



Designated Office Evaluation Report

Aurchem Exploration Ltd. – Pilot Project – Small Portable Mill

Project Number: 2011-0297

Proponent: Aurchem Exploration Ltd.

Assessment Completion Date: April 17, 2012

Mayo Designated Office

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EXECUTIVE SUMMARY

Aurchem Exploration Ltd has proposed to install and operate a pilot floatation mill to produce high grade gold concentrate from ore obtained from 3 claims. The proposed project is located approximately 60 km west of Carmacks and will be accessed via existing roads. Project activities will commence in 2012 and will occur seasonally from May 31st to October 31st for 5 years. Comments were received during the seeking views and information period by R. Savidge, D. Baker, Yukon Government (YG), the Carmacks Renewable Resource Council (CRRC), Environment Canada (EC), and the Yukon Conservation Society (YCS).

Based on the comments submitted and other relevant considerations, four valued components were identified: aquatic resources, wildlife, environmental quality, and other land users. The application of existing legislation (Appendix B), the proponent's mitigations (Appendix A), as well as the recommended mitigation measures (listed below) are adequate to mitigate the significant adverse effects of the project.

OUTCOME

The Mayo Designated Office, pursuant to section 56(1)(b) of the *Yukon Environmental and Socio-economic Assessment Act* (YESAA), recommends to the decision bodies that the project be allowed to proceed, subject to specified terms and conditions, as it has determined that the project will have significant adverse environmental or socio-economic effects in or outside Yukon that can be mitigated by those terms and conditions.

THE TERMS AND CONDITIONS OF THE RECOMMENDATIONS ARE AS FOLLOWS

1. The proponent shall develop and implement a comprehensive ARD/ML sampling and monitoring protocol to be submitted during the licencing process.
2. Any waste rock or tailings piles with the potential for acid generation or metal leaching shall be segregated and stored in a manner that prevents direct or indirect drainage to any watercourse. The proponent shall ensure that no ARD/ML is released to the environment except as permitted by a water use licence.
3. The proponent shall prepare a water balance for the project for review during the licencing process.
4. The proponent shall prepare and submit a contingency plan during the licencing process that takes into consideration the need for water treatment.
5. The proponent shall prepare design drawings for the waste rock and tailings storage areas to be submitted during the licencing process.
6. The proponent shall ensure that all means by which water is withdrawn from creeks is screened or otherwise guarded to prevent the entrainment of fish from these waters. Water standards for screening can be found in DFO's standards "Freshwater Intake End-of-Pipe Screen Guidelines" which can be viewed at: <http://www.dfo-mpo.gc.ca/library/223669.pdf>.
7. The proponent shall ensure sufficient flow downstream of water intake structures to maintain fish habitat and avoid harmful alteration, disruption or destruction of fish habitat.

8. The proponent shall contact the local Conservation Officer and/or Regional Biologist if caribou occur in the area during important times such as the fall rut and over winter.
9. The proponent shall enter into discussions with the Regional Biologist and/or Habitat Programs Branch of the Department of Environment for information on the location of the raptor nests.
10. The proponent shall contact the Regional Biologist for information on appropriate set back distances if raptor nests, dens or mineral licks are encountered.
11. The proponent shall implement progressive reclamation of roads, trenches and other clearings that are no longer required for exploratory/operational purposes.
12. The proponent shall develop an attractant management plan which outlines how human-bear conflicts will be minimized.
13. The proponent shall equip each camp with bear deterrent devices and maintain such devices in good working order throughout the duration of camp occupation as per the Guidelines for Industrial Activity in Bear Country
14. The proponent shall notify the Conservation Officer if any bears are frequenting the camp or exploration areas for advice on further mitigation.
15. The proponent shall prepare a Spill Prevention and Contingency Plan that includes the correct transport, handling, storage, use and emergency response plan of all reagents used in the milling process.
16. The proponent shall regularly inspect the pilot mill for leaks and malfunctions.
17. The proponent shall communicate plans and timing of activities to other resource users (trappers, outfitters, wilderness tourism operators, quartz/placer miners, First Nation(s) and known subsistence harvesters) that may be affected by the proposed project as soon as practicable, prior to the actual commencement of activities to reduce land use conflicts and any potential negative impacts on other users.

Issued by the Mayo Designated Office on April 17, 2012.

For more information please contact:

Name: Jennifer Clark

Title: Assessment Officer

Mayo Designated Office

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PART A. INTRODUCTION

The following sections present a background to the project and the assessment. Details of the project are provided and the environmental and socio-economic setting of the project area is described. Finally, the requirement for an assessment and a discussion on the scope of the assessment, which includes the identification of valued components, are provided.

1.0 PROJECT DESCRIPTION

1.1 PROPONENT INFORMATION

The proponent of the proposed project is Aurchem Exploration Ltd. The contact person for this project is Jillian Chown. Contact information is as follows:

15 Logan Berry Lane
Whitehorse, YT
Y1A 5W4

Telephone: 867-456-4167
E-mail: chownjpc@gmail.com

1.2 GEOGRAPHICAL CONTEXT

The proposed project is located approximately 60 km from Carmacks. Table 1 and Figure 1 below provide further details regarding the project location and geographical context.

Coordinates: UTM Zone 8		Watershed(s) and Drainage Region: <i>Major Drainage Area:</i> Yukon River <i>Sub Drainage Area:</i> Upper Yukon <i>Sub-Sub Drainage:</i> Donjek
NW E387568 N6892673	NE E387415 N6893594	
SW E386595 N6892505	SE E387568 N6892673	
First Nation Traditional Territories Involved: Little Salmon/Carmacks First Nation		Nearby Watercourse(s) or Waterbody(s): Iron Creek, Klaza River

Table 1: Project Location

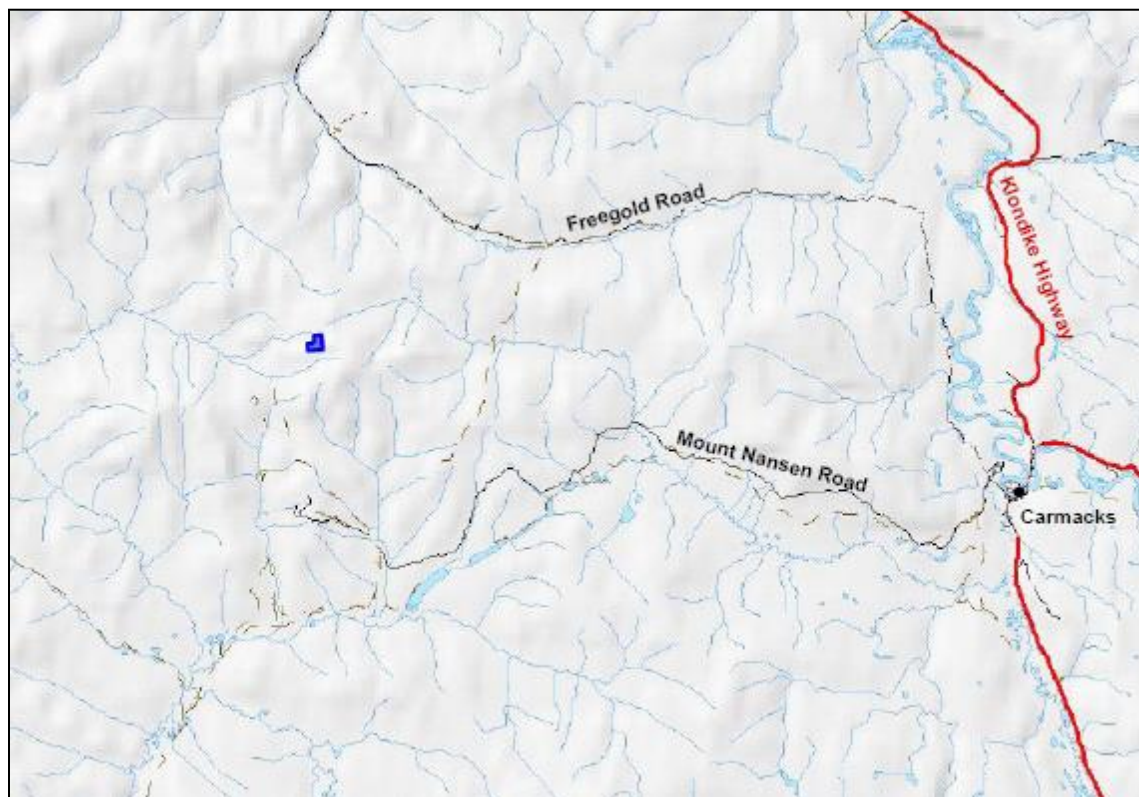


Figure 1: Map of Project Location (blue polygon indicates project location)

1.3 HISTORY

This project was previously assessed by YESAB in 2006 (project number 2006-0012). The project was a request for a Type B Water Use Licence to undertake a milling operation on the Vic claims under an existing Class 3 Mining Land Use Approval (LQ00068), which expires on July 14, 2012. The Designated Office recommended that the project proceed subject to terms and conditions. The terms and conditions were accepted by the decision body (Yukon Government, Energy Mines and Resources). The Yukon Water Board granted a Type B Water Licence (QZ06-073), which expires on December 31, 2012.

