To: Planning Committee  
From: Administration  
Date: July 10, 2015  
Re: Licence of Occupation – Sand and Gravel Quarry, Alice Arm Referral No. 72898248

This is a request for comment from Front Counter BC regarding a Crown land application (File No. 6408781 & Mine No. 1650880) for a 5 year Licence of Occupation on approximately 11.55 hectares located 1 km south of the Kitsault town site. The applicant, Avanti Kitsault Mine Ltd., is applying for a Licence of Occupation for Industrial – Mineral Production purposes to mine sand and gravel. Information and maps regarding the proposed Licence of Occupation are attached. Further information is available upon request.

Review

The proposed site is located near Alice Arm, 1 km south of the Kitsault town site. The site area will consist of an open borrow pit, stockpile area, lay-down for temporary equipment and a crushing/screening plant. The applicant has indicated that the proposed sand and gravel quarry will be produced for the construction and maintenance of the infrastructure required for the Kitsault Mine. The general nature of work will consist of stripping (logging and brushing), mining, stockpiling, crushing, screening and reclamation. If washing is needed, then a storage/sediment pond will be established adjacent to the plant to provide wash water and contain sediment. The crushing/screening plant will be a portable self-contained unit. The applicant states that mining activity will be seasonal and take place between April and October and will operate between the hours of 7:00 am to 7:00 pm, Monday to Saturday.

The area is located on part of District Lot 64 and 65, Cassiar District. The proposed quarry site is outside of Kitsault Zoning Bylaw No. 174 and not within the Agricultural Land Reserve. No Federal or Provincial Environmental Assessment Act review is required. The applicant requires construction aggregate material for the development and operation of their Kitsault Mine. The Licence of Occupation site is expected to be able to provide approximately 800,000 cubic meters of material throughout the life of the mine. Access will be through the town site of Kitsault and south along the inlet via an existing forestry road. Water may be required for dust suppression in which case the applicant must obtain a water licence from the Ministry of Environment. Portable sewage disposal facilities will be utilized for sanitation purposes of the workers.

The only major watercourse located near the development is Lime Creek, and it is approximately 200 meters from the northern boundary. A 30+ m buffer will be maintained between the high water mark in Alice Arm and the project extraction zones to avoid impacts from the site to the ocean.

The reclamation plan will follow guidelines of the Health Safety and Reclamation Code for Mines in British Columbia. Upon completion of mining, the safety benches and pit floor will
have approximately 20 cm of mineral soil placed over the areas, and will be fertilized and hydro-seeded. A more detailed description of the reclamation program is attached for reference.

The project is located within the traditional territories of the Nisga'a Lisims Government and at this time there has not been any contact with the Nisga'a in regards to this particular application.

Recommendation

No objection to the Licence of Occupation Crown Land File No. 6408781 & Mine No. 1650880 for a 5 year term provided the applicant addresses any environmental issues and appropriate First Nations are consulted and provided an opportunity to comment.

Recommended Voting Structure: Electoral Area Directors

Prepared by/contact: Nick Redpath
Approved by Manager – Development Services
Section A  PROJECT OVERVIEW

Avanti Kitsault Mine Ltd. (AKM) requires construction aggregate material for the development and operation of their Kitsault Mine. This License of Occupation (LOO) site will be able to provide approximately 800,000 cubic metres of material which will be extracted and processed commencing in 2015 and continuing throughout the life of the mine. As required by the Mines Act, a permit will be obtained prior to commencing mining operations.

The proposed pit is located on part of District Lot 64 and 65, Cassiar District, approximately one kilometre south of the Kitsault town site along an existing forestry road. AKM has an access allowance through the Kitsault town site to the LOO site.

The LOO site is approximate 250m, east west adjacent to the inlet and 550 m north south for a total of 11.5 ha (Figure 1). The northern boundary of the LOO abuts the private property owned by Kitsault Resorts Ltd.

The site will be cleared of trees with the topsoil and overburden being stockpiled along the north and south boundaries to be utilized as part of the reclamation program.

