



July 19, 2023

Kelli Bergh
Vice President, Environment and Permitting
BMC Minerals Ltd.

By Email: kelli.bergh@bmcm minerals.com

Re: Quartz Mining License Application, Information Request 5 – Phase 5a review

Dear Ms. Bergh:

During the June 28, 2023 meeting with BMC Minerals Ltd (BMC), Mineral Resources Branch (MRB) provided an update on the Quartz Mining License (QML) application review and indicated that an information request on Phase 5a was forthcoming.

We have completed our adequacy review of the Site Characterization Plan, Environmental Monitoring Surveillance Reporting and Adaptive Management Plan, Water Management Plan, and have determined that we require additional information to support our complete review of these plans.

As you are aware, Yukon government provided comment on aspects of these plans in an intervention on Water License Application QZ20-068 (Exhibit 5.2) and in our Phase 1 information request dated April 11, 2023. Where applicable, and for the sake of completeness, we have referenced the information requests outlined in YG's WL Intervention in this information request as well. Our expectation is that BMC will consider the information requests and recommendations identified by other intervenors in the Water Licensing process and include those in the responses to Yukon government where there is overlap with the Quartz Mining License application.

In relation to the Phase 5a review, MRB would like to note that the application for the Quartz Mining License was applied for in 2022, and the baseline information used to support the application ends in 2019. Applications for a quartz mining license must use the most recent data and information available at the time of submission to ensure proposed measures and methodologies are supported by sufficient information. MRB would like to highlight the following

guidance materials that must be relied upon when responding to the information requests contained in the enclosure:

- [Guidelines for Developing Adaptive Management Plans in Yukon: Water-related components of quartz mining projects](#), Government of Yukon, 2021;
- [Guidelines for Developing Water Quality Objectives and Effluent Quality Standards for Quartz Mining Project](#), Yukon Government, 2021;
- [Guidelines for Mine Waste Management Facilities](#), Yukon Government, 2023;
- [Projected Climate Data](#) and resources for calculating [Design Flood Hydrology](#), Engineers and Geoscientist British Columbia;
- [The 6th Generation seismic hazard model of Canada](#), Natural Research Council of Canada, 2020;
- [Guide on Climate Change Adaptation for the Mining Sector](#), Mining Association of Canada, 2021;
- [Climate Atlas](#) for Yukon climate modeling and high-level climate change predictions;
- [Technical Guide: Development, interpretation and use of rainfall intensity-duration-frequency \(IDF\) information: Guideline for Canadian water resources practitioners](#), CSA Group, 2019;
- [Developing an Operation, Maintenance, and Surveillance Manual for Tailings and Water Management Facilities](#), Mining Association of Canada, 2021;
- [Yukon Ambient Air Quality Standards](#), Government of Yukon, 2019, 2025;
- [Ecological and landscape classification](#) guidance library;
- [Field Manual for Describing Yukon Ecosystems](#), Government of Yukon, 2017;

Yukon government has committed to requiring quartz mines to project their anticipated greenhouse gas emissions, identify measures to reduce emissions, and report on greenhouse gas emissions. This commitment is in [Our Clean Future, A Yukon strategy for climate change, energy and a green economy](#). In February 2022, Yukon government enacted reporting requirements for greenhouse gas emissions, these requirements are enclosed with this letter. These are reporting expectations for all quartz mines and monitoring to enable the reporting is expected throughout the life of the project.

The issuance of this information request concludes our adequacy review of Phases 1 through 5 of the Quartz Mining License application. Following receipt and review of the responses to the information requests, provided the responses do not result in significant changes to project design, development or operations, MRB will be in a position to initiate the Phase 6 adequacy review of the Reclamation and Closure Plan. While the Phase 6 adequacy review is in process, EMR will begin consultation on Phases 1 through 5 with affected First Nations.

BMC Minerals Ltd

July 19, 2023

Page 3 of 3

Once you have taken the time to consider the requests, please confirm your estimated timeline for response to this and all previous information requests.

MRB remains committed to meeting with BMC on a regular basis to discuss both technical matters and the application review process. Should you have any questions or concerns, I am available at (867) 667-3126 or todd.powell@yukon.ca or you can reach out to Monica Nordling, Mining Technologist, at 667-5604 or monica.nordling@yukon.ca.

