

# **MORE CREEK HYDROELECTRIC PROJECT**

## **Project Description (Federal)**

**Alaska Hydro Corporation**

**Project Description**

**To Initiate the Environmental Assessment Process**



Photo Credit: Jay P. Kawatski



**SIGMA ENGINEERING LTD.**

400 – 1444 Alberni Street

Vancouver, B.C. Canada V6G 2Z4

Tel: (604) 688-8271 Fax: (604) 6881286

**September 2016**

## REVISION TRACKING TABLE

Ref. No.	Revision	Date
1	Draft Submitted to CEAA	February 18, 2016
2	Draft Submitted to CEAA	August 5, 2016
3	Draft Submitted to CEAA	September 8, 2016
4	Submitted to CEAA	September 14, 2016



## EXECUTIVE SUMMARY

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### General Information and Contacts

Alaska Hydro Corporation (AHC) proposes to develop the More Creek Hydroelectric Project (the Project) as a 75 MW hydroelectric project with reservoir storage. The proposed reservoir storage would inundate (flood) an area of approximately 2104 ha extending 20 km upstream from the Project intake and create a reservoir with a total surface area of 2680 ha. AHC is a renewable green energy company and has a registered office in North Vancouver. The company is listed on the Toronto Stock Exchange as (TSX:AKH).

Category	Details
Name of Project:	More Creek Hydroelectric Project
Name of Corporation:	Alaska Hydro Corporation
Address:	2633 Carnation Street, North Vancouver, BC V7H 1H6
President and Chief Executive Officer:	Cliff Grandison
Principle Contact:	Cliff Grandison (address same as above)
<b>Principle Contact for Purposes of Project Description for the More Creek Hydroelectric Project</b>	
Name and Title:	Cliff Grandison, President
Email Address:	grandiso@telus.net
Contact:	<b>Ph.</b> (604) 929-3691 <b>Fax.</b> (604) 929-4996
Company Website	<a href="http://www.alaskahydro.com/">http://www.alaskahydro.com/</a>
Agent:	Lily Kotzeva, Sigma Engineering Ltd (604.688.8271 ext 388; lkotzeva@synex.com)

