrams to examine correlations between elements to assess trace mineralogical controls on concentrations, and by considering element mobility under the environmental conditions of the Project (e.g. pH conditions).

3 Results and Discussion

3.1 Field Observations

Potential Quarry Sites

All outcrops examined at the five potential quarry sites contained coarse-grained pink granite dominated by K-feldspar, quartz, and plagioclase with minor mafic minerals. No sulphide minerals were observed at any of the outcrops and no fizz with hydrochloric acid was observed with the exception of outcrop A at potential quarry site 1 (sample KQ1A) which showed slight fizz with HCl.

Decline Samples

The core examined to represent the decline was within the metaturbidite sequence. The drill core examined alternated between the following two rock types generally on a meter-scale to sub-meter scale:

- A heterogeneous, medium to coarse grained biotite gneiss with cm and sub-cm scale quartz/feldspar-rich bands and biotite-rich bands that were irregularly folded.
- A homogenous, medium grained, equigranular, recrystallized biotite-rich metagreywacke.

The biotite gneiss was generally the dominant rock type in the drill core that was examined from hole KDI15-073. The nature of these two rock types is observed in Figure 4 (biotite gneiss) and (Figure 5) metagreywacke. Seven samples of biotite gneiss were collected and four samples of metagreywacke. Biotite gneiss generally contained trace disseminated sulphides to no visible sulphides. Metagreywacke was observed to contain either trace disseminated pyrite +/- chalcopyrite, or pyrite occurring as both disseminated crystals and along the surface of veins or fractures where it was very fine grained. Pyrite content in the metagreywacke was up to 0.5%. Slight fizz from HCl was observed in rare spots in the biotite gneiss and metagreywacke.

Figure 4. Drill core from hole KDI15-073 showing irregular banded gneissic fabric in biotite gneiss.

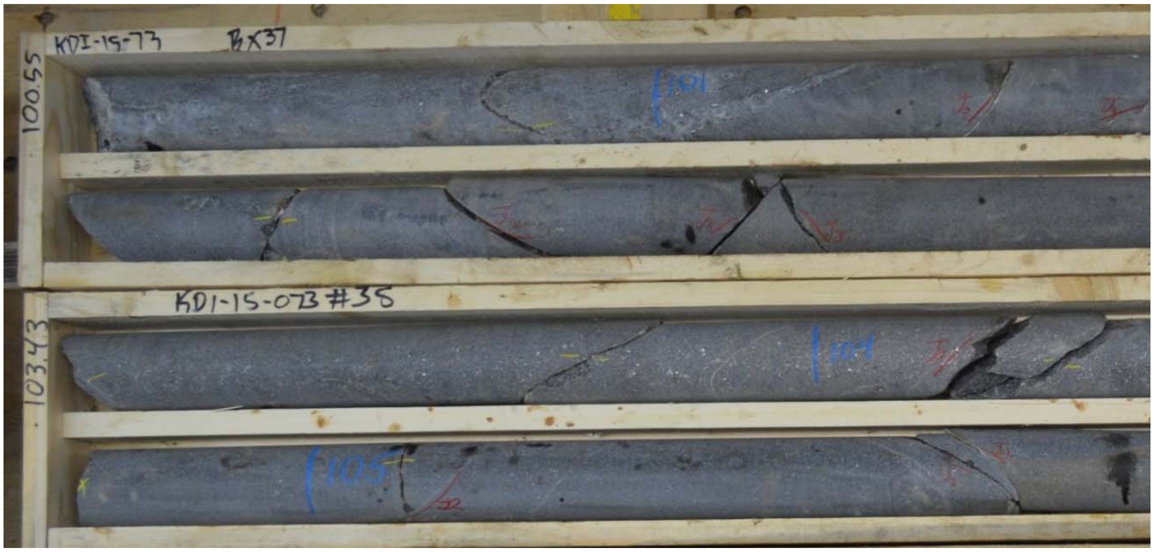

Figure 5. Drill core from hole KDI15-073 showing relatively homogenous metagreywacke.

3.2 Geochemistry

3.2.1 Acid Rock Drainage Potential

Acid base accounting results are summarized in Table 1 with the lab report presented in Attachment B.

Quarry Samples

Total sulphur content was below the DL of 0.01% in six of the granite samples and ranged from 0.01 to 0.04 % in the other three granite samples. Sulphate by both methods was below or close to detection in all samples (<0.01 to 0.02%). Sulphide by calculation was <0.01 to 0.04% (Figure 6).

Paste pH was alkaline at pH 8.7 to 9.4. Neutralization potential (NP) ranged from 2 to 11 kg $CaCO_3$/t with a median of 3 kg $CaCO_3$/t, and total inorganic carbon (TIC or carbonate) was below the DL of 4.5 kg $CaCO_3$/t in all samples. NP was significantly higher than TIC in one sample (KQ2B) suggesting a contribution to NP from silicate minerals. As carbonate was below DL in all the samples and was therefore not fully quantified, NP from some of the other samples may also represent NP from silicate minerals. Acid rock drainage potential calculated from NP/AP ratio ranged from 3.2 to 19 (median NP/AP of 9.6) indicating that all granite samples were classified as not potentially acid generating (non-PAG; Figure 7). However as some of the NP may be from silicate minerals which are slow reacting under field conditions compared to the lab test and compared to carbonate reactivity, the effectiveness of silicate NP should be considered. This cannot be quantified without kinetic testing; however, in SRK's experience, in northern climates at such low sulphur content, silicate NP is likely to be effective at providing neutralization in granite.

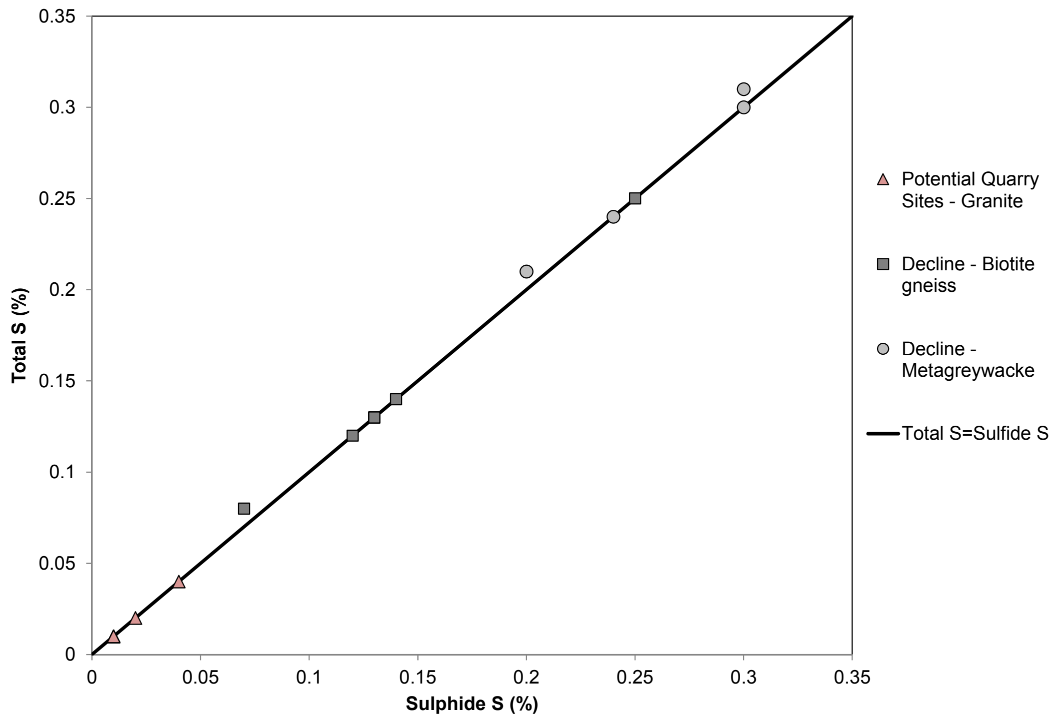

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Figure 6. Sulphide S vs total S.

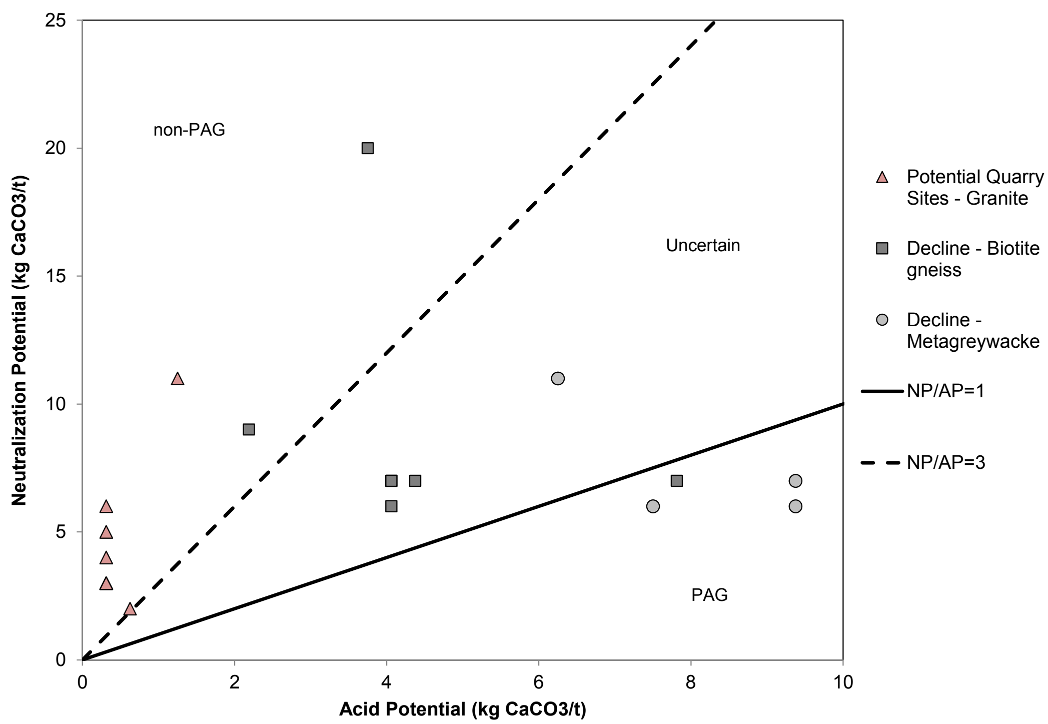

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Figure 7. Neutralization potential vs acid potential.

Table 1. Summary of Acid-Base Accounting Results.