Sincerely,


for Todd Powell
Director, Mineral Resources Branch

CC: Allan Nixon, VP External Affairs, BMC Minerals Ltd.
Keith Maguire, Director, Major Projects Yukon
Caleb Light, A/Director, Yukon Water Board Secretariat
Chief Charlie, Liard First Nation
Travis Stewart, Lands Department, LFN
Chief Loblaw, Ross River Dena Council
Josh Barichello, Lands Department, RRDC
Chief McCook, Kwadacha Nation
Chief Manygreyhorses, Dease River First Nation

Enclosed: Information Request 5: QML Application Phase 5a review
Greenhouse Gas Monitoring and Reporting Requirements

Information Request 5

This information request is issued to BMC Minerals Ltd. with respect to their application for a Quartz Mining License (QML) for the Kudz Ze Kayah Mine. This information request pertains to the Site Characterization Plan, the Water Management Plan, and the Environmental Monitoring, Surveillance, Reporting and Adaptive Management Plan.

Where applicable this information links to previous information requests issued by Mineral Resources Branch (IR#-question) and the Yukon Government intervention (the “YG Intervention”) on Water License application QZ20-068.

Mineral Resources Branch will review the BMC responses to QZ20-068 interventions. BMC is expected to identify any areas that will require updates in the QML application material as a result of the intervention responses. BMC is encouraged to keep in mind the areas of overlap between the two regulatory processes and ensure responses to MRB information requests and QZ20-068 interventions are consistent.

Several updates to the Site Characterization Plan, Water Management Plan, Adaptive Management Plan, and Environmental Monitoring, Surveillance and Reporting Plan are required in this information request. Updated plans must include a concordance table that demonstrates how Decision Document terms and conditions and proponent commitments have been met and must indicate how and where information requirements from MRB have been addressed. Where applicable, the concordance table should also include how and where responses to QZ20-068 interventions are captured.

1 Site Characterization Plan

The Site Characterization Plan is an integral component of a QML application as it summarizes the environmental conditions of the site and provides the basis for the assumptions and designs that support the development and operation of a project.

Yukon government expects that Site Characterization Plans submitted for the purposes of a QML application are updated to incorporate data and information gained through the assessment period, this expectation is clearly laid out in the 2013 Plan Requirement Guidance of Quartz Mining Project. Incorporation of recent environmental conditions is important to ensure assumptions that impact mine development, operations and closure continue to be relevant for the site. The Site Characterization Plan submitted with the QML application included baseline data collection up to early 2019, and earlier for certain disciplines, although the QML application was submitted in 2022. No additional baseline data from 2019-2022 was considered in the submitted Site Characterization Plan, and it uses guidance documents and reference materials that were out of date at the time of writing or were updated post-2019.

While the application for Water License QZ20-068 does not contain a Site Characterization Plan many of the appendices are a part of that application. Yukon government thoroughly

reviewed those appendices and provided comments in our Intervention. Responses to the requests and comments in the Intervention which are critical to MRBs review of the Site Characterization Plan and the QML application are specifically referenced in the questions below.

General

IR5-1: Update the Site Characterization Plan to include baseline data collected in all discipline areas up to and including August 2022. Where practical, include data collected in 2023 as well.

IR5-2: Ensure the updated Site Characterization Plan is consistent with the 2023 Guidelines for Mine Waste Management Facilities, in particular appendices A and B.

Climate, Hydrology and Hydrogeology

IR5-3: YG's WL Intervention recommendation 29 with respect to climate change modelling applies to our review of the Site Characterization Plan as well. The Site Characterization Plan is required to be updated to address the comments and observations raised in YG's Intervention.

IR5-4: Update the hydrogeological model following completion of the additional field work identified in YG's Intervention recommendation 16 and 17. If the field work required has already been completed include this in the updated Site Characterization Plan.

IR5-5: Update the Site Characterization Plan to incorporate the conceptual site models required in MRB's IR1-1 and YG's Intervention recommendation 18 and the numerical model in YG's Intervention recommendation 19.

IR5-6: Update the Site Characterization Plan to incorporate the climate modelling required in MRB's IR1-2.

IR5-7: The LOMWB references a "Hydrometeorology Analysis Report (KP, 2019a)" but also refers to a "Hydrology and Climate Analysis Report (KP, 2019A)". Please confirm if Site Characterization report, Appendix B: 2019 Hydrology and Climate Analysis, is the same reference as in the LOMWB. If not, please provide a copy of that report.