### Project Location

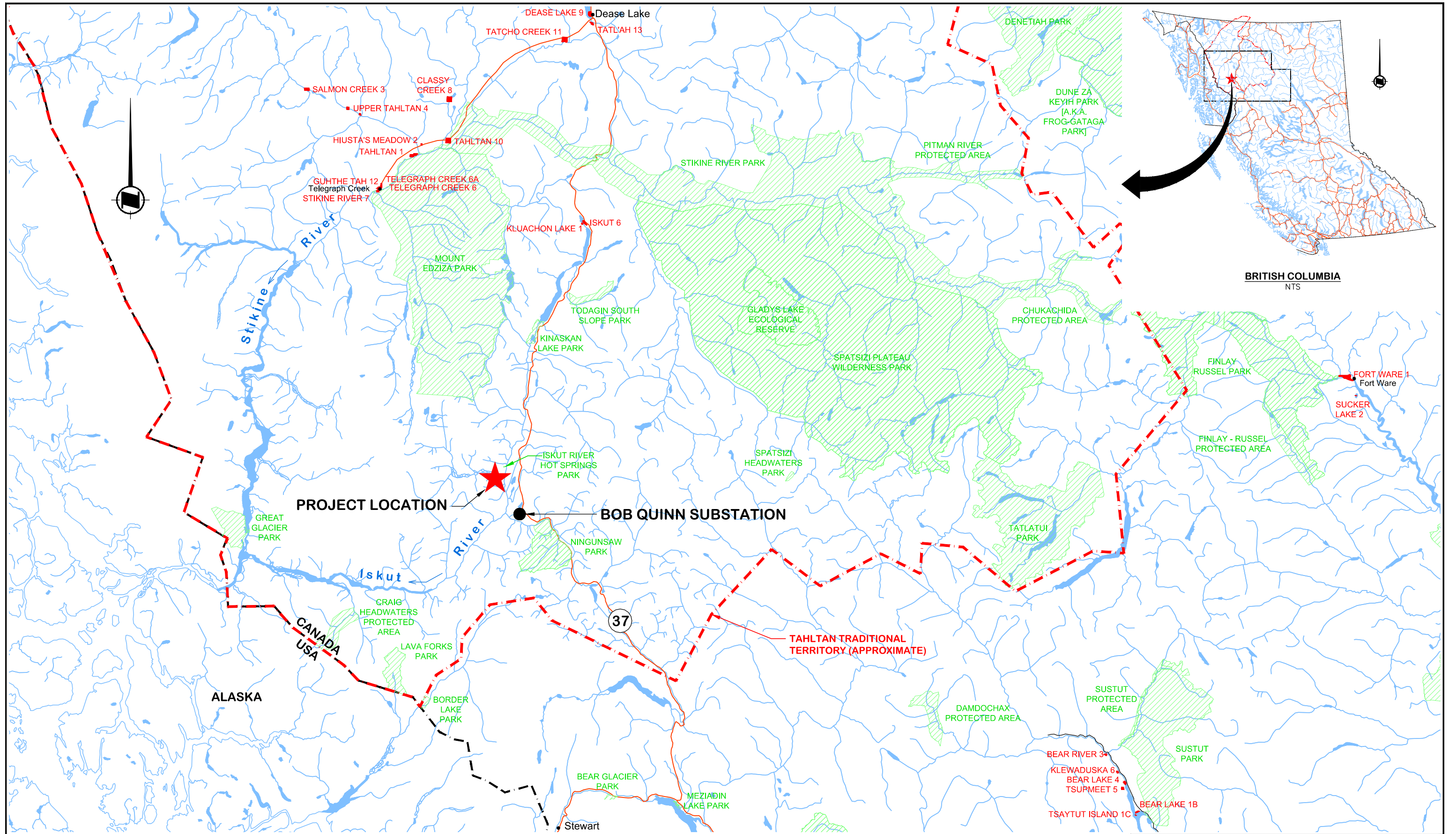
The Project is located at N57°01'51" latitude and W130°22'28"W longitude (at powerhouse), which is approximately 985 km northwest of Vancouver, 130 km north of the town of Stewart in northwestern British Columbia and 95 km east from the border of British Columbia and Alaska (Figure 1). The Project Layout is shown in Figure 2 and the general arrangement of works is shown in Figure 3. The Project is located entirely over provincial Crown land within the Kitimat-Stikine Regional District.

The Project is being proposed to achieve several key objectives: provide British Columbia electricity consumers with a long-term, reliable, cost effective supply of renewable electricity; provide benefits to First Nations; stimulate economic resource development in the region consistent with defined land management resource objectives (LRMP, 2000); and contribute to achieving British Columbia's goals set out in the *Clean Energy Act* and *Green House Gas Reductions Target Act*.

The proposed Project would assist BC Hydro in meeting future energy demands and/or supply local resource sectors with a clean, renewable, on-demand source of energy. One distinct advantage to the proposed Project is that it would help meet the demands of energy peaking in the Province; whereby, the reservoir/storage capacity of the Project would allow Project operations to increase or decrease to match energy consumer demands.

The purpose of this document is to provide a conceptual Project development plan to the BC Environmental Assessment Office (BC EAO) and the Canadian Environmental Assessment Agency (CEAA) such that these agencies have sufficient information to make a determination on whether provincial and/or federal environmental assessments are required.