Sample #	Rock type	Neutralization Potential	Total Sulphur	Sulphate CO_3 leach	Sulphide (Calculated)	Inorganic Carbon	TIC (Calculated)	Acid Potential (Calculated)	TIC/AP	NP/AP
Analyte		**NP**	**S**	**S**	**S**	**C**	**TIC**	**AP**		
Units		**kg $CaCO_3$/t**	**%**	**%**	**%**	**%**	**kg $CaCO_3$/t**	**kg $CaCO_3$/t**		
Quarry Samples										
KQ1A	Granite	4	<0.01	0.01	<0.01	<0.05	<4.5	0.31	15	13
KQ1B	Granite	6	0.01	<0.01	0.01	<0.05	<4.5	0.31	15	19
KQ2A	Granite	3	<0.01	<0.01	<0.01	<0.05	<4.5	0.31	15	9.6
KQ2B	Granite	11	0.04	<0.01	0.04	<0.05	<4.5	1.3	3.6	8.8
KQ3A	Granite	3	<0.01	<0.01	<0.01	<0.05	<4.5	0.31	15	9.6
KQ3B	Granite	5	<0.01	<0.01	<0.01	<0.05	<4.5	0.31	15	16
KQ4A	Granite	3	<0.01	<0.01	<0.01	<0.05	<4.5	0.31	15	9.6
KQ4B	Granite	3	<0.01	<0.01	<0.01	<0.05	<4.5	0.31	15	9.6
KQ5A	Granite	2	0.02	<0.01	0.02	<0.05	<4.5	0.63	7.3	3.2
Decline Samples										
KD01	Biotite gneiss	7	0.14	<0.01	0.14	<0.05	<4.5	4.4	1.0	1.6
KD02	Biotite gneiss	7	0.13	<0.01	0.13	<0.05	<4.5	4.1	1.1	1.7
KD03	Biotite gneiss	7	0.13	<0.01	0.13	<0.05	<4.5	4.1	1.1	1.7
KD05	Biotite gneiss	7	0.25	<0.01	0.25	<0.05	<4.5	7.8	0.58	0.90
KD07	Biotite gneiss	6	0.13	<0.01	0.13	<0.05	<4.5	4.1	1.1	1.5
KD10	Biotite gneiss	9	0.08	0.01	0.07	0.05	4.5	2.2	2.1	4.1
KD11	Biotite gneiss	20	0.12	<0.01	0.12	0.2	16	3.8	4.2	5.3
KD04	Metagreywacke	7	0.3	<0.01	0.3	<0.05	<4.5	9.4	0.48	0.75
KD06	Metagreywacke	6	0.31	0.01	0.3	<0.05	<4.5	9.4	0.48	0.64
KD08	Metagreywacke	6	0.24	<0.01	0.24	<0.05	<4.5	7.5	0.61	0.80
KD09	Metagreywacke	11	0.21	0.01	0.2	0.11	9.1	6.3	1.5	1.8

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Notes:

Shading for TIC/AP and NP/AP denotes ARD potential: green=non-PAG (ratio of >3), yellow=uncertain (ratio of 1-3), pink=PAG (ratio of <1).

Decline samples

Total sulphur content ranged from 0.08 to 0.25% in the biotite gneiss samples and from 0.21 to 0.31% in the metagreywacke samples. Sulphate by both methods was below or close to detection in all samples (<0.01 to 0.02%), and total sulphur was similar to sulphur content by aqua regia digestion (suggesting a lack of sulphur associated with organic carbon), indicating that sulphide minerals were likely the dominant form of sulphur (Figure 6). Sulphide content was 0.07 to 0.25% in the biotite gneiss (median of 0.13% sulphide) and 0.2 to 0.3 % in the metagreywacke (median of 0.27% sulphide). Overall in the decline samples median sulphide content was 0.14%.

Paste pH was alkaline in all samples ranging from pH 8.6 to 9.5 indicating that the samples were not generating acid at the time of testing. Neutralization potential ranged from 6 to 20 kg $CaCO_3$/t with a median of 7 kg $CaCO_3$/t. Total inorganic carbon (carbonate) was below the DL of 4.5 kg $CaCO_3$/t in eight of the samples and 4.6 to 16 kg $CaCO_3$/t in the other three samples (one metagreywacke and two biotite gneiss). NP was consistently higher than TIC suggesting a contribution to NP from silicate minerals. As discussed above, silicate minerals are slow reacting under field conditions compared to the lab test and compared to carbonate reactivity. As TIC is not fully quantified (generally below DL), ARD potential was determined from NP/AP ratio (Figure 7). NP/AP in biotite gneiss was 0.9 to 5.3 with a median of 1.7, indicating a range of ARD potential however only two samples were classified as non-PAG (NP/AP of 4.1 and 5.3). These two samples both contained detectable carbonate and TIC/AP in these two samples was lower than NP/AP (TIC/AP of 2.1 and 4.2). Considering both NP/AP and TIC/AP ratios, only one of the seven biotite gneiss samples was classified as non-PAG. For the samples with undetectable carbonate, TIC was calculated from the DL value indicating it represents maximum TIC (Figure 8). In these samples TIC/AP ranged from 0.58 to 1.1 which are also maximum values indicating that biotite gneiss should predominantly be considered as PAG.

NP/AP in metagreywacke was 0.64 to 1.8 with a median of 0.77. Three of the four samples were classified as PAG and one sample had uncertain potential to generate ARD. The sample classified as uncertain contained detectable carbonate and had a TIC/AP ratio of 1.5 also indicating uncertain ARD potential.

Overall, based on NP/AP ratios, the decline samples were classified as PAG to uncertain potential for ARD, with only one of 11 samples classified as non-PAG. Based on their undetectable carbonate content and maximum TIC/AP ratios close to 1, the uncertain samples likely also have the potential to generate ARD.

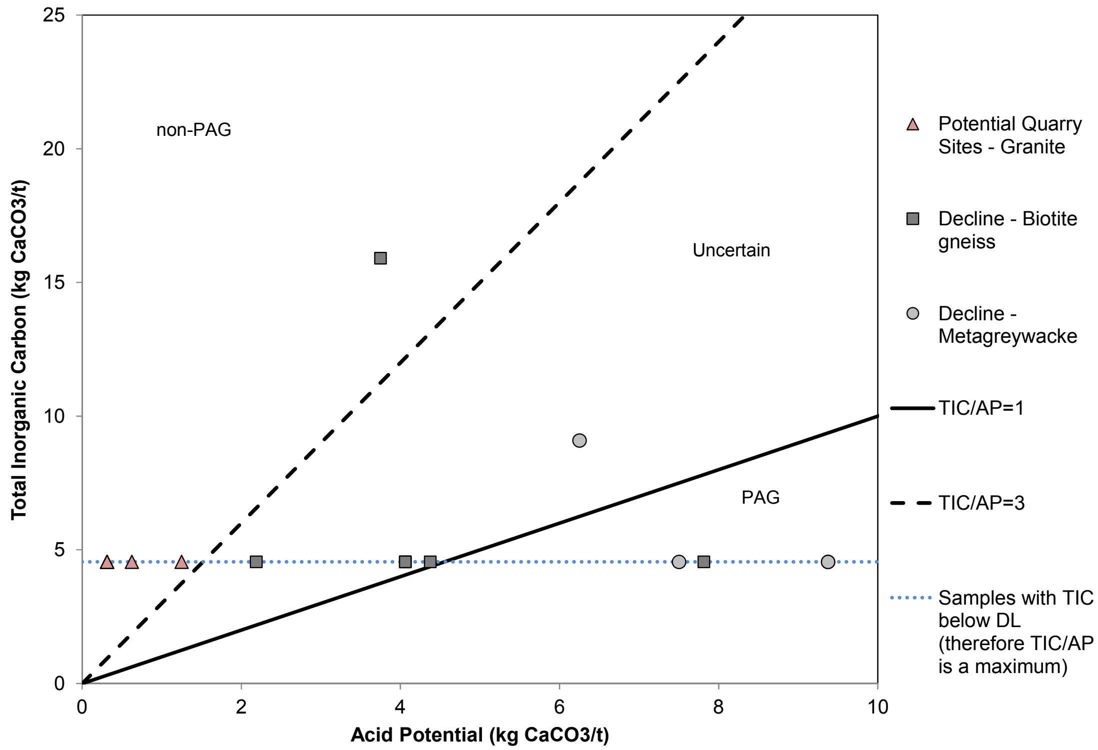

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Figure 8. Total inorganic carbon (carbonate) vs acid potential.

3.2.2 Preliminary Metal Leaching Potential

Quarry Samples

A screening-level assessment of the metal leaching potential of the quarry samples was completed by identifying concentrations of elements in the samples that were elevated (by greater than 10 times) with respect to global average compositions for granite (Turekian and Wedepohl 1961, reported in Price 1997). The comparison indicated that selenium was the only element that was elevated in granite, and only in one sample (1.8 mg/kg; Table 2). This sample contained the highest sulphur of the granite samples (0.04%) and the highest iron and copper suggesting that selenium enrichment may be related to the presence of trace sulphide minerals in this sample. This sample however also contained higher phosphorous, lanthanum, cerium and yttrium than the other granite samples suggesting that it contained trace apatite. The yttrium content is 38 mg/kg and represents a surrogate for heavy rare earth elements (typically contained in phosphate minerals such as apatite). In a previous SRK study (unpublished data) it was shown that where yttrium content was above 35 mg/kg, the heavy rare earth elements interfered with selenium during analysis in the mass spectrometer and gave artificially higher concentrations. This cannot be checked with this sample because heavy rare earth elements were not analysed but selenium in this sample may be artificially elevated.

Overall, under the circum-neutral pH conditions expected during weathering of the granite, the metal leaching potential is considered to be low.

Table 2. Comparison of Element Concentrations to the Global Average Composition of Similar Rock Types.

