



**Environment Environnement  
Canada Canada**

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Manager of Licensing  
Nunavut Water Board  
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Attention: Phyllis Beaulieu

**Re: NWB 2BE-KIG0812: Amendment Request to Authorize Drilling During Low Flow Artesian Conditions and Allow Drilling within 30 metres of Ordinary High Water Mark in the Andrew Lake Area and Mushroom Lake – Areva Resources Canada Inc..**

Environment Canada's contribution to your request for specialist advice is based on the mandated responsibilities under **Section 36(3)** of the *Fisheries Act*, the *Canadian Environmental Protection Act* (CEPA), the *Migratory Birds Convention Act* (MBCA) *Regulations* and the *Species at Risk Act* (SARA).

Based on the information and the mitigation measures provided by the proponent in the above noted amendment, Environment Canada (EC) offers the following comments and recommendations to the Nunavut Water Board for consideration:

#### **Amendment Request No. 1**

The proponent is requesting an exemption to Part F section 3 of their water licence which states: "The Licensee shall not conduct any land based drilling within thirty (30) metres of the ordinary high water mark of any water body, unless approved by the Board in writing."

#### **EC Comments & Recommendations Request No. 1**

EC generally does not promote activities within the thirty (30) metre high-water mark of any waters that may flow into any fish bearing waters. If the proponent is permitted to drill within the 30 metre zone **for** the above noted specified areas only, provided the 30 metre buffer zone should not be impacted nor disturbed due to the proponent's drilling activity.

Mitigation measures outlined in the proponents Technical Support document, "Drilling in Low Flow Artesian Conditions" would apply. The proponent states that they will minimize erosion and surface water contamination, however the proponent should ensure that there is no permafrost degradation, surface erosion or surface water contamination due to the proposed drilling activities.

The proponent should comply with the Fisheries and Oceans Canada (DFO) operational statements for Mineral Exploration Activities and the Timing Windows for fish bearing waters and obtain the necessary permits if required through DFO.

It is uncertain whether or not the proponent will be using Calcium Chloride (CaCl<sub>2</sub>) as a drilling additive to help prevent freezing of the drill rods in the drill hole. EC does not support the practice of disposing of drilling wastes into natural depressions nor does it support the practice of relying on permafrost to contain

and isolate drilling wastes that contain freeze depressants (e.g. salts). If salts are used for drilling, then the drilling wastes should be disposed of in a properly constructed sump that has an impermeable liner and cap to ensure that there is no run-off into water-bodies downstream of the drilling activity or thawing of the surrounding permafrost. All sumps are to be constructed above the 30 metre high-water mark.

**Request No. 2:**

The proponent is also requesting an amendment related to Part F section 6 of their water licence which states: "If artesian flow is encountered, drill holes shall be immediately sealed and permanently capped to prevent induced contamination of groundwater or salinization of surface waters. The licensee shall report all artesian flow occurrences within the Annual Report, including the location (GPS) co-ordinates and dates."

**EC Comments Request No. 2**

EC would like to know the proponents sealing and capping procedures used when containing artesian flow?

The proponent and drilling contractor have established the controllable Low Flow rate at 95 L/min, therefore any flow rates over the 95 l/min shall be immediately sealed and permanently capped.

The proponent should ensure that they have the capacity to contain the volumes of water that maybe encountered during low artesian flow for the full duration of the borehole being drilled, and prevent the induced contamination of groundwater or salinization of surface waters if saline conditions are encountered. The proponent shall ensure that the water is contained and not allowed to migrate into fish bearing waters unless it is proven to be non deleterious. Surface erosion must be prevented.

A Packer Test shall be carried out on all boreholes drilled within the 30 metre high-water mark of any water body that does not have apparent artesian flow. If the Packer Test indicates that artesian flow conditions are present, the borehole shall be permanently plugged and sealed. The licensee shall report all artesian flow occurrences including the GPS co-ordinates, dates, artesian flow rates, depth of permafrost, and aquifer and Packer Testing data results within the Annual Report. Water samples shall be taken at each borehole where artesian flow is encountered and analysis results forwarded to the NWB as stipulated in the Water Licence. The proponent should establish background water quality levels above and below the proposed amended area prior to drilling.

The proponent should be in compliance with the terms and conditions set out under of their existing Water Licence.

The proponent shall not deposit, nor permit the deposit of chemicals, sediment, wastes, or fuels associated with the project into any water body. According to the *Fisheries Act*, Section 36 (3), the deposition of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any deleterious substance that results from the deposit of the deleterious substance, may enter any such water, is prohibited.

EPO should be notified of changes in the proposed or permitted activities associated with this Water Licence Permit.

If you have any further questions or comments, please do not hesitate to contact me at (867) 669-4744 or ron.bujold@ec.gc.ca.

Yours truly,



Ron Bujold  
Aquatic Environmental Assessment Technician

cc: Carey Ogilvie (Head, EA-North, EPO)  
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