1.4 PROJECT DETAILS

The project will take place on Vic claims 28-30. Activities are anticipated to take place between May 31 and October 31 for 5 years.

Access

Access to the site will occur via an existing road and trail network. No new access is proposed as part of this project.

Milling Operations

The proponent is proposing to mill 50 t/day from an exposed vein using a portable pilot mill that requires no permanent structures. The mill is prefabricated, and is currently housed in Whitehorse in a storage

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unit. The mill will be assembled on a portable skid in Whitehorse and trucked to the site in May 2012. The skid mounted mill will remain on site until October 2012. It is a self contained unit, and can be easily removed from site in October via truck.

The mill is a floatation mill and is comprised of a grinder and a series of small flotation columns that are used to float gold from the crushed fine material. Between 300 and 500 m³ of water will initially be required upon project start-up (annually) for milling operations. This water will be sourced from rainwater and snowmelt that has accumulated in open trenches on the property. The proponent has requested to withdraw water from Iron Creek as a back-up. An additional 5 m³/day of water will be required to replace water lost due to evaporation. Milling will occur for approximately 10 hrs/day for 7 days/week.

Ore for processing will be taken from an open vein (Vic vein) on site. An excavator (27 tonne) will be used to break off ore from open vein. A loader (15 tonne) will then be used to transport ore to a dump truck which will take the ore to the mill. There will be two pick-up trucks (2 tonne) on site for personnel transport as well.

No explosives will be used as ore can be collected from the open vein via an excavator.

Tailings will be discharged at the end of each operating season into a series lined above-ground swimming pools. After settling and water testing, water will be deposited to ground and tailings at approximately 80% solids and will be removed and stored in a lined tailings area for the lifespan of the project and then used to refill the excavations prior to reclamation. Waste rock on site will be returned to open veins, or its parent material location.

Milling will only run from May-Oct, then the project will go into temporary shut down until the following season. During temporary shut down, the mill and crusher will be hauled off site, water from inside the mill will be discharged to lined settling ponds. Trenches will be left open to refill with water for next season's use. Upon expiration of the proposed new water licence, all settling ponds will be drained into the trenches on site, then all trenches will be backfilled with native rock.

Reagents

The proponent is proposing to use the following reagents during the milling process:

- AP208 (Aerofloat 208) – 200g/t of solids (10mg/L)
- PAX (Aero 350 Xanthate) – 200g/t of solids (10mg/L)
- MIBC – 40 g/t (2mg/L)

All reagents for the milling process will be stored in a locked, ventilated container on site, and next to the mill. This container is steel and is stand-alone. Mill operations will require that personnel wear PPE's while handling reagents, which includes gloves and eye wear.

Camp

A camp of up to a maximum of 10 people will be established. Camp will consist of 2-3 RV's with portable toilets and drinking water will be hauled to site in a 1000 gal portable water holding tank via a pick-up truck. Camp personnel will cook for themselves. Camp waste will be stored in bear proof containers and hauled to Whitehorse for disposal.

Waste Management

All materials, such as used oil, lubricants, and other waste generated by the used of equipment on site will be stored on pallets, in a dry, secure area on site. Waste will be transported to the City of Whitehorse Municipal Landfill for proper disposal. It is not anticipated that any special waste will be generated as a result of this project.

Domestic garbage will be placed into bear proof garbage receptacles and removed once/week to the City of Whitehorse landfill. Port-a potties will be emptied on as a needed basis by local septic truck contractor.

Fuel Use

Fuel required for the project includes diesel and gasoline. Fuel will be delivered via truck to site and transferred into two double walled 1000 gal enviro tanks (one for diesel and one for gasoline). Tanks will be contained in a bermed and lined storage area. Fuel will be stored a minimum of 200 m from the Klaza River.

1.5 PROJECT SCOPE

The scope of the project for this assessment has been determined to be as follows:

The proponent has proposed to install and operate a pilot floatation mill to produce high grade gold concentrate from ore obtained from 3 claims. The proposed project is located approximately 60 km west of Carmacks and will be accessed via existing roads. Project activities will commence in 2012 and will occur seasonally from May 31st to October 31st for 5 years.

Project activities include:

- Ore obtained from open vein
- Processing ore (approximately 50 tons/day)
- Camp construction and operation (for up to 10 people)
- Fuel storage (diesel 1,000 gall; gasoline 1,000 gal)
- Use of existing roads and trails
- Construction and use of up to five above-ground swimming pools as settling ponds
- Water use (up to 500 m3/day) from surface runoff for milling operations
- Waste management
- Use of heavy equipment
- Reclamation and camp closure

2.0 ENVIRONMENTAL AND SOCIO-ECONOMIC SETTING

2.1 BIOPHYSICAL ENVIRONMENT

The project is located within the Klondike Plateau ecoregion of the Boreal Cordillera ecozone¹. Vegetation in this ecoregion ranges from boreal forest in the valleys and lower slopes, to tundra on the high ridges. The proponent describes the project as being located above treeline in the Mount Nansen area and that the area is comprised primarily of exposed rock, willows and low lying bushes.

Within the Boreal forest, riparian areas are biological “hotspots” containing greater ecological diversity than the surrounding matrix, providing travel corridors, water resources and critical food resources. The project occurs approximately 1.5 km upslope from Iron Creek and approximately 1 km upslope from the Klaza River, which is a tributary to the Nisling River. According to the Fisheries and Ocean Canada’s FISS database, slimy sculpin can be found in Iron Creek. The proponent has described Iron Creek as an ephemeral stream.

The project area provides habitat for a variety of wildlife species including, but not limited to, black and grizzly bears, moose, caribou, wolves, foxes, beaver, wolverine, marten and other small mammals. Wetland and forest habitat within the project area also provides breeding habitat for a number of raptors, songbirds, forest birds and waterfowl.

Wildlife Key Areas are areas used by wildlife for critical, seasonal life functions, and area often used traditionally around the same time each year. The property directly overlap with a Wildlife Key Area designated as a summer nesting area for Gyrfalcons, used between June and August (Figure 2). The Wildlife Key Area database on the YESAB Geo Locator mapping program shows that the project is located near fall and winter ranges for the Klaza Caribou herd (Figure 2). Yukon Environment indicates that caribou are likely to be present in the project area year round.

¹ Ecoregions of the Yukon Territory, 2004

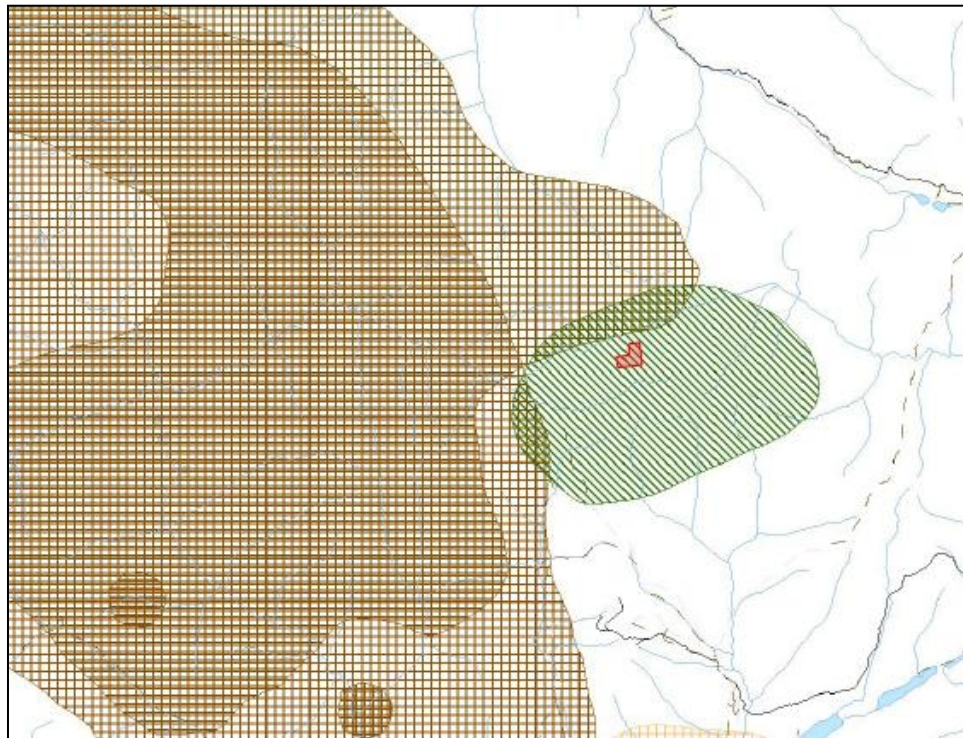


Figure 2: Project (red) overlap with gyrfalcon WKA (green) and proximity to caribou WKA (brown)

2.2 SOCIO-ECONOMIC ENVIRONMENT

The project is located approximately 60 kilometres west of Carmacks. In 2011, the population of Carmacks was estimated at approximately 520². The project will be accessed by the roads and trails to the project area. Historic and current land uses in the area include quartz and placer mining and exploration activities, such as drilling, trenching, vegetation clearing, camp operation and construction of roads and trails. The roads and trails in the Mount Nansen area are also used by local residents for hunting, trapping, gathering, fishing, and camping.