Analyte		As	Cd	Co	Cr	Cu	Fe	Mo	Ni	Pb	Sb	Se	Tl	U	Zn
Units	**Rock type**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
Quarry Samples															
KQ1A	Granite	0.6	0.01	3.1	11	6.2	1.1	2.7	6.2	6.8	0.05	0.4	0.07	1.2	34
KQ1B	Granite	0.4	0.01	6.5	17	8.1	1.9	0.47	7.5	7.1	0.05	0.4	0.23	1.3	73
KQ2A	Granite	0.4	0.01	3.6	12	3.5	1.5	0.23	3.8	5.4	0.05	0.4	0.2	1.5	43
KQ2B	Granite	0.5	0.02	6.9	9	16	5.8	1.9	8.4	8.9	0.06	1.8	0.16	2.4	76
KQ3A	Granite	0.1	<0.01	3	8	3.1	0.89	0.96	3.5	2.1	<0.05	0.3	0.02	0.62	22
KQ3B	Granite	0.2	0.02	2.6	9	3.2	1.4	2.1	4	3.7	<0.05	0.4	0.09	0.95	33
KQ4A	Granite	0.1	<0.01	2.8	8	1.4	1.1	0.13	3	4.7	<0.05	0.4	0.11	1.6	27
KQ4B	Granite	0.3	0.01	2.7	5	1	0.73	0.21	2.2	3.2	<0.05	0.4	0.09	1.1	21
KQ5A	Granite	0.3	0.01	2.3	6	4.2	1.2	0.29	2.6	2.8	<0.05	0.4	0.05	2.8	25
Decline Samples															
KD01	Biotite gneiss	15	0.03	26	143	51	4.7	1.4	89	3.4	<0.05	0.4	0.56	0.93	81
KD02	Biotite gneiss	22	0.12	28	160	47	5.1	1.9	101	4.2	0.06	0.5	0.72	0.94	101
KD03	Biotite gneiss	5.4	0.02	27	166	37	5.1	1.6	94	4.1	<0.05	0.6	0.8	1.0	92
KD05	Biotite gneiss	11	0.07	24	131	72	4.1	1.1	80	4.4	<0.05	0.4	0.62	0.97	84
KD07	Biotite gneiss	13	0.05	19	106	41	3.3	0.94	57	3.9	<0.05	0.6	0.53	1.3	73
KD10	Biotite gneiss	39	0.05	22	121	26	3.9	0.91	74	3.3	<0.05	0.3	0.41	1.1	73
KD11	Biotite gneiss	42	0.08	27	130	40	4.5	1.5	87	3.9	<0.05	0.5	0.44	1.3	89
KD04	Metagreywacke	11	0.06	24	148	81	4.2	1.1	77	3.1	<0.05	0.5	0.64	0.96	79
KD06	Metagreywacke	2.7	0.06	20	136	98	3.3	0.95	64	3.4	<0.05	0.5	0.53	0.93	64
KD08	Metagreywacke	14	0.07	19	111	74	2.9	0.86	55	6.4	<0.05	0.4	0.46	0.94	69
KD09	Metagreywacke	6.5	0.09	20	116	71	3.0	1.1	58	4.2	0.07	0.5	0.37	0.89	106
Average Crustal Abundances															
High Ca granite		1.9	0.13	7	22	30	2.96	1	15	15	0.2	0.05	0.72	3	60
Shale		13	0.3	19	90	45	4.72	2.6	68	20	1.5	0.6	1.4	3.7	95
Sandstone		1	*0.05*	0.3	35	*5*	0.98	0.2	2	7	*0.05*	0.05	0.82	0.45	16

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Notes:

Pink highlighting indicates concentration is greater than 10 times the global average composition of granite for quarry samples and sandstone for decline samples. Sandstone average compositions in italics (Cd, Cu, Sb are approximate).

Decline Samples

A screening-level assessment of the metal leaching potential of the decline samples was completed by identifying concentrations of elements in the samples that were elevated (by greater than 10 times) with respect to global average compositions for sandstone and shale (Turekian and Wedepohl 1961, reported in Price 1997). The comparison indicated that compared to average sandstone the following elements were enriched in the decline samples: arsenic, cobalt, copper, nickel, and selenium (Table 2). Compared to global average shale, the decline samples were not enriched in any elements (shale is naturally higher in metal concentrations due to its origin).

Metal leaching potential in the decline samples was investigated further by evaluating mineralogical associations and considering element mobility under the anticipated environmental conditions. Copper showed a strong positive relationship with sulphur indicating that copper is likely associated with chalcopyrite (Figure 9). Copper may therefore be leached as a result of sulphide oxidation.

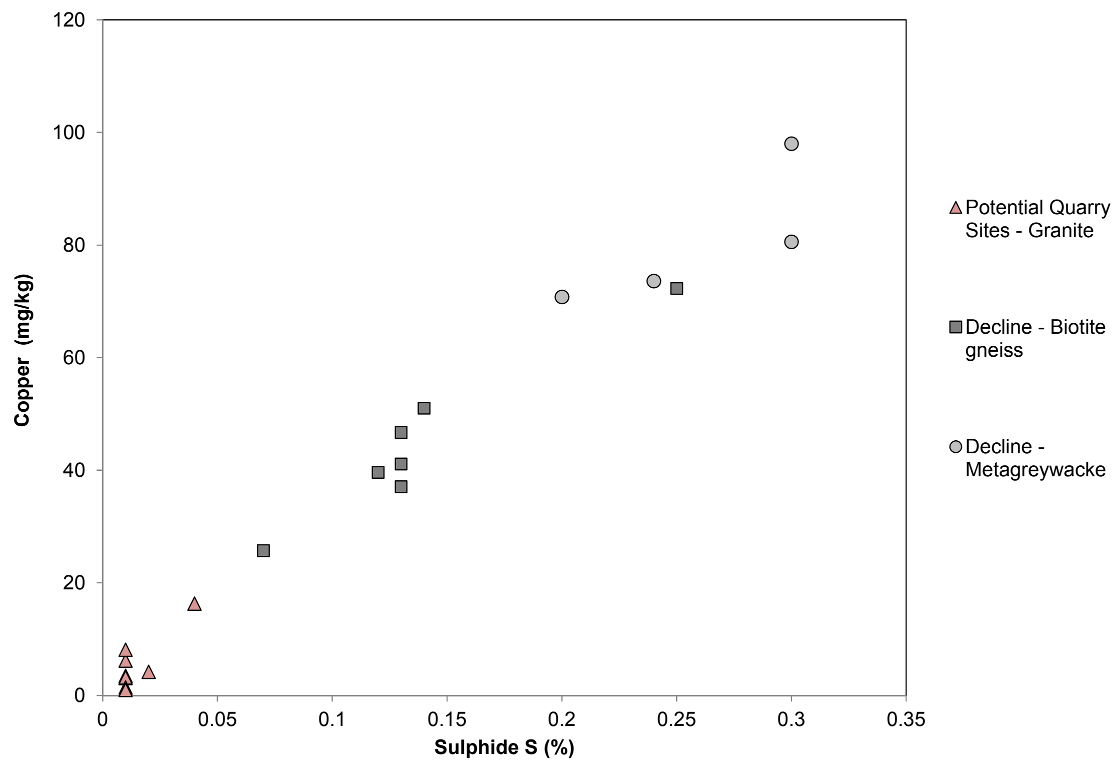

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Figure 9. Copper vs sulphide sulphur.

Iron was not correlated with sulphur, and iron concentrations were much higher than that expected if iron was primarily hosted by pyrite (Figure 10). In addition to sulphides, other minerals typically dissolved by an aqua regia digestion include carbonates, oxyhydroxides, some oxides and some phosphates, but not silicates. Iron oxyhydroxides may be the most likely phases to host iron. Iron oxyhydroxides may form as a result of weathering/oxidation of pyrite and may coprecipitate or adsorb other metals. Cobalt and nickel were well-correlated with iron (Figure 11, Figure 12), whereas arsenic and selenium were not (not shown).

Under acidic conditions that may be expected to develop during weathering of PAG rock, the primary control on metal leaching potential will be pH. The metals that are enriched in the decline samples are mobile under acidic conditions but at low pH enrichment of metals may not be necessary to result in elevated concentrations in contact waters. Therefore the metaturbidite sequence has potential for metal leaching.

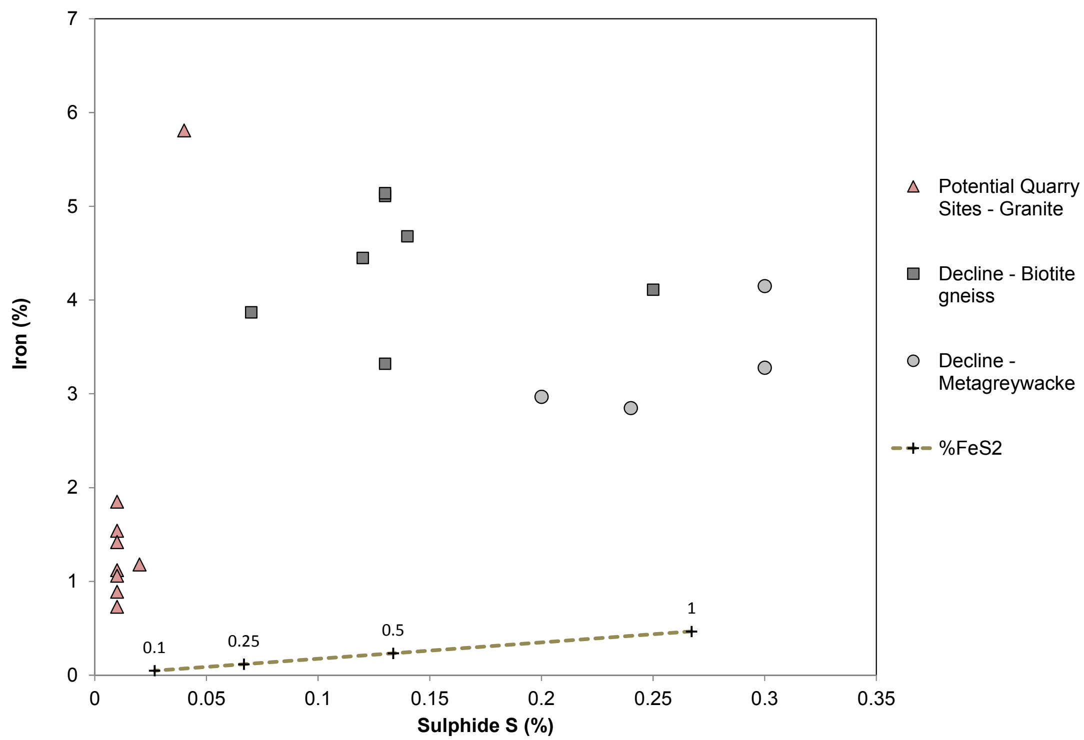

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Figure 10. Iron vs sulphide sulphur.