IR5-8: YG's Intervention comments 23 and 25 with respect to the hydrometeorology baseline applies to our review of the Site Characterization Plan as well. A response to these comments along with requisite updates to the Site Characterization Plan is required from BMC.

IR5-9: Responses to information request 22 and 24 of YG's Intervention may have an impact on the material submitted in support of the QML application. If BMC alters any plans or supporting information as a result of interventions filed with Yukon Water Board, updated plans should also be filed with Mineral Resources Branch along with a concordance table describing any changes.

IR5-10: Response to IR5-8 and IR-9 may also have an impact on the classification and design of the mine waste management facilities, particularly the Class A, and may require additional consideration when responding to Information Request 1 issued by Mineral Resources Branch on April 20, 2023.

IR5-11: The updated Site Characterization Plan must include an inventory of anticipated emissions related to energy, electricity generation, and fuel, in line with Yukon's annual reporting requirements for quartz mines concerning greenhouse gas emissions.

Geological, Geotechnical and Seismicity

IR5-12: The geotechnical report required in MRB's IR1-3 is required to be incorporated into the updated Site Characterization Plan.

IR5-13: The geological model required in MRB's IR1-5 is required to be incorporated into the updated Site Characterization Plan.

IR5-14: Site-specific site characterization reports required in MRB's IR1-6 for the waste rock and tailings management facilities are not required to be included in the updated Site Characterization Plan but could be appended for completeness.

IR5-15: Provide the *Terrain Stability and Hazards Mapping Report and Related Field Reconnaissance* (Core and Associates, 2017b) referred to in the Site Characterization Plan and Appendix J.

IR5-16: The Site Characterization Plan uses the 2015 National Building Code Seismic Hazard Calculation; Natural Resources Canada revised this guidance in 2020. Complete a seismic hazard assessment using the 2020 guidance and include it in an updated Site Characterization Plan.

IR5-17: Responses to information request 38 and 39 of the Intervention may have an on the material submitted in support of the QML application. If BMC alters any plans or supporting information as a result of interventions filed with Yukon Water Board updated plans should also be filed with Mineral Resources Branch along with a concordance table describing any changes

Wildlife

IR5-18: Upon completion of the wildlife baseline data collection required in accordance with Decision Document term 11b, the timing of which is described in the June 20, 2023 letter from Department of Environment, the relevant sections of the Site Characterization Plan are required to be updated.

Vegetation

IR5-19: The Site Characterization Plan does not include a discussion on the current extent of invasive plants species in the project area. Appendix F provides information from 2015-2016, though with continued exploration and use of the area this may have

changed. Include an updated invasive plant species inventory in the updated Site Characterization Plan.

2 Water Management Plan and Water Balance Model

Yukon Government conducted a thorough review of the Water Management Plan (WMP) and Life of Mine Water Balance Model (LoMWBM) during the Public Commenting period for WL application QZ20-068; as the WMP and LoMWBM overlap with the management of mine waste and development and operation of the mine the comments and concerns raised in YG's Intervention are applicable to the QML application review. Aspects of the Intervention that are directly applicable to the QML application review are included and additional comments are included that are more applicable to the development and operation of the mine.

General

IR5-20: The Water Management Plan includes a list of regulations and guidelines that were used for the development of the plan. This list does not include the Yukon government issued guidance documents that are relevant including the 2021 guidance on adaptive management plans¹ and 2021 guidance on water quality objectives and effluent quality standards². Provide confirmation that Yukon guidance documents were considered during the development of this plan, and that the proposed actions and outcomes are in conformity with those guidelines.

IR5-21: The dam classification summary provided in Table 4-1 needs to be reviewed and updated in accordance with the 2023 Guidelines for Mine Waste Management Facilities. Classification of the facilities, as defined in the 2023 Guide must be added to Table 4-1.

IR5-22: The design events and criteria considerations for water management and conveyance infrastructure identified in Table 4-2 should be reviewed and updated in accordance with the 2023 Guidelines for Mine Waste Management Facilities.

IR5-23: Provide clarification and additional details on the "risk based approach" that was used when developing the storm water design criteria in section 4.2 of the WMP.

Site Water Management

IR5-24: Collection ponds are used for sediment removal in run off from the overburden and Class C facilities prior to water discharge to the environment. Provide clarification that the design of these collection ponds considers the accumulation of sediment without adversely impacting storage capacities.