The project overlaps with Registered Trapping Concession #148 and Outfitting Concession #13. The project is located within the traditional territory of Little Salmon/Carmacks First Nation (LSCFN). The proposed project overlaps with LSCFN settlement parcel R-8A (Figure 3). The LSCFN carry out a variety of fish and wildlife harvesting and other traditional activities within their traditional territory.

² Government of Yukon, Bureau of Statistics, 2011

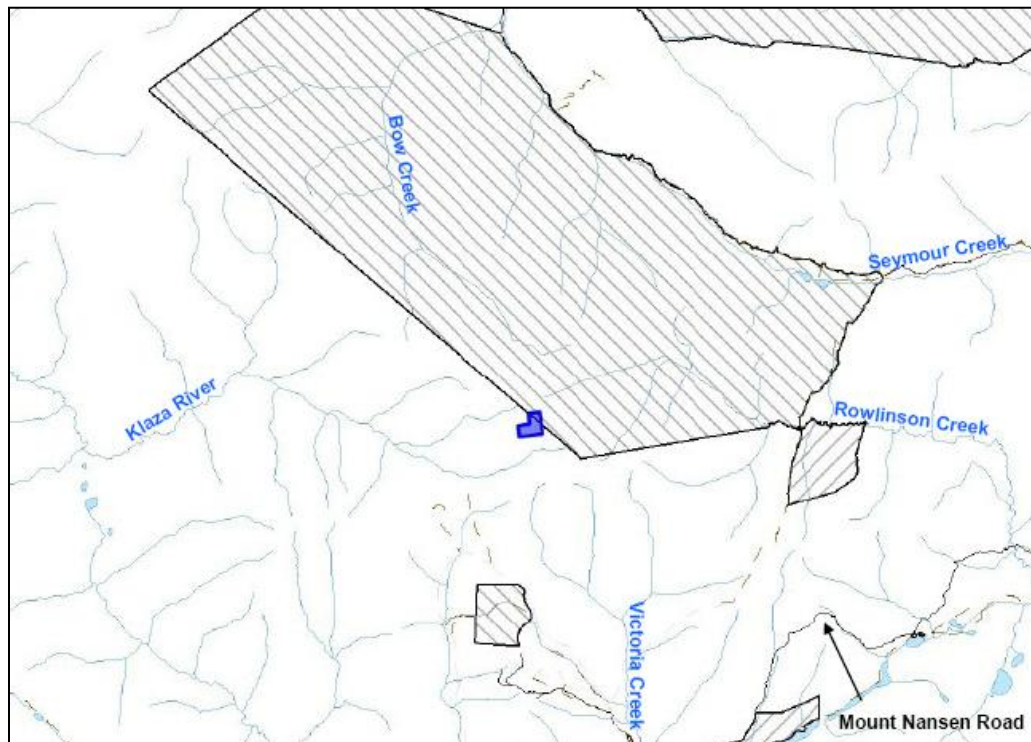


Figure 3: Project Overlap with LSCFN Settlement Land Parcel R-8A

3.0 REQUIREMENT FOR AN ASSESSMENT

An assessment by the Designated Office is required under the following circumstances:

an activity is proposed to be undertaken that is listed in Schedule 1 of the Assessable Activities, Exceptions and Executive Committee Projects Regulations (Activity Regulations) and not excepted. The proponent proposes to undertake activities listed in part 1 item 1 of the Activity Regulations, specifically:

“Other than on an Indian reserve, exploration for the purpose of quartz mining, or other activities in relation to exploration for the purpose of quartz mining, on a quartz grant.”

- The project is being undertaken in the Yukon; and
- An authorization or the grant of an interest in land by a government agency, independent regulatory agency, municipal government, or first nation is required for the activity to be undertaken.

Decision bodies and authorizations have been identified based on information in the project proposal and information submitted to the Designated Office during the assessment. A list of the decision body(s) and authorizations required for the project are in the table below:

Decision Body	Authorization Required	Act or Regulation
Yukon Government, Energy Minerals and Resources	Class 3 Mining Land Use Permit	<i>Quartz Mining Act</i>
Yukon Water Board	Type B Water Use Licence	<i>Waters Act</i>

Table 2 Decision Body(s) and Authorizations Required

4.0 SCOPE OF THE ASSESSMENT

The scope of the assessment is determined by considering the activities described in the scope of the project and, based on consideration of the matters set out in section 42(1) of YESAA, identifying the valued environmental and socio-economic components that may be affected by those project activities. Comments submitted during the assessment also assisted the Designated Office in identifying valued components and understanding the potential affects the project activities may have on them. Comments were received by R. Savidge, D. Baker, Yukon Government (YG), the Carmacks Renewable Resource Council (CRRC), Environment Canada (EC), and the Yukon Conservation Society (YCS).

R. Savidge

R. Savidge provided comments concerning the use of the project area as a summertime migration route for caribou and recommended that the project occur during the winter months in order to encourage the recovery of the herd. Project effects to the Klaza caribou herd are discussed further in section 6.0 (Wildlife).

D. Baker

A citizen expressed concern regarding the amount of disturbance to wildlife in the Mt Nansen area and noted that such disturbances could reduce wildlife populations and infringe upon First Nations right to harvest animals. The concerned citizen also noted that increased disturbance to the land also impacts plant and medicine harvest as reclamation is difficult given limited topsoil in the region. Wildlife concerns are discussed in section 6.0 (Wildlife) and the effects of the project on vegetation is discussed in sections 6.0 (Wildlife) and 7.0 (Environmental Quality).

Yukon Government

YG Heritage Resources commented that they have no concerns with the project and that standard conditions included in all quartz approvals provide sufficient mitigation to address surface heritage resource concerns. Considering these comments and taking into account that project activities are proposed in a previously disturbed area, heritage resources are not discussed further in this report.

YG Mining Lands provided comments and mitigation measures relating to the storage area for tailings, the need for an ongoing ARD/ML monitoring protocol and seasonal closure of the settling of the pools. These topics are discussed further in section 5.0 (Aquatic Resources).

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Comments provided by YG – Energy, Mines and Resources, Client Services and Inspections requested that the proponent ensure all settling pond facilities are lined, bermed and fenced with appropriate signage, and to place signage warning of "Active Mining Operation" on main access road to the operation. Additionally, they requested that the proponent ensure that there is proper documentation in place in the event that water needs to be drawn from a local source and to mark all terrain hazards with flagging and signage. They indicated that the environmental impacts of this operation should be mitigated if activities are conducted in accordance with the applicable regulations and permitted operating conditions.

YG Environment identified potential effects of the project to wildlife (general), the Klaza caribou herd, bears, water quality/quantity and other land users, as well as to identify the effects from waste management and cumulative effects. YG Environment also recommended mitigation measures to reduce the effects of the project. These issues are discussed in more detail in sections 5.0 through 8.0.

YG Community Services indicated that a permit is required for the storage of fuel over 4000 L and that a permit may be required for the installation of small , short term, low occupancy, temporary or re-locatable construction, mining and oil and gas exploration camps within the Yukon. The proponent is encouraged to contact YG Community Services for more information.

CRRC

The CRRC expressed concern regarding the effects of multiple exploration projects in close vicinity on the Klaza caribou herd and its habitat .Furthermore, they note that the project area is frequently used by community members for the harvest of caribou, moose and ptarmigan, as well as for berry picking. The CRRC identifies areas where they consider the project proposal inadequate, including settling ponds, pond liners, containment berms, water balance, ARD testing and monitoring program, waste rock dump storage. They also note that the access road to the site is dangerous a fuel haul tanker truck as the grade is steep, muddy, slippery and prone to rutting and eroding during rainfall. The CRRC concluded that they could not support the project with the information provided. These comments are discussed further in sections 5.0 (Aquatic Resources), 6.0 (Wildlife) and section 7.0 (Environmental Quality).

Environment Canada

EC's comment submissions identified gaps in the proposal information, including: a lack of discussion and incomplete detailing of property geology / ore and waste mineralogy; an incomplete understanding and/or presentation of geochemistry (particularly metal leachate [ML] characterization) for those expected rock units to be encountered; a lack of information upon hydrology and hydrogeology and/or expected ground conditions relevant to site development; no climatologic information and no attempt to provide a water balance; and other project aspects. Mitigation measures and project effects monitoring are either not suggested or only conceptually provided in the submitted documentation. EC commented that the limited information provided for the YESAA review made it difficult to review and comment on the potential effects of the project. These issues are discussed further in section 5.0 (Aquatic Resources).