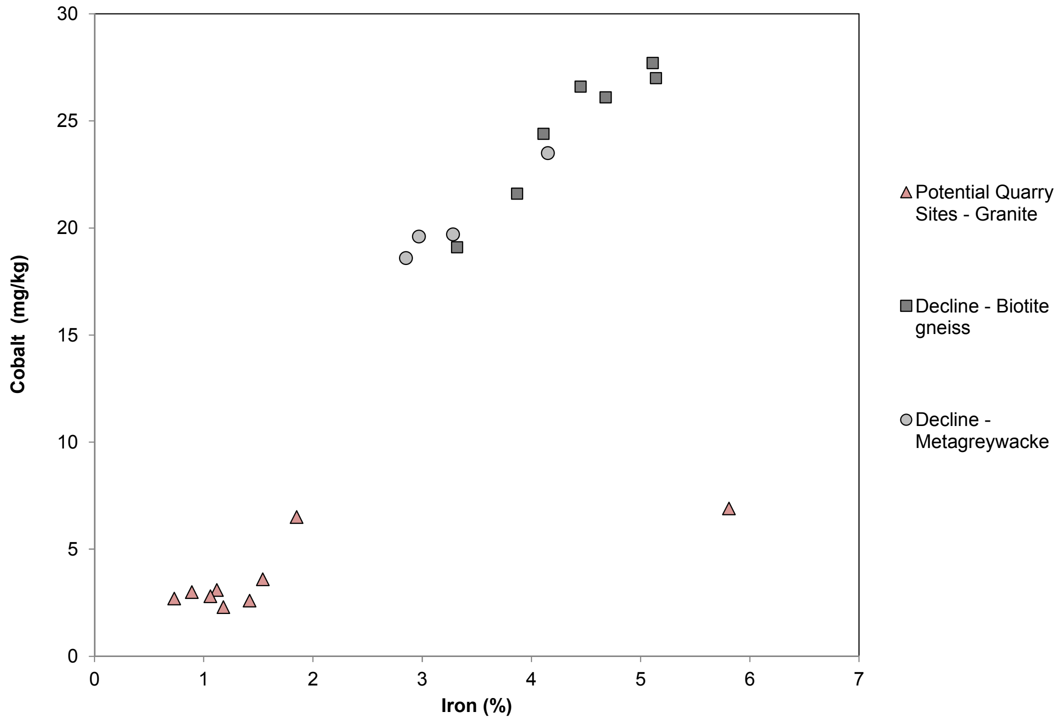

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Figure 11. Cobalt vs iron.

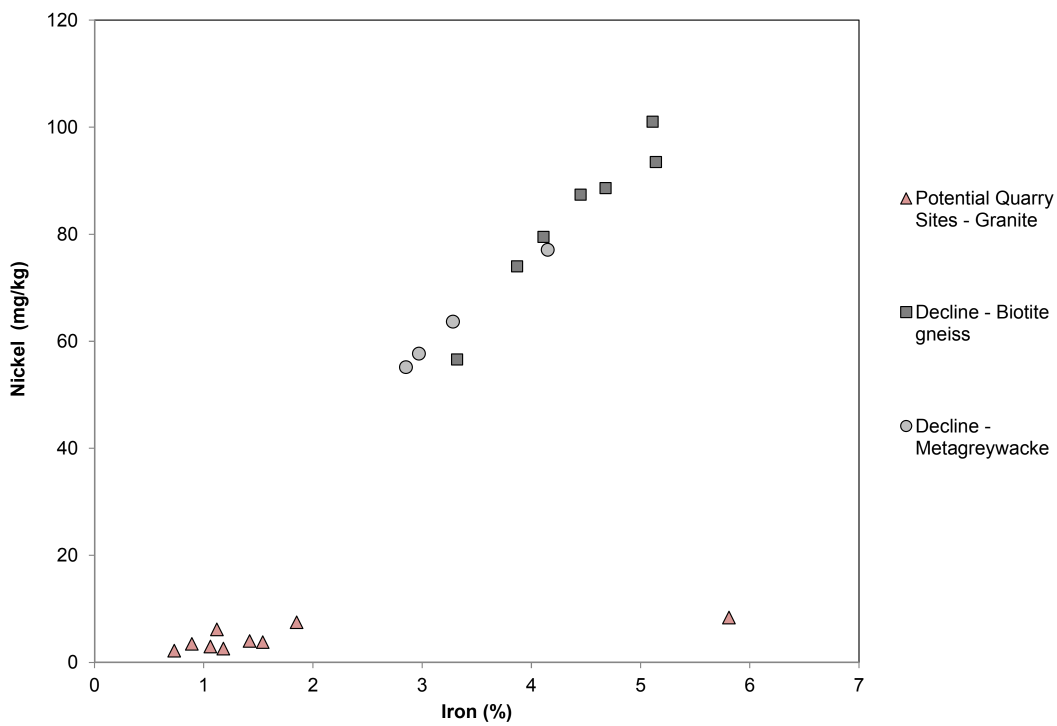

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Figure 12. Nickel vs iron.

3.3 Comparison to Analogous Sites

Data from the samples in this study were compared to publicly available data from Misery waste rock from Ekati Diamond Mine (SRK 2016) as an analogous site (similar rock types and similar climatic conditions).

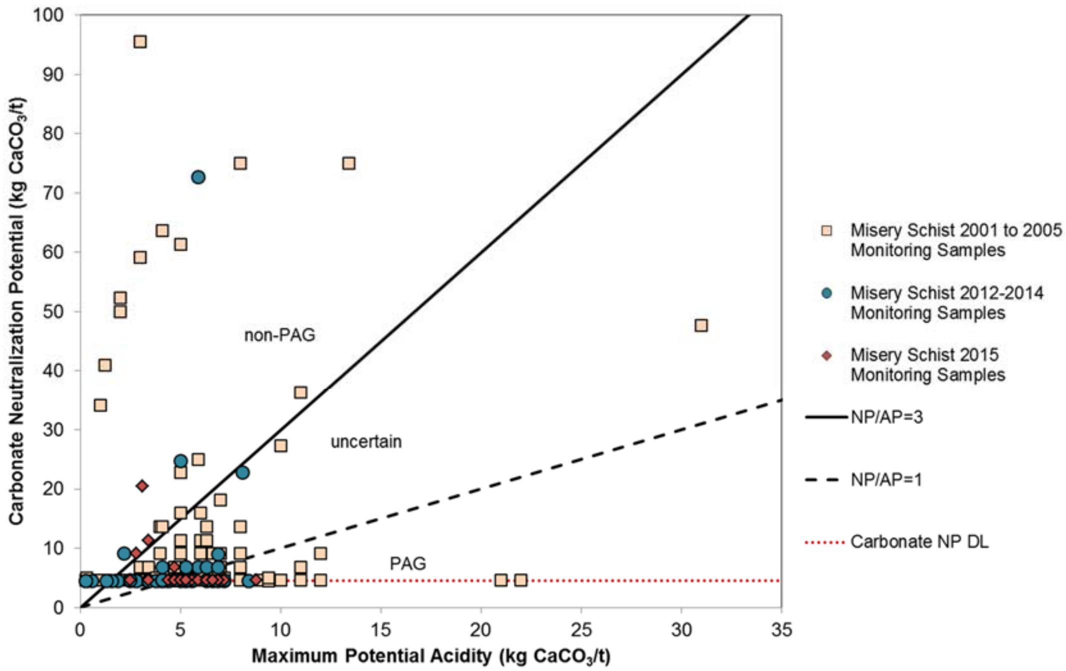
3.3.1 Misery Granite

Misery granite at Ekati had NP/AP of 1.5 to 500 with a median of 13 to 19 depending on the monitoring year. Sulphide content ranged from <0.01 to 0.42 with a median of 0.01. Granite in the Kelvin-Faraday area is similar to typical Misery granite and may be expected to behave in a similar way. Granite waste rock at Misery releases alkalinity under site weathering conditions and during the monitoring period (2001 to 2016) has provided neutralization to co-disposed waste rock.

3.3.2 Misery Schist

Misery schist at Ekati is a biotite schist representing metamorphosed greywacke (SRK 2007). On a regional scale the metamorphosed sedimentary sequence at Ekati and at Kennady North are part of the same extensive metaturbidite sequence that covers 25% of the NWT (Stubley 2005). Misery schist at Ekati contains 0.01 to 1 % sulphide (median 0.15 % sulphide), NP/AP of 0.33 to 110 (median NP/AP of 2.1 to 2.5 depending on the monitoring year), and has TIC/AP of 0.21 to 43 (median TIC/AP of 0.86 to 1.1 depending on the monitoring year). TIC/AP ratios should be considered maximums as Misery schist typically contains below DL carbonate. Figure 13 shows overall ARD potential of Misery schist based on carbonate content which is equivalent to Figure 8 for Kelvin-Faraday rocks. Misery schist is predominantly PAG to uncertain potential to generate acid, similar to Kelvin-Faraday decline samples.

Misery schist generated acid during humidity cell testing but at Ekati storage of this waste is managed such that during the monitoring period (2001 to 2016) it has not generated acid from the Misery waste rock storage area (SRK 2016).



\\van-svr0.van.na.srk.ad\Projects\01_SITES\Ekati\1CD015.004_Seepage Monitoring_2015\340_WR and CKR Data Management\[A.1.3_MiseryBlast_Database.1CD015.003_2015_LM_00.xls]

Figure 13. Total inorganic carbon (carbonate) vs acid potential for Misery schist (SRK 2016).

3.4 Suitability of Material for Construction

Granite from the potential quarry sites to the west of Kelvin-Faraday is considered suitable for construction based on its very low sulphur content, its classification as non-PAG and its low potential for metal leaching.

Based on static test results, rocks of the metaturbidite sequence where the decline will be developed are predominantly classified as PAG to uncertain ARD potential but due to their very low carbonate content should be considered predominantly PAG. Less than 10% of the samples tested from this sequence were non-PAG and the scale of variation (metre to sub-meter scale) makes it impractical for segregation. Further testing is required to more definitively establish the potential for ML/ARD; however, until such time that further testing is completed, the decline rock should be considered to have the potential to generate acid upon weathering and oxidation of sulphides. Under acidic conditions the rock would also have the potential for metal leaching.

3.5 Recommendations for Management

No special management procedures are required to prevent ML/ARD from the quarry rock. Recommendations for management of the quarry rock include visual inspection of the blasted rock during excavation to confirm that sulphides are not present, and limited sampling and testing to verify the geochemical characteristics of the quarry rock.

At this time, SRK does not recommend use of the waste rock from the decline for general construction. There may be specific construction uses that would inherently prevent ML/ARD such as encapsulation, or saturated conditions, that could be considered. A robust management plan for this rock will be required to prevent oxidation of sulphide minerals and development of acidic conditions. As discussed previously, further testing could be considered to more definitively establish the potential for ML/ARD. The lag time to development of acidic conditions is currently unknown and kinetic testing will be required to understand the delay in development of acidic conditions and to quantify metal leaching potential.