¹ [Guidelines for developing adaptive management plans in Yukon: Water-related components of quartz mining projects](#), Government of Yukon, January 2021.

² [Yukon Guide for Developing Water Quality Objectives and Effluent Quality Standards for Quartz Mining Projects](#), Government of Yukon, October 2021.

IR5-25: If sediment accumulation was not included in the design of the collection ponds provide the monitoring and management methods that will be put in place to ensure sufficient capacity in these ponds are available.

IR5-26: Section 6.2.1 states that the overburden dewatering trenches are expected to be approximately 15 to 20 m deep. Workplace Health and Safety Regulations³ have specific requirements with respect to trenches over 6m deep (10.62-10.72) that must be adhered to when designing and constructing this infrastructure. Provide confirmation that the dewatering strategies conform with the regulations.

IR5-27: Section 6.3.10 states that flows requiring treatment have the greatest potential to exceed water treatment plant capacity during freshet and the months that immediately follow and indicates that these flows may exceed the capacities of the plant. Consideration of this risk and adaptive management measures must be included in the Adaptive Management Plan required in IR-73.

IR5-28: Information requests with respect to the management of frozen materials were included in MRBs Phase 4 information request. Update Section 6.7 of the Water Management Plan with information on frozen materials management information to ensure consistency across management plans.

Maintenance and Monitoring Strategies

IR5-29: Maintenance and monitoring strategies are described at a high level in Section 7 with reference to details being provided in the Environmental Monitoring, Surveillance, Reporting and Adaptive Management Plan. To avoid cross-referencing errors and requirement for frequent updates, BMC should consider removing this section.

IR5-30: Section 7 refers to an Operation, Monitoring and Surveillance manual being prepared for the project, and more specifically for water management infrastructure. These manuals must be prepared and submitted for review as a part of the QML application process.

Adaptive Management

IR5-31: The adaptive management strategies should be separated out of this plan and included in the stand-alone Adaptive Management Plan (AMP) required in IR5-73.

IR5-32: The requests with respect to adaptive management throughout this information request must be included in the AMP and submitted as a part of the QML application.

IR5-33: Additional information on the mobile water treatment plant referred to in Table 8-1 is required in the Adaptive Management Plan. Specific triggers, action responses and outcomes (i.e., water quality objectives) with respect to the mobilization, commissioning and operation of a mobile water treatment plan are required.

³ [Workplace Health and Safety Regulations](#), Government of Yukon

IR5-34: Increasing discharge rates to the environment when management pond volumes are exceeded is included as an adaptive management strategy. Provide justification and additional detail on how Water Quality Objectives will be monitored and met when implementing these strategies and how they link to other strategies (i.e., capacities and throughputs of water treatment plants).

IR5-35: Directing non-compliant water from overburden stockpiles and the Class C facility to the upper and lower water management ponds is included as an adaptive management strategy. Confirm if the intended management practice is dilution of non-compliant water in the water management ponds to achieve water quality objectives prior to discharge to the environment.

Water Use

IR5-36: Use of water from the lower water management pond for the purposes of dust control is included as an adaptive management measure. Provide clarification and additional information with respect to the expected water quality in this pond and its acceptability for this purpose, and alternative solutions for dust control when water is not of appropriate quality.

Life of Mine Water Balance Model

IR5-37: Intervention comments 26 through 29 with respect to assumptions behind the water balance model and available water management methodologies may have an impact on mine development and operation. A response to these comments along with requisite updates to relevant management plans is required from BMC.

3 Environmental Monitoring, Surveillance, Reporting, and Adaptive Management Plan

The Environmental Monitoring, Surveillance, Reporting and Adaptive Management Plan is a submission for both the quartz mining license and water license applications; Yukon government provided thorough comments on this plan in the WL Intervention, many of which are applicable to the QML application review. Aspects of the WL Intervention that are directly applicable to the QML application review are included in this information request as well as comments that are more applicable to the terrestrial environment and development and operation of the mine.

The comments in this section are split into two categories (1) environmental monitoring, surveillance and reporting and (2) adaptive management. As is evident in the information requests that follow, MRB is of the opinion that the adaptive management sections of the plan should be presented in a standalone plan.

3.1 Environmental Monitoring, Surveillance and Reporting

Monitoring, surveillance, and reporting is an important aspect of the development and operation of the mine as it provides the mechanisms to understand the effectiveness of mitigation measures, identifies areas of concern, and provides information that can identify changes in site characterization that would indicate assumptions and methodologies should be revisited.