Mining will be conducted utilizing front end loaders and excavators loading haul trucks. Dozers will be utilized to push the material downhill from the higher elevations of the pit. Explosives are not planned on being used.

Section B  PROJECT DESCRIPTION

All activities will be conducted in compliance with the Health, Safety and Reclamation Code for Mines in British Columbia (HSRC). Mining will utilize the following mobile equipment; loaders, excavators, track dozer, tandem dump trucks. A portable crushing/screening plant will be utilized for processing of the material.

The mining and pit operations will normally be seasonal between April and October, with activities driven by requirements of the project. The first year of operation will mainly involve logging and partial clearing of the site for establishment of acceptable access corridors and operating areas with the beginning of mining to meet the requirements of the Kitsault Mine development. The required operating areas for this development will consist of stockpiles, crushing & screening areas and access roads. The pit will most likely operate between 7:00 am to 7:00 pm during Monday to Saturday of the work season. There may be washing of aggregate materials on-site during the tenure timeframe.

The area of the proposed development was selected due to its supply of aggregate materials and existing access infrastructure that will allow for acceptable development. Photographs 1, 2 and 3 show examples of the material available on site.
There will not be a requirement for an Environmental Management Act – Effluent Permit, given that the project is not anticipated to have any effluent discharge. The control of total suspended solids (TSS) and turbidity of any contact surface waters will be achieved through use of erosion and sediment control measures such as sediment ponds, silt fencing and straw (hay) bales.

The project will be developed in an environmentally sensitive manner. AKM proposes to accomplish this by implementing plans, utilizing technology and using industry standard best management practices approach as set forth in the “Aggregate Operators Best Management Practices Handbook for British Columbia (April, 2002)”, in order to either eliminate or minimize any environmental impacts that might occur from the operational areas.

B.1 DESCRIPTION OF WORK

B.1.a Stripping

Trees and shrubs will be removed from the area to be mined. The topsoil material will be stockpiled on the north and south edge of the property. Overburden material will be stockpiled separately adjacent to the topsoil. The topsoil and overburden will be utilized in the future reclamation program. These soil stockpiles will have an application of erosion control grass seeding applied to reduce erosion and noxious weed invasion. If necessary, noxious weeds will be controlled by spraying with approved weed control products that are acceptable for this area.
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B.l.b  Mining
Mining will proceed in double 6.5m (13m) high benches with an 8m wide safety berm every
bench. This will give an overall pit slope of 1.5:1 (hz:vt). Drawings 1628-Pit1-1 and 1628-
PIT-2 show the plan and profile of the pit.

Dozers will push the material from the higher elevation downhill until a wide enough area is
established to allow removal by front end loaders or excavators. Material will be loaded into
tandem dump trucks and either hauled off site to be used as pit run material or delivered to
the crushing/screening plant for processing.

B.l.c  Processing
Material will be delivered to the crushing/screening plant to produce the required sized
material for utilization on the various construction sites. If washing is required, then a
storage/sedimentation pond will be established adjacent to the plant to provide wash water
and contain sediment.

Processed aggregate will be stockpiled in the pit for future use.

B.l.d  Products
Aggregate material will be produced for the construction and maintenance of the
infrastructure required for the Kitsault Mine.

Commercial sales of material is not anticipated. If the town site of Kitsault requires
aggregate then arrangements may be made to provide material.

B.II  PRESENT STATE OF LAND
B.II.a  Current Land Use
This area is not within the Agricultural Land Reserve (ALR) and the Kitimat-Stikine Regional
District classifies this area as Rural which allows for resource extraction and gravel pit
development. The current land use for the area is wildlife, and therefore following completion
of mining activities the land will revert to an end land use of wildlife.

The adjacent properties are currently undeveloped and are forested.

B.II.b  Vegetation and Topography
The soils within the development area are typical coastal area type, which have a high
organic content and low pH values. On-site the soils (~ 0.25 to 0.5 m thick) overlay the
mining area, therefore salvage and stockpiling of these soils in a strategic location (Figure 2)
will be important for reclamation.