4 Conclusions

- Static geochemical characterization has been conducted on nine samples of granite from potential quarry sites and 11 samples representing decline rock.
- All of the granite samples from potential quarry sites had uniformly low sulphur, low neutralizing potential, low metals content and negligible potential for ML/ARD.
- Rock from the decline had somewhat elevated sulphur content (up to 0.31% occurring primarily as sulphides), and low neutralization potential, indicating that there is potential for ARD in waste rock that will be produced during development of the decline. Additionally, in comparison to the global average composition of similar rock types, many samples had elevated concentrations of trace elements, suggesting that they could be a source of metal leaching.
- Based on these findings, granite from the potential quarry sites is considered suitable for construction and requires no special management procedures for prevention of ML/ARD. Decline rock is not suitable for general construction and will require management to prevent ML/ARD.

SRK Consulting (Canada) Inc.

19 Sept, 2016.

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Principal Consultant (Geochemistry)

Reviewed by:

PROFESSIONAL PROVINCE OF K.S. Sexsmith BRITISH COLUMBIA GEOSCIENTIST

19 Sept, 2016

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5 References

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Attachment A – Sample Location and Rock Type Information

Sample #	Rock type	UTM East	UTM North	Drill Hole ID	Interval From (m)	Interval To (m)
Quarry Samples						
KQ1A	Granite	594420	7041911	-	-	-
KQ1B	Granite	594276	7041865	-	-	-
KQ2A	Granite	594424	7041694	-	-	-
KQ2B	Granite	594463	7041648	-	-	-
KQ3A	Granite	594072	7039676	-	-	-
KQ3B	Granite	594059	7039745	-	-	-
KQ4A	Granite	594790	7041228	-	-	-
KQ4B	Granite	594755	7041214	-	-	-
KQ5A	Granite	594812	7040385	-	-	-
Decline Samples						
KD01	Biotite gneiss	-	-	KDI15-073	75.42	78.26
KD02	Biotite gneiss	-	-	KDI15-073	81.05	84.03
KD03	Biotite gneiss	-	-	KDI15-073	86.68	89.52
KD04	Metagreywacke	-	-	KDI15-073	92.10	92.90
KD05	Biotite gneiss	-	-	KDI15-073	92.90	95.05
KD06	Metagreywacke	-	-	KDI15-073	98.50	99.33
KD07	Biotite gneiss	-	-	KDI15-073	99.33	100.55
KD08	Metagreywacke	-	-	KDI15-073	103.43	106.06
KD09	Metagreywacke	-	-	KDI15-073	108.74	111.40
KD10	Biotite gneiss	-	-	KDI15-073	114.29	115.50
KD11	Biotite gneiss	-	-	KDI15-073	119.64	122.50

Attachment B – Analytical Results

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Finalized Date: 3- AUG- 2016
Account: AURGEO

CERTIFICATE YW16118714

P.O. No.: KDI- 16002- NT
This report is for 20 Rock samples submitted to our lab in Yellowknife, NT, Canada on 22- JUL- 2016.

The following have access to data associated with this certificate:

CHRIS HRKAC		

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
CRU- 21	Crush entire sample > 70% - 6 mm
CRU- 22c	Crush entire sample > 70% - 19 mm
SPL- 21	Split sample - riffle splitter
PUL- 21	Pulverize entire sample
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
C- IR07	Total Carbon (Leco)	LECO
ME- MS41	Ultra Trace Aqua Regia ICP- MS	
OA- VOL08mn	NP MEND 1991	
S- IR08	Total Sulphur (Leco)	LECO
OA- ELE07	Paste pH	
S- GRA06	Sulfate Sulfur- carbonate leach	WST- SEQ
S- GRA06a	Sulfate Sulfur (HCl leachable)	WST- SEQ
S- CAL06	Sulfide Sulfur (calculated)	LECO
C- GAS05	Inorganic Carbon (CO2)	

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This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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Sample Description / Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	S-CAL06 S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	C-IR07 C % 0.01	ME-MS41 Ag ppm 0.01
KQ1A	3.91	<0.3	1	4	4	9.0	25.60	<0.01	0.01	0.02	<0.01	<0.05	<0.2	0.03	0.02
KQ1B	2.52	0.3	1	6	6	9.0	19.20	0.01	<0.01	0.02	0.01	<0.05	<0.2	0.03	0.03
KQ2A	2.64	<0.3	1	3	3	9.1	19.20	<0.01	<0.01	0.01	<0.01	<0.05	<0.2	0.02	0.02
KQ2B	3.37	1.3	1	10	11	9.1	8.80	0.04	<0.01	0.02	0.04	<0.05	<0.2	0.04	0.06
KQ3A	3.28	<0.3	1	3	3	8.7	19.20	<0.01	<0.01	<0.01	<0.01	<0.05	<0.2	0.01	<0.01
KQ3B	1.55	<0.3	1	5	5	9.1	32.00	<0.01	<0.01	0.02	<0.01	<0.05	<0.2	0.03	0.02
KQ4A	3.00	<0.3	1	3	3	9.1	19.20	<0.01	<0.01	0.01	<0.01	<0.05	<0.2	0.01	0.01
KQ4B	2.74	<0.3	1	3	3	9.4	19.20	<0.01	<0.01	<0.01	<0.01	<0.05	<0.2	0.01	0.02
KQ5A	2.99	0.6	1	1	2	9.0	3.20	0.02	<0.01	<0.01	0.02	<0.05	<0.2	0.01	0.03
KD01	4.21	4.4	1	3	7	8.7	1.60	0.14	<0.01	<0.01	0.14	<0.05	<0.2	0.03	0.09
KD02	4.55	4.1	1	3	7	8.6	1.72	0.13	<0.01	0.01	0.13	<0.05	<0.2	0.04	0.12
KD03	4.88	4.1	1	3	7	8.7	1.72	0.13	<0.01	0.01	0.13	<0.05	<0.2	0.03	0.08
KD04	6.54	9.4	1	-2	7	9.3	0.75	0.30	<0.01	<0.01	0.30	<0.05	<0.2	0.01	0.17
KD05	4.53	7.8	1	-1	7	9.0	0.90	0.25	<0.01	<0.01	0.25	<0.05	<0.2	0.02	0.21
KD06	3.39	9.7	1	-4	6	9.5	0.62	0.31	0.01	0.02	0.30	<0.05	<0.2	<0.01	0.22
KD07	4.59	4.1	1	2	6	9.2	1.48	0.13	<0.01	<0.01	0.13	<0.05	<0.2	0.01	0.11
KD08	4.73	7.5	1	-2	6	9.4	0.80	0.24	<0.01	0.02	0.24	<0.05	<0.2	0.02	0.22
KD09	4.47	6.6	1	4	11	9.2	1.68	0.21	0.01	0.02	0.20	0.11	0.4	0.12	0.14
KD10	4.25	2.5	1	7	9	9.1	3.60	0.08	0.01	<0.01	0.07	0.05	0.2	0.06	0.08
KD11	5.19	3.8	1	16	20	9.1	5.33	0.12	<0.01	0.01	0.12	0.20	0.7	0.22	0.11

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Sample Description	Method Analyte Units LOR	ME- MS41 Al % 0.01	ME- MS41 As ppm 0.1	ME- MS41 Au ppm 0.2	ME- MS41 B ppm 10	ME- MS41 Ba ppm 10	ME- MS41 Be ppm 0.05	ME- MS41 Bi ppm 0.01	ME- MS41 Ca % 0.01	ME- MS41 Cd ppm 0.01	ME- MS41 Ce ppm 0.02	ME- MS41 Co ppm 0.1	ME- MS41 Cr ppm 1	ME- MS41 Cs ppm 0.05	ME- MS41 Cu ppm 0.2	ME- MS41 Fe % 0.01
KQ1A		0.60	0.6	<0.2	<10	40	0.19	0.02	0.12	0.01	101.5	3.1	11	0.13	6.2	1.12
KQ1B		0.88	0.4	<0.2	<10	70	0.15	0.01	0.35	0.01	127.5	6.5	17	0.44	8.1	1.85
KQ2A		0.58	0.4	<0.2	<10	40	0.08	0.01	0.12	0.01	106.0	3.6	12	0.64	3.5	1.54
KQ2B		0.55	0.5	<0.2	<10	40	0.13	0.03	0.69	0.02	206	6.9	9	0.38	16.3	5.81
KQ3A		0.61	0.1	<0.2	<10	20	0.28	<0.01	0.05	<0.01	48.1	3.0	8	<0.05	3.1	0.89
KQ3B		0.44	0.2	<0.2	<10	30	0.12	0.01	0.16	0.02	63.7	2.6	9	0.29	3.2	1.42
KQ4A		0.53	0.1	<0.2	<10	20	0.09	0.02	0.05	<0.01	96.8	2.8	8	0.33	1.4	1.06
KQ4B		0.40	0.3	<0.2	<10	30	0.07	0.03	0.07	0.01	55.6	2.7	5	0.31	1.0	0.73
KQ5A		0.30	0.3	<0.2	<10	20	0.06	0.05	0.08	0.01	35.5	2.3	6	0.19	4.2	1.18
KD01		3.62	14.8	<0.2	30	460	0.82	0.29	0.15	0.03	29.9	26.1	143	5.57	51.0	4.68
KD02		3.98	21.7	<0.2	30	520	0.93	0.28	0.15	0.12	35.5	27.7	160	7.28	46.7	5.11
KD03		4.08	5.4	<0.2	30	560	1.19	0.40	0.14	0.02	34.6	27.0	166	8.98	37.1	5.14
KD04		2.94	11.0	<0.2	10	390	0.89	0.27	0.14	0.06	27.5	23.5	148	7.25	80.6	4.15
KD05		3.03	10.8	<0.2	20	370	1.65	0.31	0.15	0.07	29.9	24.4	131	7.15	72.3	4.11
KD06		2.35	2.7	<0.2	10	290	0.71	0.17	0.17	0.06	30.3	19.7	136	7.80	98.0	3.28
KD07		2.52	13.3	<0.2	10	320	2.73	0.31	0.11	0.05	31.4	19.1	106	6.93	41.1	3.32
KD08		2.00	13.6	<0.2	<10	270	0.52	0.17	0.13	0.07	28.7	18.6	111	8.72	73.6	2.85
KD09		2.08	6.5	<0.2	10	200	1.35	0.30	0.27	0.09	32.2	19.6	116	9.08	70.8	2.97
KD10		2.81	39.4	<0.2	10	250	1.13	0.33	0.18	0.05	33.8	21.6	121	4.78	25.7	3.87
KD11		3.19	41.8	<0.2	10	300	1.42	0.31	0.47	0.08	38.8	26.6	130	4.43	39.6	4.45