YCS

The YCS provided comments relating to the cumulative impacts in the region (in particular to caribou), water use, waste management and a spill response plan. A discussion on cumulative effects is provided

in sections 5.0 through 8.0 of this report. Water use is discussed in section 5.0 (Aquatic Resources) and fuel and waste management are discussed in section 7.0 (Environmental Quality).

Consideration of Cumulative Effects

With regards to cumulative effects, subsection 42(1) of the *Yukon Environmental and Socio-economic Assessment Act* (YESAA) instructs designated offices to consider:

(d) The significance of any adverse cumulative environmental or socio-economic effects that have occurred or might occur in connection with the project or existing project in combination with the effects of

(i) Other projects for which proposals have been submitted under subsection 50(1), or

(ii) Other existing or proposed activities in or outside Yukon that are known to the designated office, executive committee or panel of the Board from information provided to it or obtained by it under this Act

As elsewhere in the Yukon, the proposed project area is currently subject to intense staking and mineral exploration activities. It was estimated that over 100,000 claims were staked in the Yukon during the previous fiscal year ending March 31st, 2011. The majority of claims staked do not currently have land use permits issued and the possibility for Class 1 quartz exploration and placer activities exist. There is an abundance of quartz and placer claims in the area in the immediate area surrounding the proposed project. Several quartz claims have Class 3 quartz mining land use permits, and several placer claims have Class 4 placer mining land use permits (Figure 4).

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The following valued components were considered in this assessment:

- Aquatic Resources (section 5.0)
- Wildlife (section 6.0)
- Environmental Quality (section 7.0)
- Other Land Users (section 8.0)

PART B. EFFECTS CHARACTERIZATION AND REASONS FOR RECOMMENDATION

Part B of this report presents the effects assessment of the project on valued components identified in Section 4.0. For each valued component, an overview of the value is provided followed by the effects characterization analysis. Where relevant, measures to reduce significant adverse effects of the project on the valued component are identified. The effects characterization ends with a conclusion on the key findings of the assessment.

5.0 AQUATIC RESOURCES

5.1 OVERVIEW

The project occurs in proximity to Iron Creek and the Klaza River. Project activities, including milling operations, the use of settling pools, tailings and waste rock storage areas, and water use have the potential to adversely affect aquatic resources in the project area.

The following potential project effects on aquatic resources have been considered:

- Reduced surface and ground water quality from milling operations and waste storage; and
- Reduction in fish habitat or fish mortality as a result of water withdrawal.

The Designated Office has determined that the project will result in significant adverse effects to aquatic resources such that further mitigation is required. The rationale used to determine the significance of the project effects on this valued component is discussed in the following section.

5.2 PROJECT EFFECTS

5.2.1 Surface and Groundwater Quality

The closest surface watercourses to the proposed project are Iron Creek and the Klaza River. No information was provided on the groundwater regime in the project area. However, the proponent indicates that no groundwater has been observed. Project activities including the use of settling ponds (pools), milling operations, and the permanent disposal of waste rock and tailings have the potential to adversely affect surface and ground water quality in the project area.

The proponent proposes to mill at a rate of 50 tonnes/day (or 5000 tonnes/year). Up to 300 m³ of water will be required for start-up annually and will be sourced from snowmelt and runoff that has accumulated in excavated trenches. An additional up to 5 m³ of make-up water will be required each season for water that is lost due to evaporation. Waste rock and tailings will be generated as result of mining and milling operations. The tailings stockpile and waste rock stockpile will be kept separate. Concentrate collected will be removed from the site and tailings, after settling in pools, will be stored in a lined and bermed tailings area for the lifespan of the project. Tailings and waste rock will also be backfilled into trenches upon final decommissioning.

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The project has the potential to result in acid rock drainage and/or metal leaching (ARD/ML) from stored/exposed waste rock and ore piles, as well as from the tailings. The proponent indicates that none of the tests on the ore or the host rock have indicated any potential for acid rock drainage (ARD); however, insufficient data was provided to support this claim. Additionally, the proponent has sampled ore or waste rock for the metal leaching potential, which EC stressed can occur under neutral conditions. EC noted in their comment submission:

“...information received as part of the original application (multi element analysis [whole rock?]) indicates that at least sulphides may present within wt% S approaching 1% (samples 576, 671; others showing hits). We note that these same samples contained elevated Cu and Zn. It isn't possible to make direct link between the multi-element assay information and limited ARD testing data however because of a lack of detailed information regarding specific samples and their spatial locations relative to each other and to the project as a whole. As a result, the potential for at least limited ARD generation and/or ML release cannot be confirmed.”³

Without information proving otherwise, the Designated Office considers that the project has the potential to result in ARD/ML. Seepage from tailings and waste piles could adversely affect down gradient aquatic resources. The geochemical stability of tailings and effluent water quality are also unknown. As this is a pilot project, the proponent states that the mill must be operational before this information can be collected. The proponent indicates that they do not anticipate generating large volumes of tailings, as the floatation circuit is capable of operating at 97-98% recovery. However, no information was provided to the Designated Office to support this claim.

No in-ground settling ponds are proposed for this project. Instead, the proponent is proposing to use up to five above-ground swimming pools for process water storage and as settling ponds. The pools may also be used as collection basins for rainwater during operations. Each pool will have a capacity of approximately 12,000 L. Most recent documentation provided by the proponent indicates that the pools will be erected at the beginning of each season, then dismantled and stored during the winter. If any pools remain during the winter months, especially if they are left uncovered, they may be at risk of overtopping from precipitation and may also crack. The integrity of the pool liners to withstand very cold winter temperatures and freeze/thaw actions are unknown.

The proponent indicates that there will be no discharge into the settling ponds until the end of the season (October) and they anticipate that it will take approximately 2 weeks to completely drain and settle wastewater. The proponent has indicated that they will monitor the pools during this time to ensure that no overfill occurs. The proponent indicates that the settling circuit is twinned and will be alternated after approximately 50% storage capacity is reached. Additionally, the proponent also notes that after settling for five days, water will be decanted from the pools and sent to a clarifier pool where it will be re-used. However, given that wastewater will not be discharged until the end of the season, the purpose of decanting water from the settling pools at this time (i.e. seasonal closure) is unclear to the Designated

³ YOR doc # 2011-0297-047-1

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Office. The issue of whether the discharge from milling operations will occur throughout the operating season or only at the end of season needs to be clarified prior to licencing.

The capacity of the pools to effectively receive and store the discharged slurry is unknown. A water balance was not provided for the site. Some wastewater reporting to the lined pools may be lost through evaporation. However, a heavy rain event may result in the pools overtopping, thereby releasing potentially contaminated water and sediment into the environment. This water may report directly Iron Creek and the Klaza River through surface runoff or indirectly through the groundwater regime. Any malfunctions or accidents associated with the use of pools may also result in contaminated water being released into the environment.

The Yukon Water Board establishes the effluent standards that the proponent must meet in order to deposit a waste. The current licenced standards are as follows:

Parameter	Max Grab Sample (mg/L)
Arsenic	1.0
Copper	0.6
Lead	0.4
Nickel	1.0
Zinc	1.0
TSS	50.0
Cd	0.02
Ammonia	2.5
Selenium	0.015

The proponent has indicated that they feel that these parameters are too stringent for a minor operation but noted that they will comply with the standards contained in their water use licence. However, the proponent has not indicated how they propose to treat effluent water should it exceed the licenced parameters, nor have they provided a plan to treat waste rock, ore stockpiles and/or the tailings seepage should they demonstrate ARD/ML potential.

The proponent is also proposing to use the following reagents in the milling process:

- AP208 (Aerofloat 208) – 200g/t of solids (10mg/L)
- PAX (Aero 350 Xanthate) – 200g/t of solids (10mg/L)
- MIBC – 40 g/t (2mg/L)

In their comment submission, EC notes that the chemicals proposed “could pose serious risk to human health and to the environment. The majority of the chemicals are known toxic substances with published LD50 and LC50 values for exposure to terrestrial and aquatic organisms respectively...” The proponent indicates that by the nature of the flotation process, almost all of these flotation reagents (95%+) leave the process with the concentrate. However, the percent that remains, if discharged into the environment and

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allowed to enter surface and groundwater may result in long-term adverse effects to the terrestrial and aquatic environments.