The area is a hillside rising from approximately 10m elevation at road level to approximately
110m at the east side of the property.
B. II. c  Proposed Infrastructure
Aggregate extraction from this site does not require the installation of infrastructure. The crushing/screening plant will be a portable self-contained unit.

B. II. d  Road Access
Road access will be through the town site of Kitsault and south along the inlet via an existing forestry road.

B. II. e  Utilities
The installation of utilities will not be required for this operation. Communication at the site will be by two way radios.

B. II. f  Water Supply and Management
Water may be required for dust suppression in which case a water license will be obtained from the Ministry of Environment.

B. II. g  Sewage Disposal
Portable facilities will be utilized for sanitation purposes of the workers.

B. III  RECLAMATION PROGRAM
The reclamation and closure of the aggregate operation will follow the general guidelines recommended by Part 10.7.1 to 10.7.10 of the HSRC. It is the intent of AKM to prevent long-term environmental impacts at the site and the end land use for this site will be wildlife (forestry), and that the reclamation plan will foster return to appropriate and functional values on the site.

Progressive reclamation will be conducted on areas that are no longer required for mining purposes. This will reduce the amount of disturbed area and build knowledge in effective reclamation of the site.

Reclamation procedure will consist of the following:

- During operations the stripping of mineral soil to just below the rooting depth and then stockpiling in locations adjacent to the north and south property boundaries shown in Figure 2. Other materials such as overburden, dirty sand, etc. that exists between the sand & gravel layer and mineral soil, will be placed in adjoining stockpiles near the mineral soil stockpiles. These soil stockpiles will have an application of erosion control grass seeding to reduce erosion and noxious weed invasion. Noxious weeds will be controlled by spraying with approved weed control products that are acceptable for this area if required.

- On completion of mining, the safety benches and pit floor will have approximately 20cm of mineral soil placed over the areas, and will be fertilized and hydro-seeded.

This reclamation plan has been developed in a manner to limit potentially negative site values such as environmental impacts, surface soil erosion, soil instability and excessive
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water flows resulting from altered natural drainages. AKM will be able to mitigate the effects from the mining activities by:

- Minimizing or eliminating public safety hazards;
- Minimizing potential effects to the environment, particularly water resources;
- Providing long-term stable landform configurations;
- Reclaiming surface disturbances for beneficial use; and
- Minimizing the requirements for post-closure monitoring and maintenance.

The goals of the reclamation plan will be to provide the necessary details of the reclamation objectives, and to provide an opportunity for the plan to be refined during the operational period of the project. After closure work has been completed, the project will be left in a safe and secure manner for the long-term with little or no projected maintenance.

AKM may revise this reclamation plan from the experience gained during operations, if this is the case then the revised reclamation plan will be provided to the Ministry of Forests, Lands and Natural Resource Operations.

Section C ADDITIONAL INFORMATION

The development is not expected to have any environmental or socio-community impacts given its relatively small size and/or remote location. AKM will have procedures in place as required for their Mines Act permit plans for archaeological chance find procedures, sediment and erosion control, and fuel management & spill contingencies.

C.I ENVIRONMENTAL

C.I.a Land Impacts

The site will be logged with the topsoil and overburden being stockpiled on the north and south edges. Following completion of mining the area will be revegetated and returned to wildlife status.

There are no known documented archaeological sites within the proposed development area, based on the baseline archaeological impact assessments that were completed as part of the Kitsault Mine Project Environmental Assessment (EAA) review.

C.I.b Atmospheric Impacts

It is expected that minimal atmospheric impacts will come from equipment emissions and fugitive dust during mobilization, demobilization, land clearing, excavating, haulage and crushing and screening operations, given the general wet climate at the site.
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However, to assist with reducing atmospheric effects AKM, will undertake the following:

- Use modern construction (mining) equipment that meets latest applicable Canadian emission standards;
- Ensure proper and routine inspection and maintenance of equipment;
- Operate equipment within specifications and capacity;
- Limit vehicle and construction equipment idling;
- Use low sulphur fuels for all diesel equipment;
- Re-vegetate any parts of the development that will not be disturbed in the future;
- Limit the clearance of tress to only those needed to be removed for mining operation in that particular area;
- Through a planned site layout (minimize creation), operational controls (control escape); air quality (dust removal) and cessation, AKM will manage and mitigate any generated fugitive dust; and
- Utilization of water sprays when needed for dust control on the haul roads and the crushing/screening plant.