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Sample Description	Method / Analyte / Units / LOR	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10
KQ1A		4.92	0.18	0.48	<0.01	0.011	0.15	51.0	13.0	0.41	143	2.74	0.04	0.31	6.2	180
KQ1B		7.47	0.20	0.45	<0.01	0.018	0.44	63.5	24.8	0.51	254	0.47	0.05	0.50	7.5	770
KQ2A		5.99	0.18	0.48	<0.01	0.014	0.30	54.5	23.2	0.29	173	0.23	0.04	0.56	3.8	310
KQ2B		18.65	0.28	0.32	<0.01	0.020	0.25	100.5	16.5	0.25	188	1.89	0.06	0.64	8.4	2910
KQ3A		4.52	0.13	0.26	<0.01	<0.005	0.10	25.3	15.0	0.45	119	0.96	0.04	<0.05	3.5	160
KQ3B		4.81	0.15	0.26	<0.01	0.010	0.19	32.9	13.8	0.23	134	2.12	0.04	0.25	4.0	480
KQ4A		4.34	0.17	0.51	<0.01	0.008	0.18	47.7	12.0	0.29	137	0.13	0.04	0.26	3.0	150
KQ4B		2.78	0.14	0.22	<0.01	<0.005	0.17	28.0	14.1	0.20	105	0.21	0.04	0.20	2.2	130
KQ5A		4.47	0.13	0.25	<0.01	0.006	0.11	16.2	9.7	0.13	78	0.29	0.05	0.12	2.6	280
KD01		13.50	0.19	0.23	<0.01	0.046	1.72	14.3	117.5	1.80	413	1.40	0.06	0.13	88.6	510
KD02		15.00	0.21	0.22	<0.01	0.049	2.01	16.9	121.5	1.97	433	1.87	0.06	0.14	101.0	480
KD03		14.75	0.23	0.23	<0.01	0.045	2.23	16.7	112.0	2.04	468	1.57	0.07	0.13	93.5	480
KD04		11.75	0.19	0.17	<0.01	0.039	1.73	13.6	70.2	1.51	337	1.13	0.07	0.18	77.1	520
KD05		11.95	0.20	0.17	<0.01	0.036	1.66	14.5	84.2	1.51	385	1.08	0.06	0.17	79.5	540
KD06		9.39	0.20	0.20	<0.01	0.032	1.42	15.3	54.4	1.26	338	0.95	0.09	0.17	63.7	410
KD07		9.65	0.19	0.15	<0.01	0.031	1.42	15.9	74.5	1.22	326	0.94	0.06	0.18	56.6	360
KD08		8.62	0.19	0.19	<0.01	0.029	1.22	14.2	47.0	1.05	275	0.86	0.06	0.19	55.2	390
KD09		8.45	0.18	0.20	<0.01	0.030	0.96	16.3	58.2	1.20	294	1.05	0.05	0.14	57.7	360
KD10		11.50	0.16	0.09	<0.01	0.030	1.15	16.2	83.9	1.60	399	0.91	0.05	0.11	74.0	380
KD11		12.20	0.18	0.14	<0.01	0.038	1.29	18.9	104.0	1.86	393	1.47	0.05	0.18	87.4	490

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YELLOWKNIFE NT X1A 2H1

Finalized Date: 3- AUG- 2016
Account: AURGEO

CERTIFICATE OF ANALYSIS YW16118714

Sample Description	Method / Analyte / Units / LOR	ME- MS41 Pb ppm 0.2	ME- MS41 Rb ppm 0.1	ME- MS41 Re ppm 0.001	ME- MS41 S % 0.01	ME- MS41 Sb ppm 0.05	ME- MS41 Sc ppm 0.1	ME- MS41 Se ppm 0.2	ME- MS41 Sn ppm 0.2	ME- MS41 Sr ppm 0.2	ME- MS41 Ta ppm 0.01	ME- MS41 Te ppm 0.01	ME- MS41 Th ppm 0.2	ME- MS41 Ti % 0.005	ME- MS41 Tl ppm 0.02	ME- MS41 U ppm 0.05
KQ1A		6.8	11.6	0.001	0.01	0.05	1.3	0.4	0.8	10.5	<0.01	<0.01	32.1	0.040	0.07	1.22
KQ1B		7.1	39.0	0.001	0.02	0.05	3.2	0.4	4.7	11.2	<0.01	<0.01	38.5	0.151	0.23	1.25
KQ2A		5.4	29.8	<0.001	0.02	0.05	2.5	0.4	1.3	6.7	<0.01	<0.01	30.9	0.080	0.20	1.49
KQ2B		8.9	24.1	<0.001	0.04	0.06	2.1	1.8	1.2	10.3	<0.01	<0.01	55.8	0.078	0.16	2.44
KQ3A		2.1	4.5	<0.001	0.02	<0.05	0.9	0.3	0.2	6.7	<0.01	<0.01	10.9	<0.005	0.02	0.62
KQ3B		3.7	13.5	<0.001	0.01	<0.05	1.3	0.4	0.4	7.1	<0.01	<0.01	16.6	0.042	0.09	0.95
KQ4A		4.7	16.7	<0.001	0.01	<0.05	1.4	0.4	0.4	3.8	<0.01	<0.01	30.7	0.024	0.11	1.58
KQ4B		3.2	13.4	<0.001	0.01	<0.05	0.9	0.4	0.4	5.4	<0.01	<0.01	15.6	0.020	0.09	1.08
KQ5A		2.8	8.6	<0.001	0.04	<0.05	0.4	0.4	1.2	4.9	<0.01	<0.01	9.1	0.011	0.05	2.76
KD01		3.4	79.9	0.001	0.16	<0.05	16.4	0.4	1.1	7.8	<0.01	0.03	3.6	0.274	0.56	0.93
KD02		4.2	98.8	<0.001	0.14	0.06	19.6	0.5	1.5	7.7	<0.01	0.02	3.8	0.319	0.72	0.94
KD03		4.1	109.0	0.001	0.14	<0.05	19.2	0.6	2.0	8.4	<0.01	0.03	3.8	0.349	0.80	1.02
KD04		3.1	87.9	<0.001	0.29	<0.05	13.9	0.5	1.4	8.7	<0.01	0.02	3.0	0.301	0.64	0.96
KD05		4.4	85.0	0.001	0.24	<0.05	14.3	0.4	1.4	7.8	<0.01	0.02	3.2	0.279	0.62	0.97
KD06		3.4	74.8	0.001	0.32	<0.05	11.9	0.5	1.0	12.9	<0.01	0.03	3.6	0.253	0.53	0.93
KD07		3.9	73.8	0.001	0.14	<0.05	11.0	0.6	1.2	8.6	<0.01	0.03	3.6	0.237	0.53	1.31
KD08		6.4	62.9	0.001	0.23	<0.05	9.4	0.4	1.0	6.1	<0.01	<0.01	3.2	0.233	0.46	0.94
KD09		4.2	53.2	<0.001	0.22	0.07	8.6	0.5	0.9	7.7	<0.01	0.02	3.7	0.177	0.37	0.89
KD10		3.3	56.8	0.001	0.10	<0.05	11.1	0.3	0.8	7.6	<0.01	0.01	4.0	0.189	0.41	1.07
KD11		3.9	62.1	0.001	0.15	<0.05	12.9	0.5	0.9	10.9	<0.01	0.02	4.4	0.220	0.44	1.30

***** See Appendix Page for comments regarding this certificate *****

ALS Minerals
ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com

To: AURORA GEOSCIENCES LTD.
3506 MCDONALD DRIVE
YELLOWKNIFE NT X1A 2H1

Finalized Date: 3- AUG- 2016
Account: AURGEO

CERTIFICATE OF ANALYSIS YW16118714

Sample Description	Method / Analyte / Units / LOR	ME-MS41 V ppm 1	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5
KQ1A		12	0.09	5.56	34	17.8
KQ1B		26	0.11	11.95	73	16.9
KQ2A		15	0.10	6.87	43	18.4
KQ2B		47	0.17	38.4	76	14.0
KQ3A		8	0.06	1.70	22	9.7
KQ3B		17	0.08	5.98	33	9.4
KQ4A		8	0.08	6.97	27	18.5
KQ4B		6	0.08	3.94	21	7.9
KQ5A		12	0.07	2.84	25	9.4
KD01		115	0.31	4.70	81	9.6
KD02		131	0.36	4.64	101	9.7
KD03		136	0.34	4.46	92	8.9
KD04		101	0.42	4.26	79	5.8
KD05		100	0.40	4.71	84	6.0
KD06		88	0.24	4.62	64	6.6
KD07		69	0.33	4.51	73	5.2
KD08		71	0.34	4.03	69	6.8
KD09		67	0.17	4.65	106	6.8
KD10		92	0.23	4.38	73	3.5
KD11		98	0.33	5.76	89	4.6

***** See Appendix Page for comments regarding this certificate *****

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Finalized Date: 3- AUG- 2016
Account: AURGEO

CERTIFICATE OF ANALYSIS YW16118714

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Gold determinations by this method are semi- quantitative due to the small sample weight used (0.5g).

Applies to Method: ME- MS41

LABORATORY ADDRESSES

Processed at ALS Yellowknife located at 3 Coronation Drive, PO Box 1919, Yellowknife, NT, Canada.