Matters Considered – Proponent Commitments

- Prior to operations, Aurchem will submit a site specific ARD sampling program that follows the guideline recommendations in the MEND documents.
- As per our current Type B Water Use Licence, we are required to collect water samples down gradient of the waste rock storage facility, and we will comply with this requirement.
- No water will be discharge until water quality test results indicate it is suitable for discharge.
- The pools will be more than 30 m from any surface water, and discharge will be to ground, into the trenches.
- The ponds will be closely monitored [after discharge from mill] during this time to ensure no overfill occurs.
- To address the ML concerns we can re-assay the samples with an appropriate test. We would like to propose that an ARD sampling program be submitted to the Yukon Water Board prior to beginning production on site.
- To mitigate ARD concerns will also be monitoring for any ARD discharge. This monitoring shall consist of monthly samples of the rock from the tailings pile, waste rock pile, and ore stockpile (if present) during the course of the operating season. We also will be monitoring the seepage from the tailings pile.
- Currently no ARD risk is shown but if ARD is found during testing all milling will cease and all tailings/waste will be moved to lined storage areas until a solution acceptable to the board is found.
- The proponent shall have an emergency plan posted on site to deal with upsets/spills of mill reagent/chemicals, mill process streams, or fuels and other potential environmental contaminants.

Significance Determination

In determining the significance of the above noted effects, the Designated Office considered comments received during the assessment as well as the measures committed to by the proponent. Given that no or very little information was provided concerning, effluent quality, or the potential for the project to result in ARD/ML, the Designated Office has determined that the project will result in significant adverse effects to surface and groundwater quality. These effects can be adequately eliminated, reduced or controlled through the application of mitigation measures.

MITIGATION:

The following mitigation measures are specified to eliminate, reduce or control significant adverse effects of the project relating to surface and groundwater quality:

1. The proponent shall develop and implement a comprehensive ARD/ML sampling and monitoring protocol to be submitted during the licencing process.
2. Any waste rock or tailings piles with the potential for acid generation or metal leaching shall be segregated and stored in a manner that prevents direct or indirect drainage to any watercourse. The proponent shall ensure that no ARD/ML is released to the environment except as permitted by a water use licence.
3. The proponent shall prepare a water balance for the project for review during the licencing process.
4. The proponent shall prepare and submit a contingency plan during the licencing process that takes into consideration the need for water treatment.
5. The proponent shall prepare design drawings for the waste rock and tailings storage areas to be submitted during the licencing process.

5.2.2 Fish and Fish Habitat

The proponent has proposed to withdraw water from Iron Creek as a backup should trenches not provided sufficient water for milling operations. The proponent describes this creek as an ephemeral creek. According to the FISS database, slimy sculpin may be present in Iron Creek. Withdrawal of water from fish-bearing waters may result in direct fish mortality as a result of fish entrainment (trapping fish in the water intake) or impingement (entrapment of fish in contact with the intake screen). Water withdrawal may also result in a reduction of suitable fish habitat through a decrease in water volume and/or changes in stream flow. These changes may alter the watercourse temperature and chemistry and the rate and volume of food delivery/transport downstream, which can in turn accelerate sediment deposition and create access limitations to fish. Aquatic plants and local terrestrial wildlife populations may also be affected by a disruption or decrease in the volume of water flow in Iron Creek.

Matters Considered – Proponent Commitments

- We will ensure that the pump is screened

Matters Considered – Non-Discretionary Legislation

- Fisheries Act, sections 30 (fish screening) and 35 (harmful alteration, disruption or destruction of fish habitat)

Significance Determination

When determining significance, the Designated Office considered the proponent's commitments, requirements of applicable non-discretionary legislation. The proponent states that screens will be used during water withdrawal; however, the proponent did not specify whether or not the screens used are consistent with those recommended by DFO. As such, additional mitigation is recommended to ensure there are no significant adverse effects on fish as a result of water withdrawal. Additionally, given that Iron Creek is described as a ephemeral creek, timing of water withdrawal is an important consideration minimize effects to fish and fish habitat.

MITIGATION:

The following mitigation measures are specified to eliminate, reduce or control significant adverse effects of the project relating to fish injury/mortality and reduction in suitable fish habitat.

6. The proponent shall ensure that all means by which water is withdrawn from creeks is screened or otherwise guarded to prevent the entrainment of fish from these waters. Water standards for screening can be found in DFO's standards "Freshwater Intake End-of-Pipe Screen Guidelines" which can be viewed at: <http://www.dfo-mpo.gc.ca/library/223669.pdf>.
7. The proponent shall ensure sufficient flow downstream of water intake structures to maintain fish habitat and avoid harmful alteration, disruption or destruction of fish habitat.

5.3 CUMULATIVE EFFECTS

Residual Effects

Residual effects are those effects that remain from the activities after enacting mitigations. The potential residual effects of the proposed project on aquatic resources include a reduction in ground and surface water quality as well as fish injury/mortality and a reduction in suitable fish habitat. These effects may have far-reaching implications for downstream aquatic resources. The spatial scope of the residual effects on aquatic resources may extend beyond the direct project footprint. Fish mortality and reduction in fish habitat could potentially impact fish migration movement, reproduction and the ability to find food, thus impacting entire fish populations in connecting watercourses. Residual effects resulting from the proposed activities may extend beyond the duration of the project (5 years) and is dependent on the degree of fish mortality and/or habitat destruction.

Existing and Proposed Projects and Activities in the Area

Other existing or proposed activities in the area that may affect environmental quality include placer and quartz mining and exploration, use of Mount Nansen Mine Road and other secondary roads, and traditional and recreational use of the land (see section 4.0, Consideration of Cumulative Effects). These activities may have residual effects similar to the proposed project, and may include a reduction in surface and groundwater quality, fish injury/mortality and a reduction in suitable fish habitat due to water withdrawal activities and temporary fording of streams. Other exploration activities that may result in residual effects to aquatic resources include stripping, trenching, sluicing, access development, and channel diversions.

Residual Effects Interaction and Significance Determination

The residual effects of the proposed project on aquatic resources are not expected to be significant and adverse after compliance with legislation and implementation of the recommended mitigation measures identified in this report. As such, the Designated Office has determined that the proposed project will not contribute to significant adverse cumulative effects on aquatic resources.

6.0 WILDLIFE

6.1 OVERVIEW

The project overlaps with habitat for a variety of wildlife species, as described in section 2.1 (Biophysical Environment). The project also overlaps important summer nesting habitat for gyrfalcons and occurs in proximity to fall and winter habitat for the Klaza Caribou Herd. Project activities that have the potential to adversely affect wildlife include the use of heavy equipment, open trenches, noise associated with milling operations, human presence, and camp operation. The following potential project effects to wildlife have been considered:

- Wildlife disturbances; and
- Wildlife injury/mortality.

The Designated Office has determined that the project will result in significant adverse effects on wildlife and wildlife habitat such that further mitigation is required. The rationale used to determine the significance of the project effects on this valued component is discussed in the following sections.

6.2 PROJECT EFFECTS

6.2.1 Wildlife Disturbances

Habitat loss and disruption of foraging, watering, and reproductive behaviour can occur when wildlife are displaced or stressed as a result of noise disturbances associated with milling, heavy equipment use, and human presence. This can result in further habitat fragmentation, stress, and avoidance, which could potentially affect the long-term survival and reproductive success of wildlife. Wildlife species have varying degrees of tolerance and thresholds to disturbances.

The nearby Klaza property (YESAB project 2011-0007) provides habitat for the Klaza caribou herd during the fall breeding season (mid-September to mid-October) and winter (October to April). There may be some overlap with project activities (proposed until October 31 annually) and caribou use of their key habitats. However, YG Environment notes that it is likely that caribou are present within the project area year-round. Several comment received during the assessment expressed concern regarding disturbances to this herd.

Caribou disturbances resulting from project activities may result in physical injury, death, increase energy expenditures, and long-term behavioural changes. Additionally, project activities may interrupt the habitat mosaic of the herd and result in the functional removal of this area as habitat. Caribou are sensitive animals that can be disturbed by continuous human activity. While any disturbance has the potential to adversely affect caribou, certain parts of their life cycle are more vulnerable than others. One of the most vulnerable stages for the caribou is during the rut. During the rut, bulls are highly stressed and additional disturbances can affect breeding behaviour, energy reserves, reproduction and survival. Furthermore, YG Environment explains that, at this time of year, caribou are aggregated therefore one disturbance event has the potential to affect many animals whereas in the summer, caribou are typically more dispersed. As this project occurs in the alpine area above treeline where caribou congregate during the rut (15 Sep – 15 Oct), disturbance to parts of the herd cannot be avoided if caribou choose this part of their range.

This project also overlaps with summer nesting sites for gyrfalcon. Summer nesting sites are key habitat for gyrfalcon and nesting sites are frequently used in successive years. Laying of eggs through fledging occurs from approximately April 15 to July 31. Disturbance during the nesting season can result in parents being absent from the nest and in some instances nest abandonment. It is recommended that the proponent contact Department of Environment Habitat Programs or the Regional Biologist for further information on precise nesting locations in the area and that nesting areas be avoided by 1 km until end of September.