An update to the Environmental Monitoring, Surveillance and Reporting plan (EMSRP) is the desired approach of MRB to support the QML application. This update would separate out the monitoring, surveillance and reporting aspects and respond to the relevant information requirements identified in information requests issued by Mineral Resources Branch and the WL Intervention. The plan needs to be detailed and clearly laid out to ensure all parties are able to understand the requirements and expectations for onsite monitoring, surveillance and reporting and needs to be specific enough to ensure enforceability.

The updated EMSRP must include all monitoring and surveillance methods to adequately analysis data to determine if and when adaptive management actions are required. Although these plans will be separate, the links between the two and their ability to complement each other must be evident.

Reporting requirements for the quartz mining license will be refined during the licensing process, these may include monthly, quarterly, and annual requirements depending on the discipline area and stage of the project.

General

IR5-38: Prepare and submit a standalone Environmental Monitoring, Surveillance and Reporting Plan (EMSRP) for the construction and operation periods of the project that reflects the comments throughout this information request, previous information requests issued by Mineral Resources Branch and YG's WL Intervention.

IR5-39: Monitoring needs to be clearly laid out with schedules for each monitoring method including who is responsible for the data collection and how data will be analyzed. A clear monitoring schedule will ensure adaptive management methods can be implemented appropriately.

IR5-40: The plan does not include any discussion of wetland impacts, mitigations or monitoring. Update EMSRP to include characterization of the area and a map of wetlands to be disturbed during mining activities, and the avoidance, minimization and reclamation actions undertaken, as well as the area of reclaimed or constructed wetlands post-mining.

IR5-41: Standard Operating Protocols are referenced throughout the plan but are not included as appendices. In the updated EMSRP ensure all applicable Standard Operating Protocols are appended.

IR5-42: Monitoring and reporting of project-related impacts on climate change are not included in the EMSRP. The updated EMSRP should include monitoring of scope I and II emissions (i.e., fuel use on site) and indirect scope II emissions (i.e., fuel for transportation of ore, emissions from mine waste). Reporting requirements should be consistent with the annual reporting requirements for quartz mines concerning greenhouse gas emissions.

Air Quality

IR5-43: Ensure the ambient air quality standards being used and referenced throughout this section of the plan are those identified in Yukon Ambient Air Quality Standards⁴.

IR5-44: As required in Decision Document term and condition 37, ensure the ambient air monitoring plan bases all Criteria Air Contaminants (CACs) on the 2025 YAAQS. This should also be included in the concordance table required at the front of each plan.

IR5-45: Predicted NO₂ concentrations presented in Table 4-10 of the air dispersion model report did not exceed the 2014 YAAQS however, when compared to the 2025 YAAQS, NO₂ exceedances are present in the construction, operation and closure phases. Update the EMSRP to include NO₂ within the suite of monitored contaminants to ensure proper responses are initiated under the adaptive management approach, should the predicted exceedances occur.

IR5-46: Update the EMSRP to include continuous air quality monitoring to allow air quality to be viewed and assessed in real time, which will allow for adaptive management responses to be undertaken as necessary.

IR5-47: Provide clarification on the standard presented for chromium in Table 3-2. Based on the standard presented, the chromium form presented in the table is metallic, divalent and trivalent and does not include hexavalent chromium.

Groundwater Quality and Quantity

IR5-48: Monitoring and understanding groundwater quality and quantity is an important aspect for long-term stability of mine waste and water management infrastructure as well as understanding the effectiveness of containment methods for these facilities. The updated EMSRP must consider the recommendations identified in YG's Intervention #66.

IR5-49: Provide additional information regarding well locations and placement as this is integral to capturing representative data to support stability assessments. Consideration must be given to placement relative to mine infrastructure, depth, monitoring measures, and reporting.

IR5-50: To ensure environmental monitoring is conducted in a manner that supports implementation of adaptive measures, continuous water level monitoring should be

⁴ [Yukon Ambient Air Quality Standards](#)

included in groundwater wells installed near mine waste management infrastructure or water conveyance and storage infrastructure.

IR5-51: There is an annotation on Figure 6-1 that refers to a "paste plant" on the southeast side of the ABM pit. From previous plan reviews, it was assumed that paste would be created in the process plant, and not have its own separate facility. Provide clarification on where the paste plant will be located and ensure the EMSRP includes appropriate monitoring measures relevant to its location.