Applies to Method:

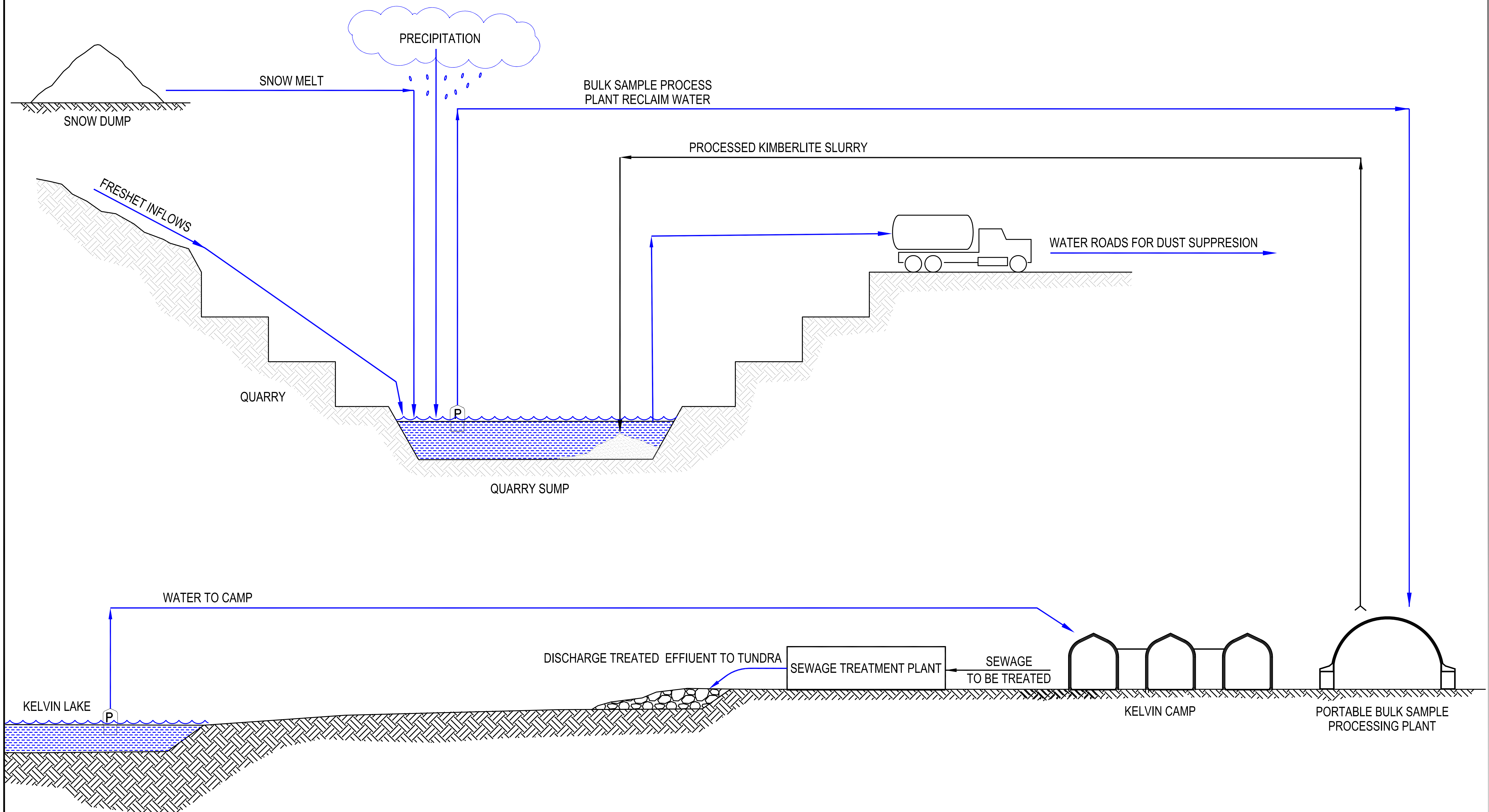
CRU- 21	CRU- 22c	CRU- QC	PUL- 21
PUL- QC	SPL- 21	WEI- 21	

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method:

C- GAS05	C- IR07	ME- MS41	OA- ELE07
OA- VOL08mn	S- CAL06	S- GRA06	S- GRA06a
S- IR08			

APPENDIX C : Water Reticulation Flow Diagram



DWG. NO.	REFERENCE DRAWINGS

Rev. No.	DESCRIPTION	DATE	BY

Rev. No.	DESCRIPTION	DATE	BY
B	ISSUED FOR PERMIT APPLICATION	20/09/16	C.K.

SECTION:	
SCALE:	
DESIGN. BY: C.Goldschmidt	20/09/16
DRAWN BY: B.Wong	20/09/16
CHECK. BY	
APP. BY:	

Kennady Diamonds Inc.
Kennady North Exploration

JDS ENERGY & MINING INC.

ADVANCED EXPLORATION PROGRAM WATER RETICULATION FLOW DIAGRAM

PROJECT NUMBER	DRAWING NUMBER	REVISION No.
KENKNP-06E	AEP-PFD	B

APPENDIX D : Summary of Country Rock Geochemistry

TECHNICAL MEMORANDUM

DATE 3 October 2023 **Reference No.** 23590561-088-TM-Rev1-3000

TO David White / Matthew MacPhail
Aurora Geosciences Ltd. / Mountain Province Diamonds Inc.

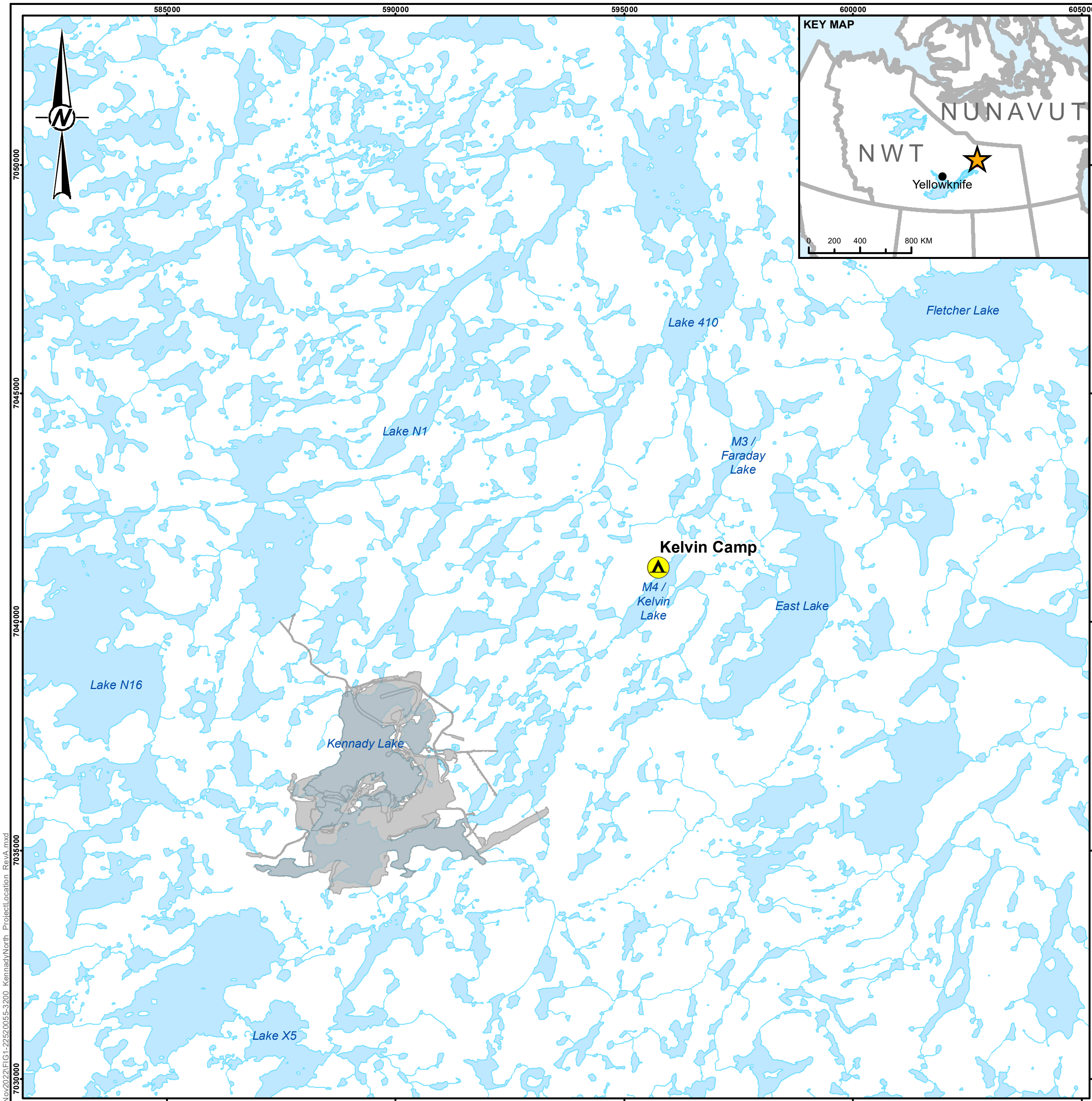
CC Katsky Venter, RainCoast Environmental Services Ltd.

FROM Carrie Jewiss and Ken De Vos **EMAIL Carrie.Jewiss@wsp.com; Ken.Devos@wsp.com**

TECHNICAL MEMORANDUM: GEOCHEMSTRY BASELINE REPORT SUMMARY

1.0 INTRODUCTION

WSP Canada Inc. (WSP) was retained by Aurora Geosciences Ltd. (Aurora) and Kennady Diamonds Inc. (Kennady) to provide an overview of the Project's geochemical baseline dataset and summarize key findings and current conclusions relevant to the management and monitoring of waste rock and processed kimberlite at the Kennady North Project (the Project), located approximately 280 km east-northeast of Yellowknife, NWT and immediately adjacent to the Gahcho Kué Mine (Figure 1). This memorandum is a summary of the full data review completed and presented to Aurora Geosciences Ltd. and Kennady Diamonds Inc. (WSP, 2023).



LEGEND

- KELVIN CAMP
- GAHCHO KUÉ MINE FOOTPRINT

0 2 4

1:125,000 KILOMETRES

REFERENCE(S)

1. HYDROLOGY DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.

PROJECTION: UTM ZONE 12 DATUM: NAD83

CLIENT

AURORA GEOSCIENCES LTD.

PROJECT

KENNADY NORTH PROJECT

TITLE

KENNADY NORTH PROJECT LOCATION

CONSULTANT

wsp

YYYY-MM-DD	2023-10-02
DESIGNED	PD
PREPARED	ANK
REVIEWED	CJ
APPROVED	KDV

PROJECT NO.	PHASE	REV.	FIGURE
23590561	3000	0	1

PATH: I:\CLIENTS\KENNADY_DIAMONDS\22520055\Mapping\WaterQuality\FieldProgramReport_Nov2022\FIG1-22520055-3200_KennadyNorth_ProjectLocation_RevA.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

25mm

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2.0 BASELINE DATA OVERVIEW

Country rock ('waste rock' in a mining scenario) and processed kimberlite samples collected to date are summarized in Table 1.

Table 1: Summary of Sample Counts for Separate Analyses and Datasets, including both Pre-existing SRK Static and Kinetic Data and 2021 Baseline Samples from May 2021

	Analyses	Gneiss	Amphibolite	Diabase	Granite & Altered Granite	Other Lithologies	Processed Kimberlite Underflow	Processed Kimberlite Other	Total Number of Samples
SRK Static	Metals, ABA	101	4	3	1	7	16[c]	68	**200**
SRK Kinetic	Field Barrel[a]	5	-	-	-	-	-	-	5
2021 Baseline Samples Static	Metals ABA WRA NAG pH NAG Extract[b]	474	36	35	7	60	12	-	**624**
2021 Baseline Samples Static Subset	SFE Mineralogy	111	9	10	5	20	12	-	167
2021 Baseline Samples Kinetic	HCT	25	3	1	-	-	6	-	35
	Submerged Column	-	-	-	-	-	6	-	6

Note:

a) Field barrel samples were initiated by SRK in 2016, but analyses transferred to WSP. Further analysis of the additional leftover material from these field barrels was used to create 5 new gneiss samples within the gneiss dataset for static, subset, and kinetic tests.

b) NAG Extract was only analyzed where the sample's NAG pH was <4.5.

c) 12 processed kimberlite samples from the original SRK dataset were reanalyzed as part of this baseline study; because of this, only 16 SRK processed kimberlite underflow samples are used as part of the comparative dataset instead of the complete 28 underflow samples.