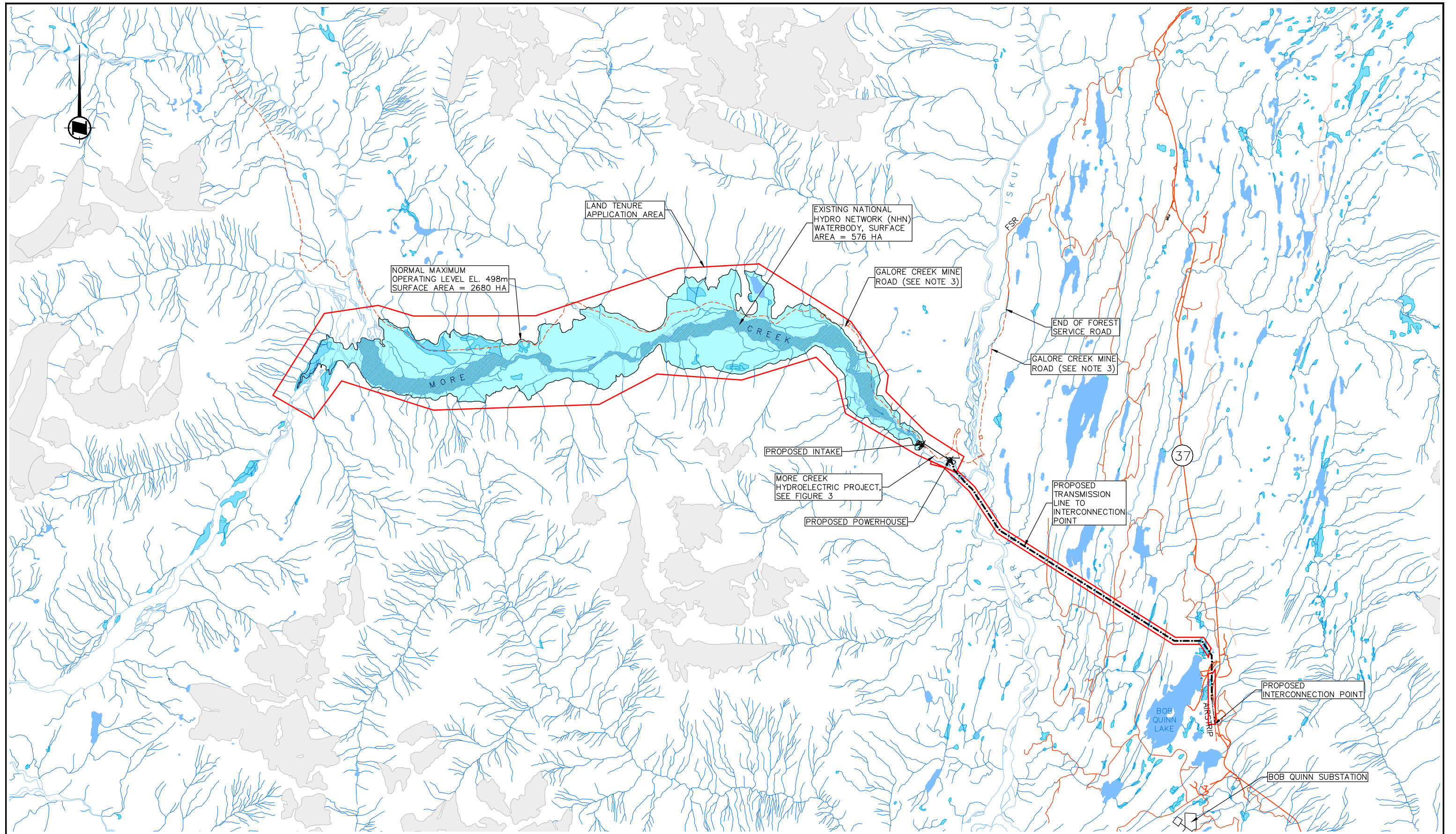


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 BASEMAP GENERATED FROM CANVEC  
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 PARKS LAYERS FROM DATA BC.

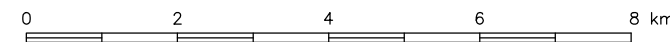


- LEGEND**
- TAHLTAN TRADITIONAL TERRITORY (APPROX.)
  - FIRST NATIONS RESERVE
  - PARK / PROTECTED AREA

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<b>ALASKA HYDRO CORPORATION</b>			
<b>MORE CREEK HYDROELECTRIC PROJECT</b>			
<b>LOCATION PLAN</b>			
DATE	JUL 16	PROJ.	E6348
DWN.	KV/DGC	DWG.	FIGURE 1