Matters Considered – Proponent Commitments

- We propose that should caribou be encountered on site, that heavy equipment operations will shut-down, to avoid scaring the animals.
- No hunting policy will be enforced on site.

Matters Considered – Non-Discretionary Legislation

- *Wildlife Act*

Significance Determination

In determining the significance of effects, the Designated Office considered the proposed mitigation as well as comments received during the assessment. The project occurs in proximity to key habitat for the Klaza caribou herd and caribou are likely to be present in the project area year-round. Gyrfalcons are also likely to be nesting in the project area. The Designated Office has determined that project activities may result in significant disturbances to these species during critical life periods. As such, the Designated Office recommends additional mitigation.

MITIGATION:

The following mitigation measures are specified to eliminate, reduce or control significant adverse effects of the project relating to wildlife disturbances:

8. The proponent shall contact the local Conservation Officer and/or Regional Biologist if caribou occur in the area during important times such as the fall rut and over winter.
9. The proponent shall enter into discussions with the Regional Biologist and/or Habitat Programs Branch of the Department of Environment for information on the location of the raptor nests.
10. The proponent shall contact the Regional Biologist for information on appropriate set back distances if raptor nests, dens or mineral licks are encountered.
11. The proponent shall implement progressive reclamation of roads, trenches and other clearings that are no longer required for exploratory/operational purposes.

6.2.2 Wildlife Injury and/or Mortality

Project activities may cause injury and/or mortality of wildlife through the following:

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- Human-wildlife interactions resulting from the habituation of bears;
- Injury or mortality of wildlife due to wildlife becoming trapped in trenches.

Black bears and grizzly bears are known to inhabit the project area and therefore the potential exists for human-wildlife interactions and/or conflicts to occur. Inadequate storage and/or disposal of waste may attract bears to the project area. Food, food odours, kitchen waste, grey water, and petroleum products are strong bear attractants. Bears may become habituated to food sources and may become tolerant of human presence and routine activities and noise. Once bears are habituated to food sources, they may become increasingly bold and are often killed in protection of property or life, resulting in direct wildlife mortality. Improper storage and disposal of waste and other attractants has the potential to instigate ongoing wildlife interactions and conflicts, which may result in the systematic removal of bears through controlled kills.

In order to reduce the potential for human-wildlife conflicts and/or property damage, garbage and other attractants must be handled so that they are not accessible to wildlife. The proponent is encouraged to become familiar with the *Guidelines for Industrial Activity in Bear Country* for practices to prevent human-bear encounters. The document is available through YG Environment, Conservation Officer Services Branch, or at http://www.geology.gov.yk.ca/pdf/Guidelines_for_Industrial_Activity_in_Bear_Country-web.pdf.

The proponent has indicated that open trenches will be used as water sources for milling activities. Open trenches have the potential to injure or entrap wildlife and may ultimately lead to death of wildlife. Although wildlife may not become trapped in trenches, injury to wildlife may result from falling or tripping, especially during times when animals are trying to escape predators. Injury to wildlife increases the likelihood of predation. The possibility of wildlife injury/mortality increases with the size of the trench and the amount of time the trench is left open.

Matters Considered – Proponent Commitments

- Bear proof containers will be used to store domestic waste generated by the camp. Domestic waste will be hauled via truck to City of Whitehorse Municipal Landfill once/week. No animal attractants will be kept on site (recyclables, food waste) in a fashion that allows access to them by wildlife.
- Aurchem has been conducting progressive reclamation on site, and will continue to do so. Our progressive reclamation activities has included filling in and recontouring some of our exposed trenches. We will be conducting more of this work this summer, and will be re-seeding some of our trenches with native grass species, engineered for reclamation work in the Yukon.
- As well, we will ensure that open trenches that are not being used in the operations, be backfilled, graded, and seeded so as to prevent large animals from getting trapped or injured in the trenches. We will also fence off active trenches, and the settling ponds, to deter wildlife from using the ponds.

Matters Considered – Non-Discretionary Legislation

- *Wildlife Act*, sections 88 (report emergency killing), 89 (accidental killing of wildlife), 92 (harassment of wildlife) and 93 (making wildlife a nuisance and dangerous wildlife protection orders)
- Solid Waste Regulations, part II (dumps and waste disposal facilities)

Significance Determination

When determining significance, the Designated Office considered the proponent's commitments, the requirements of applicable non-discretionary legislation, as well as comments submitted by YG Environment. The Designated Office also considered that the attraction of bears to the project site and/or camp area may result in habituation of bears and ultimately death. Additional mitigations are recommended to ensure that effects to bears are not significant and adverse. The Designated Office has determined that the proponent's commitments are sufficient to ensure that wildlife are not injured as a result of open trenches.

MITIGATION:

The following mitigation measures are specified to eliminate, reduce or control significant adverse effects of the project relating to wildlife injury and/or mortality.

12. The proponent shall develop an attractant management plan which outlines how human-bear conflicts will be minimized.
13. The proponent shall equip each camp with bear deterrent devices and maintain such devices in good working order throughout the duration of camp occupation as per the [Guidelines for Industrial Activity in Bear Country](#)
14. The proponent shall notify the Conservation Officer if any bears are frequenting the camp or exploration areas for advice on further mitigation.

6.3 CUMULATIVE EFFECTS

Residual effects are those effects that remain from the activities after enacting mitigations. The potential residual effects of the proposed project on wildlife include injury, mortality, or disturbance to wildlife. The spatial and temporal extent of residual effects related to the proposed project varies depending on the species affected. Other existing or proposed activities in the area that may affect wildlife and wildlife habitat include placer and quartz mining and exploration (see section 4.0 – Consideration of Cumulative Effects), and traditional and recreational use of the land. These activities may have residual effects similar to the proposed project, and may include:

- Disturbance to caribou and loss of key habitat through avoidance;
- Human-wildlife interactions resulting from the habituation of bears;
- Disturbance to breeding birds; and
- Injury or mortality of wildlife due to wildlife becoming trapped in trenches.

Woodland Caribou

The Wildlife Key Area (WKA) in proximity to the proposed project designated as fall rutting area for the Klaza caribou herd is considered critical habitat to the long-term well-being of this species. As such, the potential for residual effects on woodland caribou has been assessed for the immediate area as well as the identified WKA. The temporal scope during which woodland caribou may be affected by the project is 5 years, which is the life of the project. Potential residual effects on woodland caribou include the disturbance to the Klaza caribou herd during the rutting season, thereby resulting in the functional removal of this area as key habitat. As noted previously, caribou are sensitive to disturbance, especially during the rutting season. Disturbance to caribou during the seasonal rutting period may result in reduced reproductive success, survival and loss of habitat as animals are pushed out of their range.

Several comments received during the assessment expressed concern regarding the impact of cumulative effects on this herd. There are several active quartz and placer claims located near the proposed project which may already be affecting woodland caribou during the rutting season including the loss of key rutting habitat from clearings, linear developments and disturbances associated with helicopter use, diamond drilling and heavy equipment use. The proposed project is not proposing to construct any new roads or trails or to clear vegetation. Some noise disturbances may result from proposed activities, however taking into account the small area for which activities are proposed and the measures committed to by the proponent and recommended in this report, this project is not anticipated to contribute significantly to adverse cumulative effects to the Klaza caribou herd.

Bears

The Designated Office considered that the project may have residual effects on individual bears (grizzly and black bears). The home ranges of grizzly bears and black bears differs greatly, as do the home ranges of males and female for the individual bear species. Male grizzly bears are known to have the largest home range. According to YG Environment, the average home range for male grizzly bears is approximately 1,000m². The Designated Office considered that residual effects to bears could extend past the life of the proposed project, given that habituation may permanently alter food-seeking behaviour in bears. As discussed, habituation can often lead to unfortunate events in which the presence of bears at project sites requires the removal of the bear (e.g. controlled kills). Considering the proponent's commitments, the recommended mitigation measures, and the applicable non-discretionary legislation, this project is not expected to result in significant adverse residual effects to bears.

Gyrfalcons

The spatial scope for the consideration of cumulative effects to gyrfalcons is the overlapping summer nesting WKA. Other quartz and placer activities may also result in disturbances to gyrfalcons within this WKA. However, the proponent is operating in a relatively small area of the WKA. The recommendation to contact YG for location on gyrfalcons nests should greatly reduce the effects of the project on these nesting birds. It is not anticipated that this project will contribute significantly to cumulative effects to gyrfalcons within the WKA.

Residual Effects Interaction and Significance Determination

The Designated Office has determined that the residual effects of the proposed project on wildlife are not expected to be significant and adverse after compliance with legislation, adherence to the proponent's proposed mitigations, and implementation of the recommended mitigation measures identified in this report. As such, the Designated Office has determined that the proposed project will not contribute to significant adverse cumulative effects on these species.