In total, 132 waste rock samples were collected historically by SRK and an additional 624 samples were analyzed by WSP in 2021. An additional 68 PK samples were historically collected by SRK, however only underflow was considered in the context of the analysis in 2021. A summary of the acid generation potential of these samples is presented in Table 3.

Table 2: Acid Generation Potential Summary for Combined SRK and 2021 Baseline Sample Datasets

Lithology	Number of Samples	Percentage of Samples		
		NP/AP >2	NP/AP >1 and <2	NP/AP <1
GNSS	502	29%	43%	27%
GNSS-ALT	64	84%	8%	8%
GNSS-K	9	78%	11%	11%
PK (Underflow)	28	96%	4%	0%
DIAB	38	100%	0%	0%
AMPH	40	38%	15%	48%
QTZV	8	63%	25%	13%
PEG	20	85%	5%	10%
FLT-ZN	18	78%	11%	11%
MB	21	71%	5%	24%
GRAN-ALT	3	67%	33%	0%
GRAN	5	80%	20%	0%

NP = neutralization potential; AP = acid potential. GNSS = Gneiss, GNSS-ALT = Altered Gneiss, GNSS-K = Gneiss-K, PK = Processed Kimberlite, DIAB = Diabase, AMPH = Amphibolite, QTZV = Quartz Vein, PEG = Pegmatite, FLT-ZN = Fault Zone, MB = Marginal Breccia, GRAN-ALT = Altered Granite, GRAN = Granite.

An initial study on waste rock characterization was conducted by SRK in 2016. The SRK study was designed to provide a preliminary overview of waste rock and processed kimberlite geochemistry and was limited to kimberlites and available core at the time. Baseline samples subsequently collected by WSP were specifically selected to be an unbiased, spatially representative selection of waste rock based on preliminary estimates of the size and location of potential future open pit and underground mines.

A comparison of the historical SRK samples to the overall Project baseline indicate that SRK samples generally fall within the range of the WSP baseline dataset, with the exception of, the five field barrel samples from SRK that generally have lower neutralization potential ratio (NPR) values than the WSP baseline dataset. These results indicate that:

1) the updated mine plan is expected to produce roughly 7% lower proportions of acid-generating waste rock (from 27% PAG gneiss down to approximately 20% PAG gneiss).

2) the characterization of overall geochemical characteristics and proportions of rock classified as having acid rock drainage (ARD) and/or metal leaching (ML) potential may be more reliably represented by the 2021 sample group alone, without the inclusion of the smaller SRK sample group which produces a skewing effect on the statistics of some parameters.

As a result, an acid generation potential summary including solely the 2021 WSP results is provided in Table 3.

Table 3: Acid Generation Potential Summary for 2021 Baseline Sample Dataset

Lithology	Number of Samples	Percentage of Samples Modified Sobek NPR			Percentage of Samples Total Inorganic Carbon NPR		
		NP/AP >2	NP/AP >1 and <2	NP/AP <1	NP/AP >2	NP/AP >1 and <2	NP/AP <1
GNSS	406	33%	47%	20%	7%	9%	85%
GNSS-ALT	59	85%	7%	8%	58%	14%	29%
GNSS-K	9	78%	11%	11%	67%	11%	22%
PK	12	100%	0%	0%	83%	8%	8%
DIAB	35	100%	0%	0%	66%	29%	6%
AMPH	36	36%	17%	47%	8%	11%	81%
QTZV	7	71%	15%	14%	50%	33%	17%
PEG	19	84%	5%	11%	79%	0%	21%
FLT-ZN	17	76%	12%	12%	53%	12%	35%
MB	17	65%	6%	29%	47%	18%	35%
GRAN-ALT	3	67%	33%	0%	33%	33%	33%
GRAN	4	100%	0%	0%	100%	0%	0%

Interpretation of ongoing kinetic testing alongside evaluation of NP from inorganic carbon and NAG pH is underway. Preliminary results of this testing show that a larger percentage of rock is expected to be PAG relative to Modified Sobek NP results shown in Table 3.

3.0 RESULTS AND DISCUSSION

Results of the waste rock and kimberlite geochemistry characterization conducted to date are summarized as follows:

- Sample results indicate that the dominant waste rock lithology at the Project is gneiss, making up approximately 97% of overall expected waste rock tonnage (based on mine plan as of April 2021).
- In general, waste rock lithologies are geochemically similar among the Kelvin, Faraday 2, and Faraday 1-3 deposits.
- Minor lithologies were sampled at a proportionately greater frequency in order to develop a reliable dataset for these lithologies as well as gneiss. However, bulk geochemical and leachate characteristics are anticipated to be controlled by the gneiss lithology based on the material tonnages and relative similarity in ARD/ML results between lithologies.

- The 2021 baseline static sample results indicate that, based on Modified Sobek NPR, 18% of gneiss samples (combined GNSS, GNSS-K, and GNSS-ALT) were classified as potentially acid generating (PAG), 40% of gneiss samples were classified as non-potentially acid generating (NPAG), and the remaining samples were classified as having uncertain potential for acid generation (42%):
  - A greater fraction (47%) of amphibolite samples is classified as PAG; however, given the anticipated material tonnages, the dominant source (by mass) of PAG waste rock will be gneiss.
  - No diabase, granite, or processed kimberlite samples are classified as PAG.
- The 2021 baseline static sample results indicate that, based on TIC NPR, 77% of gneiss samples (combined GNSS, GNSS-K, and GNSS-ALT) were classified as potentially acid generating (PAG), 14% of gneiss samples were classified as non-potentially acid generating (NPAG), and the remaining samples were classified as having uncertain potential for acid generation (9%):
  - A greater fraction (81%) of amphibolite samples are classified as PAG.
  - Two diabase samples, 1 granite, and 1 processed kimberlite sample are classified as PAG.
- The 2021 baseline static sample results indicate that, based on NAG pH, 33% of gneiss samples (combined GNSS, GNSS-K, and GNSS-ALT) were classified as potentially acid generating (PAG), and the remaining samples were classified as non- potentially acid generating (77%):
  - A greater fraction (67%) of amphibolite samples are classified as PAG.
  - No diabase, granite, or processed kimberlite samples are classified as PAG.
- Kinetic testing has included humidity cell tests (HCTs), submerged columns, and field barrels:
  - HCT results indicate that 15 of the 25 gneiss HCT samples are producing acidic leachate below pH 5; The remaining 10 gneiss HCTs have leachate pH between 5.5 and 7. However, these HCTs are not considered to have reached steady state.
  - Gneiss field barrel split HCT results show all five samples are producing acidic leachate below pH 4.1.
  - One amphibolite sample is producing acidic leachate below pH 5.
  - Diabase and processed kimberlite HCTs reported circumneutral pH leachate.
  - All processed kimberlite submerged column kinetic tests reported circumneutral pH leachate ranging from 5.5 to 7. The leachate pH is generally comparable or higher than the associated HCTs.
  - All gneiss field barrels had acidic pH below 4 in 2022, consistent with the HCT results described above.
- Overall, kinetic testing (HCTs, columns, and field barrels) results indicate that some metals may be leachable from waste rock at concentrations greater than the Canadian Council of Ministers of the Environment (CCME) chronic guidelines for the protection of aquatic life (freshwater, chronic). This comparison is completed as a screening tool to provide context to test results; however, this screening may not be representative of actual leachate chemistry under field conditions but is rather a tool to help indicate what elements and/or lithologies may require supplemental evaluation through additional test methods and/or consideration as part of the broader baseline study through a weight of evidence approach.

- Field barrel results are representative of the PAG fraction of gneiss, but do not provide representation of the majority NPAG and uncertain fractions. As materials classified as PAG have been demonstrated to produce leachate with higher concentrations of metals; the overrepresentation of PAG materials in the field barrels affects the results for both acid generation and metal leaching potential.
- Constituents which have been identified for future consideration include:
  - Gneiss: aluminium, arsenic, cadmium, chromium, copper, fluoride, iron, lead, manganese, nickel, selenium, uranium, and zinc
  - Amphibolite: aluminium, arsenic
  - Diabase: none
  - Granite: aluminium, arsenic (based on shake flask extraction [SFE] results)
  - Processed kimberlite: aluminium, arsenic, cadmium, fluoride

Kinetic testing remains ongoing and will be subject to future interpretation and reporting. This report considers results as of April 2023.

PAG classifications are highly variable between test types (Modified Sobek NPR, total inorganic carbon NPR, NAG pH, and kinetic testing).In general, total inorganic carbon NP is most consistent with the kinetic test results, and should be considered the appropriate NP to use when determining volumes of PAG rock for the purposes of mine planning.

4.0 CLOSURE

We trust that this memorandum meets your present requirements. If you have any questions or concerns, please do not hesitate to contact the undersigned.

WSP Canada Inc. (WSP) has prepared this document in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practising under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this document. No warranty, express or implied, is made.

This document, including all text, data, tables, plans, figures, drawings and other documents contained herein, has been prepared by WSP for the sole benefit of Aurora Geosciences Ltd. and Kennady Diamonds Inc. It represents WSP's professional judgement based on the knowledge and information available at the time of completion. WSP is not responsible for any unauthorized use or modification of this document. All third parties relying on this document do so at their own risk.

The factual data, interpretations, suggestions, recommendations and opinions expressed in this document pertain to the specific project, site conditions, design objective, development and purpose described to WSP by Aurora Geosciences Ltd. and Kennady Diamonds Inc. and are not applicable to any other project or site location. To properly understand the factual data, interpretations, suggestions, recommendations and opinions expressed in this document, reference must be made to the entire document.

WSP Canada Inc.

ORIGINAL SIGNED

Carrie Jewiss M.Sc.
Environmental Scientist

ORIGINAL SIGNED

Ken De Vos, M.Sc., P.Geo.
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CJ/KJD/ss

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5.0 REFERENCE

WSP (WSP Canada Inc.). 2023. Kennady North Baseline Report: Geochemistry. Draft. Submitted to Aurora Geosciences Ltd and Kennady Diamonds Inc. 20438111-076-RG-RevB-3000. 19 April 2023.