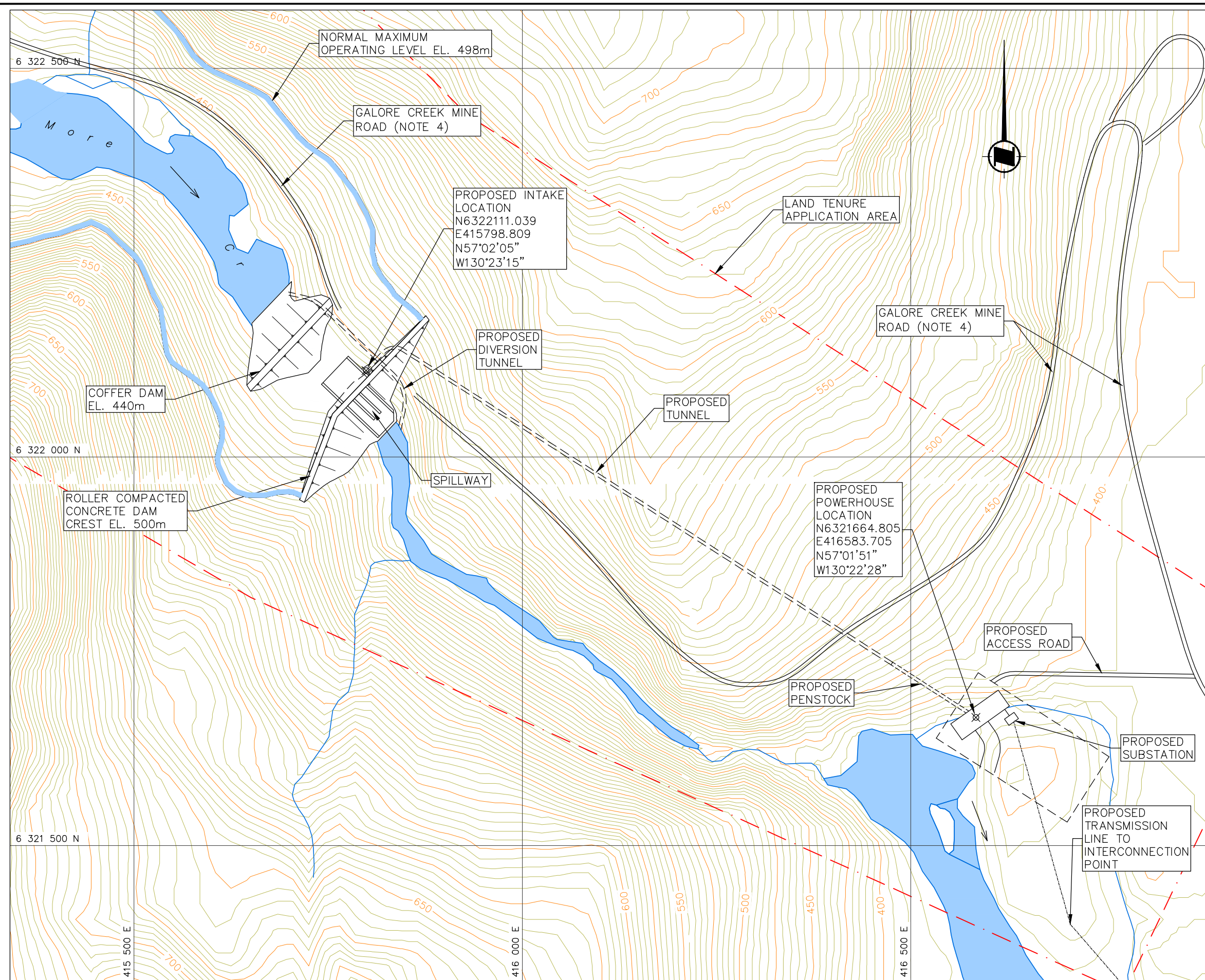


- NOTES:**
1. WATERCOURSES AND LAKES FROM BMGS, ILMB, CANADIAN HYDRO NETWORK 1.0-CL4-NC4; SOURCE DATA = BC-TRIM; SOURCE SCALE = 1:20,000
  2. ADDITIONAL BASEMAP LAYERS DOWNLOADED FROM THE BC DATA DISTRIBUTION SERVICE.
  3. GALORE CREEK MINE ROAD APPROXIMATED FROM GOOGLE EARTH.
  4. COORDINATE SYSTEM = UTM ZONE 9, NAD 83