7.0 ENVIRONMENTAL QUALITY

7.1 OVERVIEW

To determine the effects of the proposed project on environmental quality, the effects of the following activities were considered: milling operations, waste management, fuel use and storage, and camp operation. The following potential project effects to environmental quality have been considered:

- Environmental contamination;

The Designated Office has determined that the project will result in significant adverse effects to environmental quality such that further mitigation is required. The rationale used to determine the significance of the project effects on this valued component is discussed in the following section.

7.2 PROJECT EFFECTS

7.2.1 Environmental Contamination

The proponent has indicated that 1000 gallons of diesel fuel and 1000 gallons of gasoline will be transported to the project site by truck and then transferred to double walled enviro tanks. Fuel tanks will be stored in a lined and bermed area. Deleterious substances associated with vehicles and heavy equipment may include diesel fuel, gasoline, hydraulic fluids, coolants, lubricants, solvents and cleansers. The release of these substances may occur as a result of spills, leaks, poor maintenance, accidents, malfunctions during refuelling or use of vehicles/equipment.

In addition to fuels, environmental contamination may occur from the spills or leaks associated with the use of chemical reagents (as discussed in section 5.2), the temporary storage of concentrate, or as a result of acid rock drainage or metal leaching. Please see section 5.2 for a discussion on the potential for the project to result in acid rock drainage or metal leaching. The proponent has indicated that a maximum of 12 barrels of concentrate will be stored on site, next to the mill on wooden pallets, with a temporary shelter (wall tent) to cover them until they are removed from site via a pick-up truck.

Environmental contamination may also occur as a result of inappropriate management of waste such as sewage, domestic waste, special waste and grey water. Camp will consist of two RV's. The proponent has indicated that all waste will be hauled off site.

Soil contamination from fuel and other deleterious substances can affect the productivity of terrestrial habitats, pollute adjacent water resources, harm vegetation, and may create fire hazards. Contamination of the surrounding environment may affect the long-term survival of organisms or populations within the

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area and in high enough concentrations can be lethal. Bioaccumulation of contaminants can result in effects that take a long time to be observed, and can affect organisms throughout the food chain, including humans. Deleterious substances may reduce the overall natural function of the ecosystem. Correct storage and disposal of petroleum and waste products plays an important role in ensuring the risk of contamination is kept to a minimum.

Matters Considered – Proponent Commitments

- Proponent will have spill kit on site to mitigate any fuel leaks or spills. Safe fuel handling procedures will be followed as per the attached fuel handling procedures. A copy of the fuel spill response plan will be posted at site for all personnel to see and follow.
- The proponent shall have an emergency plan posted on site to deal with upsets/spills of mill reagent/chemicals, mill process streams, or fuels and other potential environmental contaminants.
- The proponent has indicated that a maximum of 12 barrels of concentrate will be stored on site, next to the mill on wooden pallets, with a temporary shelter (wall tent) to cover them until they are removed from site via a pick-up truck. Signs will be posted outside the dry storage area indicating that this is a concentrate storage area.
- All reagents for the milling process will be stored in a locked, ventilated container on site, and next to the mill. This container is steel and is stand-alone. Mill operations will require that personnel wear PPE's while handling reagents, which includes gloves and eye wear. Should a reagent spill occur, it will be cleaned up immediately. Soils will be placed in an approved container and taken to the City of Whitehorse Landfill and placed for appropriate disposal.

Matters Considered – Non-Discretionary Legislation

- *Quartz Mining Act*
- Quartz Mining Land Use Regulation, schedule 1 (operating conditions), sections F, G, H and I (relating to the use and management of deleterious substances, such as fuel storage and vehicle maintenance)
- *Environment Act*, parts 9 (release of contaminants) and 11 (spills)
- Spills Regulations, sections 2 through 4 (respecting spills of substances)
- Contaminated Sites Regulation, part 3 (restoration of contaminated sites)
- Special Waste Regulations
- *Fisheries Act*, section 36(3) (discharge of a deleterious substance into fish-bearing water is prohibited)
- *Waters Act*
- Solid Waste Regulations
- Sewage Disposal Systems Regulation, section 19 (location of soil absorption systems)

- Camp Sanitation Regulations, section 4 (camp operation)

Significance Determination

In determining the significance of the above noted effects, the Designated Office considered the proponent's commitments along with the requirements of the non-discretionary legislation. The Designated Office has determined that additional mitigation is required to ensure the proper transport handling and storage of reagents to be used for the milling process and to ensure that the pilot mill is not leaking during operation.

MITIGATION

The following mitigation measures are specified to eliminate, reduce or control significant adverse effects of the project relating to environmental contamination:

15. The proponent shall prepare a Spill Prevention and Contingency Plan that includes the correct transport, handling, storage, use and emergency response plan of all reagents used in the milling process.
16. The proponent shall regularly inspect the pilot mill for leaks and malfunctions.

7.3 CUMULATIVE EFFECTS

Residual Effects

Residual effects are those effects that remain from the activities after enacting mitigations. The potential residual effects of the proposed project on environmental quality include environmental contamination from the use of heavy equipment transport/storage of fuel, use of toxic reagents, and inappropriate disposal of wastes.

Environmental Contamination

The spatial scope of the residual effects on environmental quality may extend beyond the direct project footprint. For example, if contaminants enter watercourses it could affect the entire drainage system. The temporal scope of the effects may extend beyond the five-year period of the project given that effects relating to contamination could last for more than five years. Other existing or proposed activities in the area that may affect environmental quality include placer and quartz mining and exploration, use of Mount Nansen Mine Road and other secondary roads, and traditional and recreational use of the land (see section 4.0, Consideration of Cumulative Effects). These activities may have residual effects including erosion and sedimentation, and contamination of terrestrial and aquatic ecosystems. The same non-discretionary legislation noted in section 6.2 also applies to these activities.

Residual Effects Interaction and Significance Determination

The residual effects of the proposed project on environmental quality are not expected to be significant and adverse after compliance with legislation and implementation of the recommended mitigation measures identified in this report. As such, the Designated Office has determined that the proposed project will not contribute to significant adverse cumulative effects on environmental quality.

8.0 OTHER LAND USERS

8.1 OVERVIEW

The project overlaps with Registered Trapping Concession #148, Outfitting Concession #13, as well as Little Salmon/Carmacks First Nation traditional territory and settlement land parcel R-8A. These land users harvest wildlife for financial gain and for subsistence purposes within the project area. Proposed activities that have the potential to interfere with other land users near the project include use of existing roads, use of heavy equipment, noise associated with milling, and human presence. The Designated Office has considered the following potential project effect on land users:

- Interference with other land users.

The Designated Office has determined that the project will result in significant adverse effects to land users such that further mitigation is required. The rationale used to determine the significance of the project effects on this valued component is discussed in the following section.

8.2 PROJECT EFFECTS

Trapping

Trapping within the Yukon is an important source of revenue for many communities in the winter, and is important for the subsistent lifestyle of the First Nation. As described in section 6.0 (Wildlife), the project has the potential to adversely affect wildlife and wildlife habitat. Subsequently, this may directly affect the livelihood of registered and First Nation trappers who rely on the presence of wildlife for financial reward and subsistence harvest, respectively. Additionally, trapping equipment and infrastructure may be present within the project area and along access roads/trails throughout the year. Project activities may disturb, damage or destroy traps, snares, and other trapping equipment used by trappers. Damage to trapping equipment may affect a trapper's ability to harvest fur-bearing animals.

Outfitting

The project area also overlaps with outfitting concessions #13. Proposed activities have the potential to reduce wilderness quality (e.g. increased noise, reduced visual aesthetics), limit hunting locations, reduce hunting success, as well as reduce the ability of an outfitter to provide high quality hunts and wilderness trips. Therefore, project activities have the potential to cause significant negative economic impacts to overlapping outfitting concession holders. In addition, the project has the potential to impact the success of subsistence hunts by the Little Salmon/Carmacks First Nation. Potential effects on wildlife populations as a result of project activities is discussed in section 6.0 (Wildlife). The mitigations identified in section 6.0 will effectively reduce, eliminate or control potential significant adverse effects on wildlife populations, which are vital to the continued success of hunts by the outfitter and First Nation members.

Settlement Land

The proposed claim area overlaps a small portion of LSCFN settlement land parcel R-8A. However, the proponent has indicated that no activities are proposed to occur on settlement land. As such, it is not anticipated that the project will result in significant effects to settlement land.

Matters Considered – Non-Discretionary Legislation

- *Wildlife Act*, sections 62, (effects of trapping concessions), 64 (checking set traps), 65 (no traps on travelled roads) and 67 (no interference with traps)

Significance Determination

Communication between the proponent and the overlapping trappers, outfitters and First Nation will reduce the potential for damage to trapping equipment/infrastructure, as well as reduce the potential for land use conflicts. This is accomplished by creating opportunities for the proponent to work with other land users in identifying the locations of land user interests, timing of activities and general communication. The Designated Office recommends additional mitigation with regards to communication between the proponent and overlapping trappers, outfitters, and First Nation.