Geochemical Monitoring

IR5-52: In the updated EMSRP include the following clarifications or corrections to open pit waste rock geochemical monitoring (section 7.4.1):

- a. The first point in the bulleted list in this section references waste rock boundaries. Will these boundaries be defined by use of a pit block model?
- b. Correct the reference to Table 3-3 in the fourth bullet.
- c. The fifth point in the bulleted list in this section references visual inspections and laboratory analysis. Provide clarification on the frequency of these inspections and analysis and the threshold for classification.
- d. The fifth point in the bulleted list in this section references "the latter", but only mentions one mafic volcanic unit. Clarify if there are multiple rock types that rely on visual monitoring.
- e. The sixth point in the bulleted list in this section references "the mining software package" but does not clarify what that is. Provide additional information on this software including ownership of any databases and reliance on third-party contracts to maintain and operate the software.
- f. The ninth point in the list references a laboratory QA/QC program. Provide additional details of this program.

IR5-53: Section 7.5 refers only to annual reporting requirements. Reporting on adaptive management or response actions taken should also be included in this section, reporting requirements for different levels of response actions should be proposed by BMC in the updated EMSRP.

IR5-54: Section 7.5 should also reference that an analysis of the geochemical data collected will also be provided in the annual report.

Fish and Aquatic Resources

IR5-55: Proponent commitments with respect to the management of aquatic invasive species are not represented in the submitted EMSRAMP. The actions and measures identified in those commitments must be included in the updated EMSRP.

IR5-56: Update the EMSRP to expand monitoring and surveillance for fish and aquatic resources including spawning surveys for Arctic grayling in both Geona Creek and Finlayson Creek. This will add to the combined fish and aquatic monitoring program that

is being conducted and allow for spatial comparison. This additional data will also help determine project effects or impacts on grayling spawning, and therefore juvenile success.

IR5-57: Increase in aquatic sediments and therefore total dissolved solids, can impact survivability of juvenile fish, as well as decrease spawning success. Section 8.3 of the EMSRP does not provide details of when samples were taken, in relation to predicting potential sediment during key spawning windows. Include additional detail on the temporal scale of when aquatic sediments are sampled to allow for a more accurate presentation of the impacts to the aquatic system.

Vegetation and Soil

IR5-58: Invasive species are not addressed in this plan. Invasive species may become established, particularly within areas disturbed or impacted by mining activities. There is also a proponent commitment to developing an invasive species management plan that should be included in the updated EMSRP and provide clear monitoring and mitigations or controls for invasive species.

IR5-59: Proponent commitments with respect to development of a chance finds procedure for rare plants have not been fulfilled. The actions and measures identified in those commitments must be included in the updated EMSRP.

IR5-60: Describe what monitoring measures are in place related to hydrocarbons (e.g., visual inspections, seep survey, water samples) near the Landfill Treatment Facility.

IR5-61: Monitoring of ecosystem plots and change through time, and characterization of vegetation communities and ecosystems must be conducted in accordance with the Field Manual for Describing Yukon Ecosystems⁵ when characterizing vegetation communities or ecosystems.

IR5-62: There is currently no detailed commitment to monitoring vegetation change at control or impacted sites. Include monitoring and surveillance measures to monitor vegetation change at permanent sample plots, both at control sites, and within the zone of influence of work in the updated EMSRP.

IR5-63: The plan references trying to sample all vegetation types, with little detail on how this could be accomplished, to allow for more informative comparison of control sites against impacted sites in the same ecosite, the EMSRP should be updated to focus sampling on ecosystem mapping information, based on ecosite's present. This would provide a metric for ensuring that sampling of all major ecosites is completed.

IR5-64: The updated EMSRP should utilize ecosite classification⁶ to guide sampling and permanent plot establishment to determine and compare impacted and control sites.

⁵ [Field Manual Describing Yukon Ecosystems](#)

⁶ [Ecological and landscape classification | Government of Yukon](#)

IR5-65: The updated EMSRP must include additional information with respect to monitoring in wetlands including vegetation communities and vegetation and soil contaminants.

IR5-66: Permanent wetland monitoring sites in ecosites appropriate for comparison with constructed wetlands should be established in areas where there is no planned disturbance and included in the wetland monitoring program.