C.l.c Aquatic Impacts
This development will have insignificant (minor) changes to surface water quality and quantity.

AKM will utilize mitigation and monitoring as tools to minimize aquatic impacts, as necessary. The operation will use water management structures and appropriate erosion and sediment control strategies such as managing sediment mobilization and erosion by installing sediment controls prior to land disturbance, limiting land disturbance to the minimum practicable extent, reducing water velocities across the ground, progressively rehabilitating disturbed land, ripping areas to promote infiltration, and restricting access to rehabilitated areas, and installing appropriate temporary erosion and sediment control measures or "Best Management Practices" prior to and during construction activities.

Buffer zones will be maintained between the operation and any water source. Along with use of appropriate diversions of ephemeral creeks and a well-planned and operated operation, impacts to the aquatic resources will be minimized.

The development site is of typical coastal area that has ephemeral creeks within the land base. It is expected that the ephemeral creek noted within the development area might be impacted by the development. Efforts will be undertaken as part of the mine plan to divert where possible any ephemeral creeks away from the operation.
The only major watercourse located proximal to the development area is Lime Creek, and it is approximately 200 meters from the northern boundary of the LOO area and thus should not be impacted by the operations. As well, a +30 m buffer will be maintained between the high water mark in Alice Arm and the project extraction zones; therefore there should not be any impacts from the site to the ocean.

C.I.d Fish and Wildlife Habitat

Given the relative small size of the proposed operation, fish and wildlife habitats baseline studies were not undertaken as part of this application. Meaning there were no literature reviews of management plans specific to the site, or there were no identification of species at risk and no field surveys.

There will be no disturbance to fish and/or fish habitat during construction/operations of the development, given its location and proposed operating philosophy.


C.II SOCIO-COMMUNITY

C.II.a Land Use

There are no known designated National Parks, National Historic Sites, National Marine Conservation Areas, National Wildlife Areas, Migratory Bird Sanctuaries or Marine Wildlife Areas within the development area.

There are currently no active forestry operations within the area.

Given that no baseline work was undertaken on the site, the recreation values cannot be substantiated but the values probably are low sensitivity and low significance values, given the site's proximity to the other higher recreation value areas and the limited access to the area.

C.II.b Socio-Community Conditions

The project will not affect or influence any community services or infrastructure requirements due to it being a small operation that will operate intermittently and only for the need of Kitsault mine development and operation.

C.II.c Public Health

The project will not affect public health, again due to it being a limited size operation and remote location.

C.II.d First Nations

The project is located within the traditional territories of the Nisga’a Lisims Government (Nisga’a). At this time there has not been any contact with the Nisga’a in regards to this
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particular application, however there has been extensive consultation between them and
AKM in regards to the Kitsault Mine Project for the last five (5) years.

Section D CONCLUSION

This Aggregate Development Management Plan has been prepared by McElhanney
Consulting Services Ltd. for the benefit of Avanti Kitsault Mines Ltd. The information and
data contained herein represent MCSL’s best professional judgment in light of the knowledge
and information available to MCSL at the time of preparation.

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Yours truly,

McELHANNEY CONSULTING SERVICES LTD

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Date: Date:
Interest Holder: AVANTI KITSAULT MINE LTD.

Scale: 1:250,000
Purpose: INDUSTRIAL MINERAL PRODUCTION
Subpurpose: LICENCE OF OCCUPATION
Type: LICENCE
Subtype: LICENCE OF OCCUPATION

File No: 6408781

Referral Map

Date: 15 Jan 2015
Tantalis Area: 11.55 ha

BCGS Mapsheet(s): 103P.043