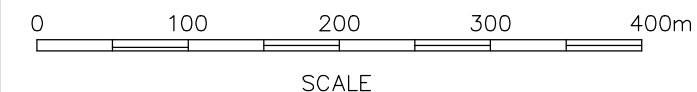
- LEGEND**
- ROAD (DIGITAL ROAD ATLAS)
  - ROAD (FOREST SERVICE)
  - - - TRAIL
  - - - ROAD (ESTIMATED, SEE NOTE 3)
  - GLACIER

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<b>MORE CREEK HYDROELECTRIC PROJECT</b>			
<b>PROJECT LAYOUT</b>			
DATE	JUL 16	PROJ.	E6348
DWN.	KV/DGC	DWG.	FIGURE 2



**NOTES**

1. CONTOURS FROM BMGS, ILMB, CANADIAN DIGITAL ELEVATION DATA, GEOBASE 1.0; SOURCE DATA = BC-TRIM; SOURCE SCALE = 1:20,000; CONTOUR INTERVAL SHOWN = 10m
2. WATERCOURSES AND LAKES FROM BMGS, ILMB, CANADIAN HYDRO NETWORK 1.0-CL4-NC4; SOURCE DATA = BC-TRIM; SOURCE SCALE = 1:20,000.
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5. COORDINATE SYSTEM = UTM ZONE 9, NAD 83



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MORE CREEK HYDROELECTRIC PROJECT**

**GENERAL ARRANGEMENT**

DATE	JUL 15	PROJ.	E6348
DWN.	DGC	DWG.	FIGURE 3

### Regulatory Framework

The Project constitutes a reviewable project pursuant to Part 4 of the Reviewable Project Regulation (B.C. Reg. 370/02) as the proposed Project is a new hydroelectric power plant facility with a rated nameplate capacity of 50 MW or more of electricity.

The Project is considered a “designated project” in accordance with the *Canadian Environmental Assessment Act* 2012, Regulations Designating Physical Activities Schedule 4 which states the following “the construction, operation, decommissioning and abandonment of a new dam or dyke that would result in the creation of a reservoir with a surface area that would exceed the annual mean surface area of a natural water body by 1,500 ha or more”. The Project reservoir is anticipated to inundate an area of approximately 2,104 ha.

### Water Resources and Use

The More Creek Hydroelectric Project submitted a water licence application on August 15, 2014 for the diversion of 80 m<sup>3</sup>/s from More Creek and the flooding of 2,104ha for development of a water storage reservoir for power generation. AHC has reviewed water interests on More Creek and in the vicinity of the Project. There are no other water licences or water licence applications on More Creek based on a web query search conducted on January 18, 2016. However, there are three existing water licence applications on tributaries that discharge directly into More Creek (Table 1). There is potential for the Project to impact one of the three water licence applications listed in Table 1.

**Table 1. Potential Water Use in the Vicinity of the Project**

Water Licence No.	Creek Name	Purpose	Quantity	Proponent	Priority Date
Z125233	ZZ Creek (83182)	Power-General	2.8 m <sup>3</sup> /s	Northern Hydro Limited	2009/08/28
Z125227	ZZ Creek (83164)	Power-General	1.0 m <sup>3</sup> /s	Northern Hydro Limited	2009/08/28
Z125232	ZZ Creek (83198)	Power-General	2.85 m <sup>3</sup> /s	Northern Hydro Limited	2009/08/28

The confluence of More Creek and the Iskut River is approximately 1.5 km downstream of the More Creek Project Powerhouse. On the Iskut River and on tributaries to the Iskut River there are three operating water power hydroelectric plants (Table 2). Preliminary estimates indicate that the More Creek Hydroelectric Project may facilitate a potential gain of 148 GWh of additional energy generation at the hydroelectric facility located on the Iskut River (C128205) as a result of co-ordinated water management.