MITIGATION:

The following mitigation measures are specified to eliminate, reduce or control significant adverse effects of the project relating to other land users.

17. The proponent shall communicate plans and timing of activities to other resource users (trappers, outfitters, wilderness tourism operators, quartz/placer miners, First Nation(s) and known subsistence harvesters) that may be affected by the proposed project as soon as practicable, prior to the actual commencement of activities to reduce land use conflicts and any potential negative impacts on other users.

8.3 CUMULATIVE EFFECTS

Residual Effects

Residual effects are those effects that remain from the activities after enacting mitigations. The potential residual effect of the proposed project on other land users includes reduced trapping and hunting success, which could directly affect the overlapping trappers, outfitters, and subsistence harvesters in the area. The spatial scope for the consideration of cumulative effects to other land users includes the outfitting and trapping concessions that overlap with the proposed project. The cumulative effects on certain wildlife ranges are discussed in section 6.0 (Wildlife). The temporal scope is the five-year period over which proposed activities will occur.

Existing and Proposed Projects and Activities in the Area

Other existing or proposed activities in the area that may affect other land users include placer and quartz mining and exploration, use of Mount Nansen Mine Road and other secondary roads, and traditional and recreational use of the land (see section 4.0, Consideration of Cumulative Effects). Class 1 exploration activities may also be occurring on quartz and placer claims in the area. Existing and proposed activities that may contribute to cumulative effects on other land users include vegetation clearing, earthworks, use of heavy equipment, helicopter use, drilling, camp operation and human presence. These activities have the potential to result in residual effects similar to that of the proposed project, and include reduced hunting and trapping success of trappers, outfitters and subsistence harvesters.

Residual Effects Interaction and Significance Determination

The residual effects of the proposed project on environmental quality are not expected to be significant and adverse after compliance with legislation and implementation of the recommended mitigation measures identified in this report. As such, the Designated Office has determined that the proposed project will not contribute to significant adverse cumulative effects on other land users.

9.0 CONCLUSION OF THE ASSESSMENT

The Designated Office has given full and fair consideration to information received during this assessment, as per section 39 of YESAA. The Designated Office has also taken into consideration the matters referred to in section 42(1) of YESAA.

In conclusion, the Designated Office has recommended to the decision bodies that the project be allowed to proceed, subject to specified terms and conditions, as the project will have significant adverse environmental or socio-economic effects in or outside Yukon that can be mitigated by those terms and conditions.

Appendix A LIST OF KEY MITIGATIONS THE PROPONENT HAS COMMITTED TO UNDERTAKE

The following is a compilation of the key mitigations proposed by the proponent and noted in this report. These mitigations are important because they help to mitigate significant adverse effects of the project. The Designated Office has confidence that the proponent will implement these mitigations and we expect that the decision body and regulators will ensure that these activities are undertaken as proposed.

Aquatic Resources

- Prior to operations, Aurchem will submit a site specific ARD sampling program that follows the guideline recommendations in the MEND documents.
- As per our current Type B Water Use Licence, we are required to collect water samples down gradient of the waste rock storage facility, and we will comply with this requirement.
- No water will be discharge until water quality test results indicate it is suitable for discharge.
- The pools will be more than 30 m from any surface water, and discharge will be to ground, into the trenches.
- The ponds will be closely monitored [after discharge from mill] during this time to ensure no overfill occurs.
- To address the ML concerns we can re-assay the samples with an appropriate test. We would like to propose that an ARD sampling program be submitted to the Yukon Water Board prior to beginning production on site.
- To mitigate ARD concerns will also be monitoring for any ARD discharge. This monitoring shall consist of monthly samples of the rock from the tailings pile, waste rock pile, and ore stockpile (if present) during the course of the operating season. We also will be monitoring the seepage from the tailings pile.
- Currently no ARD risk is shown but if ARD is found during testing all milling will cease and all tailings/waste will be moved to lined storage areas until a solution acceptable to the board is found.
- The proponent shall have an emergency plan posted on site to deal with upsets/spills of mill reagent/chemicals, mill process streams, or fuels and other potential environmental contaminants.

Wildlife

- We propose that should caribou be encountered on site, that heavy equipment operations will shut-down, to avoid scaring the animals.
- No hunting policy will be enforced on site.
- Bear proof containers will be used to store domestic waste generated by the camp. Domestic waste will be hauled via truck to City of Whitehorse Municipal Landfill once/week. No animal

attractants will be kept on site (recyclables, food waste) in a fashion that allows access to them by wildlife.

- Aurchem has been conducting progressive reclamation on site, and will continue to do so. Our progressive reclamation activities has included filling in and recontouring some of our exposed trenches. We will be conducting more of this work this summer, and will be re-seeding some of our trenches with native grass species, engineered for reclamation work in the Yukon.
- As well, we will ensure that open trenches that are not being used in the operations, be backfilled, graded, and seeded so as to prevent large animals from getting trapped or injured in the trenches. We will also fence off active trenches, and the settling ponds, to deter wildlife from using the ponds.

Environmental Quality

- Proponent will have spill kit on site to mitigate any fuel leaks or spills. Safe fuel handling procedures will be followed as per the attached fuel handling procedures. A copy of the fuel spill response plan will be posted at site for all personnel to see and follow.
- The proponent shall have an emergency plan posted on site to deal with upsets/spills of mill reagent/chemicals, mill process streams, or fuels and other potential environmental contaminants.
- The proponent has indicated that a maximum of 12 barrels of concentrate will be stored on site, next to the mill on wooden pallets, with a temporary shelter (wall tent) to cover them until they are removed from site via a pick-up truck. Signs will be posted outside the dry storage area indicating that this is a concentrate storage area.
- All reagents for the milling process will be stored in a locked, ventilated container on site, and next to the mill. This container is steel and is stand-alone. Mill operations will require that personnel wear PPE's while handling reagents, which includes gloves and eye wear. Should a reagent spill occur, it will be cleaned up immediately. Soils will be placed in an approved container and taken to the City of Whitehorse Landfill and placed for appropriate disposal.

Appendix B LIST OF RELEVANT NON-DISCRETIONARY LEGISLATION APPLICABLE TO THE PROJECT

The following is a notation of the key legislation and associated sections that the Designated Office believes are relevant to this project. These provisions help to ensure that significant adverse effects do not occur. Note that this list is not intended to be a comprehensive list of all the relevant legislation that applies to this project. Rather it is a reflection of the legislation that was discussed in this report. The Designated Office has confidence that the proponent will adhere to this legislation, and we expect that the decision body and regulators will enforce the legislation.

Legislation	Key Provisions (by part or section number)
<i>Quartz Mining Act</i>	Schedule 1
<u>Quartz Mining Land Use Regulation</u>	Schedule 1
<i>Wildlife Act</i>	Sections 17, 62, 64, 65, 67, 88, 89, 91, 92 and 93
<i>Migratory Birds Convention Act</i>	
<u>Migratory Birds Regulations</u>	6(a)
<i>Fisheries Act</i>	Sections 30, 35 and 36(3)
<i>The Waters Act</i>	
<i>Environmental Act</i>	Parts 9 and 11
<u>Contaminated Sites Regulation</u>	Part 3
<u>Solid Waste Regulations</u>	Part 2
<u>Spills Regulations</u>	Sections 2 – 4
<u>Special Waste Regulations</u>	
<i>Public Health and Safety Act</i>	
<u>Camp Sanitation Regulations</u>	Section 19
<u>Sewage Disposal Systems Regulation</u>	Section 4
<i>Historic Resources Act</i>	Part 6
<u>Archaeological Sites Regulation</u>	Section 4
<i>Territorial Lands (Yukon) Act</i>	

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Legislation	Key Provisions (by part or section number)
<u>Land Use Regulation</u>	Section 15
Little Salmon/Carmacks First Nation Final Agreement	Chapter 13

Appendix C LIST OF SUBMISSIONS MADE BY INTERESTED PERSONS AND OTHERS DURING THE ASSESSMENT

Name of Person or Party	Type of Submission	YOR Document Number	Date Submitted
R. Savidge	Comment	2011-0297-015-2	January 3, 2012
Dawnette Baker	Comment	2011-0297-016-1	January 5, 2012
Yukon Government	Compiled Comments	2011-0297-019-1	January 18, 2012
Carmacks Renewable Resources Council	Comment	2011-0297-020-1	January 19, 2012
Environment Canada	Comment	2011-0297-021-1	January 19, 2012
Yukon Conservation Society	Comment	2011-0297-022-1	January 19, 2012
Environment Canada	Comment	2011-0297-034-1	February 6, 2012
Environment Canada	Comment	2011-0297-047-1	March 12, 2012
Yukon Government – Energy, Mines and Resources: Minerals Branch	Comment	2011-0297-048-1	March 12, 2012