Mine Infrastructure

IR5-67: Provide a list of all geotechnical instrumentation on site (e.g., ground temperature cables, piezometers, inclinometers, etc.) including a plan showing their locations relative to the mine waste and overburden facilities.

IR5-68: YG's WL Intervention information request 74 and 75 with respect to seepage monitoring applies to our review of the EMSRAMP as well. The updated EMSRP must address the comments and observations raised in YG's Intervention.

IR5-69: Mine infrastructure monitoring needs to be clearly laid out with schedules for each monitoring method including who is responsible for the data collection and how data will be analyzed. A clear monitoring schedule will ensure emergency response and adaptive management measures can be implemented appropriately.

IR5-70: A monitoring program for the open pit must be included, the monitoring program must include, but is not limited to:

- a. Slope monitoring and surveying;
- b. tension crack mapping and monitoring;
- c. groundwater monitoring in adjacent to final pit walls; and
- d. emergency response measures.

IR5-71: Updated the EMSRP to include a monitoring plan for all mine waste management facilities. This plan must include potential run out zones with respect to roads and infrastructure adjacent to the facilities and include these as potential failure outcomes.

IR5-72: Section 11.2 does not reference the requirement for operation, maintenance and surveillance (OMS) manuals for mine workings. OMS manuals are required for all mine waste management facilities as well as mine workings. The manuals will be required for review and approval under the QML.

3.2 Adaptive Management Plan

Yukon government and Federal Decision Bodies highlighted the importance of adaptive management plans in the Decision Document and included several new and varied terms and conditions that spoke to the importance of specific and detailed adaptive management plans in the development, operation and closure of a mine. The Decision Document also addresses the need for triggers and actions associated with adaptive management principles that directly link to monitoring and surveillance results and analysis.

At present, adaptive management strategies are dispersed throughout several documents in the QML application and are difficult to review for adequacy, completeness and consistency when presented in this manner. The adaptive management measures identified throughout the application have not taken into account the 2021 guidance on AMPs issued by Yukon government and have not fully met the conditions in the Decision Document.

A stand-alone Adaptive Management Plan (AMP) is preferred by MRB to support the QML application to ensure that all adaptive management practices and procedures are contained in one plan and easily referenced. This update would separate out the environmental monitoring, surveillance, and reporting aspects and respond to the relevant requirements identified in information requests issued by Mineral Resources Branch and YG's WL Intervention. The plan needs to be detailed and clearly laid out to ensure adaptive management triggers, actions and responses are clearly understood by all parties and needs to be specific enough to ensure enforceability.

The updated AMP must include all adaptive management actions tied to monitoring and surveillance identified in the EMSRP and other applicable plans (e.g., Water Management Plan). Although these plans will be separate, the links between the two and their ability to complement each other must be evident.

IR5-73: Prepare and submit a standalone Adaptive Management Plan for the construction and operation periods of the project that reflects the comments throughout this information request, previous information requests issued by Mineral Resources Branch and YG's WL Intervention.

IR5-74: Adaptive management triggers and actions with respect to observed trends are ambiguous and unclear throughout the plan. In an updated Adaptive Management Plan provide clarity on how trends are identified, the timeframes that are considered when determining a trend is being observed, the number of triggers that are required to determine a measure is a trend versus an anomaly, and the magnitude of change that must be observed to trigger an action.

IR5-75: Adaptive management strategies within the AMP must align with terminology and processes as defined in the guidelines for developing adaptive management plans in Yukon: Water-related components of quartz mining projects⁷.

IR5-76: The OMS manuals referenced in IR5-72 must include measured triggers to indicate implementation of emergency response measures or other adaptive management measures (e.g., trigger action response plan - MAC 2019 and 2021⁸). The response actions must be clearly articulated and linked to AMP.

⁷ [Guidelines for developing adaptive management plans in Yukon](#) | Government of Yukon, 2021

⁸ [Developing an Operation, Maintenance, and Surveillance Manual](#) | Mining Association of Canada, 2021

- IR5-77:** YG's WL Intervention recommendations 30 and 31 with respect to adaptive management triggers and responses to pond levels applies to our review of the AMP as well. The updated AMP must address the comments and observations raised in YG's Intervention.
- IR5-78:** YG's WL Intervention information request 78 with respect to dewatering of the open pit and underground workings applies to our review of the AMP as well. The updated AMP must address the comments and observations raised in YG's Intervention.
- IR5-79:** No adaptive management measures have been proposed for geochemistry. The AMP must include comment on actions that would be taken in the event that waste rock classification, segregation and management methodologies do not meet the objectives or are insufficient meet objectives in the Tailings and Waste Rock Management Plans. The AMP must consider both neutral metal leaching conditions and acid rock drainage conditions. Changes to monitoring frequencies, increasing laboratory and analytical confirmations and decreasing visual examinations may be necessary actions throughout the mine life.
- IR5-80:** Update the AMP to include additional fish and fish habitat metrics (i.e. specific population abundance (CPUE) changes) to enact an increasing scale of mitigative measures. This should be detailed further than 'acute or chronic effects'. Detailing such specific metrics and thresholds will allow for accurate effects monitoring and mitigation.
- IR5-81:** Specific responses for vegetation and soil focus solely on dust abatement which may not be sufficient to address increased metals loading as metal contaminants may also get to soils and vegetation through groundwater movements. Update the AMP to include determination of source pathways for the metal contaminants with specific action to address that pathway.
- IR5-82:** Decision Document term and condition 33 required BMC to include adaptive management measures to address potential leakage from the Class A storage facility. The updated AMP must outline monitoring, triggers and actions associated with the Class A storage facility that address leakage scenarios.
- IR5-83:** Decision Document term and condition 36 required BMC to develop and implement adaptive management measures with respect to monitoring for the onset of acidic conditions, that allowed for early detection, management, and mitigation of acidic conditions and metal leaching developing on site. The updated AMP must include this information.
- IR5-84:** Decision Document term and condition 37 required BMC to develop an ambient air monitoring and adaptive management plan for all Criteria Air Contaminants (CACs), based on updated (2025) standards. The updated AMP must include this information.

1. Introduction

In 2020, the Government of Yukon released [Our Clean Future: A Yukon strategy for climate change, energy and a green economy](#). “Area #6: Innovation” of Our Clean Future targets reducing the carbon intensity of mining. A first step in meeting that goal is delineating the greenhouse gas emissions from our currently operating mines – Action I7:

Require quartz mines to project their anticipated greenhouse gas emissions, identify measures to reduce emissions, and annually report greenhouse gas emissions through the quartz mine licensing process beginning in 2022.

Accordingly, operators are requested to provide the information below as part of the Annual Report required under the Quartz Mining License.

2. Information Requirements

2.1 Provide the following information on fuel use throughout the reporting year.

Where it is reasonable to do so, please distinguish between fuel volumes used for mining operations, exploration activities, and closure activities.

	Volume delivered to site (in Litres)	Renewable Fuel Content (%)	Development/ production activities (in Litres)	Exploration activities (in Litres)	Closure activities (in Litres)
Heating Fuel (oil)					
Heating Fuel (propane)					
Heating Fuel (other)					
Aviation Fuel (Jet A)					
Aviation Fuel (Jet B)					
On-site transportation (diesel)					

	Volume delivered to site (in Litres)	Renewable Fuel Content (%)	Development/ production activities (in Litres)	Exploration activities (in Litres)	Closure activities (in Litres)
On-site transportation (gasoline)					
Off-road transportation (diesel) ¹					
Off-road transportation (gasoline)					
Off-site transportation (diesel) ²					
Off-site transportation (gasoline)					
Electricity production (diesel)					

2.2 Provide the following information for electricity purchased or generated on site.

Source	kWh Energy
Purchased from grid	
Produced using diesel	
Produced using LNG	
Produced using renewable resources (e.g. solar, wind)	

2.3 Report the hectares of land clearing undertaken throughout the reporting year attributed to exploration, production and closure.

¹ E.g., exploration activities.

² E.g., personnel and supplies transport to and from site; concentrate/product transport on Yukon roadways.

2.4 Describe activities undertaken throughout the reporting year to reduce project emissions.

- a) Describe future options to reduce greenhouse gas emissions.
- b) Describe how you will evaluate options for greenhouse gas reductions.

2.5 Provide projections for greenhouse gas emissions for the next 10-years. Identify the expected stage(s) of operations throughout the 10-year projection period.

2.6 Identify any federal or territorial incentive programs that have been accessed to assist in the reduction of emissions.

2.7 Identify any financial or other support provided by the Licensee to help community or territorial efforts to reduce emissions.