**Table 2. Existing Water Power Infrastructure in the Vicinity of the Project**

Water Licence No.	Creek Name	Purpose	Quantity	Proponent
C128967	Volcano Creek	Power-General	9.9 m <sup>3</sup> /s	Altagas Renewable Energy Inc.
C128205	Iskut River	Power-General	156 m <sup>3</sup> /s	Coast Mountain Hydro Corp.
C130660	Iskut River	Power-General	96 m <sup>3</sup> /s	Coast Mountain Hydro Corp.
C130640	McLymont Creek	Power-General	30 m <sup>3</sup> /s	Altagas Renewable Energy Inc.
C130640	McLymont Creek	Storage-Power	61, 600m <sup>3</sup> /year	Altagas Renewable Energy Inc.





Land Use

All components associated with the Project are located on British Columbia Crown Land. The Proponent has made applications for an Investigative Licence (IUL) and water licence for Power – General. An IUL was granted on May 14, 2015 (Land File: 6408748). The IUL is for a total area of 4,794 ha. It is anticipated that the area for the investigative use licence may be reduced during subsequent phases of Project development as Project design details become refined. The Project is located within the Cassiar-Iskut-Stikine Land and Resource Management zone based on the Cassiar-Iskut-Stikine Land and Resource Management Plan (LRMP, 2000). An overview of the land use and interests in the vicinity and overlapping the Project area was conducted and are summarized in Table 3 to Table 5.

Mineral titles overlapping the Project provide a holder with sub-surface rights only. AHC will contact and consult with all mineral title holders whose tenures are overlapped by the Project. Table 3 provides a list of mineral tenures that overlap the proposed Project.

**Table 3. Mineral Interests/Staking overlapping the Project area**

<b>Tenure Type Description</b>	<b>Tenure #ID</b>	<b>Purpose/ Description</b>	<b>Requestor</b>
Mineral and Placer	328865	Flooding	BC Hydro & Power Authority
Mineral and Placer	385933 328489	Hydro Project	Water Stewardship Division (MOE)
Mineral Claims	508337 508338 508124 408606 545725	Mineral	Galore Creek Mining Corporation
Mineral Claims	511113 692583	Mineral	Carl Alexander, Van Einsiedel
Mineral Claims	501812 518112 501927 502756	Mineral	Rimfire Minerals Corporation

No tree farm licences (TFL) have been identified over the Project area. Historically, no forest tenures have been issued in the Cassiar Timber Supply Area (TSA) in which, the Project is situated. Timber harvesting has typically been conducted under short term timber sales (LRMP, 2000). A list of active forest cut block holders in the vicinity of the Project is provided in Table 4.

**Table 4. Cut Blocks Overlapping the Project Area**

<b>File ID</b>	<b>Cut Block ID</b>	<b>Purpose</b>	<b>Holder</b>
A64561	49-1 2 7 42		Cassiar Forest Corporation
L47464	1	Road Access & Mine Site	Galore Creek Mining Corporation

L49671	1	Clearing Zone	Highway 37 Power Corporation
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AHC endeavors to consult with all parties with interests over the Crown Land that is overlapped by the Project. A summary of these interests is provided in Table 5. This table of active Crown Land interests will be updated as additional interest holders are identified.

**Table 5. Active Crown Land Interests over the Project area**

Crown Land Interest in the Project Area	Number of Active Interests
Forest Service Roads (Cassiar Forest Corp)	1
Guide Outfitter Certificate	1
Bob Quinn Substation	1
Northwest Transmission Line	1
Highway 37	1
Mineral/Placer/Coal Reserve	5
Trapline Areas (501701, 501714, 501723)	3
Water Licence Applications	3
<b>Total Active Interests</b>	<b>16</b>

Project Description

The Project is a hydroelectric facility that will include reservoir storage over an area of approximately 2,680 ha of the More Creek drainage area basin (Figure 2). The nameplate capacity of the hydroelectric facility is anticipated to be 75 MW with an average annual energy output of 348 GW-hr. The maximum Project water diversion from More Creek will be 80 m<sup>3</sup>/s. The footprint of the Project area for water power investigation is approximately 4,795 ha. The Project components and physical activities include the following:

- Access Roads
- Intake
- Dam
- Reservoir
- Power Tunnel and Penstock
- Powerhouse and Generation Facilities
- Staging and Spoil Areas
- Transmission Lines
- Reservoir Filling and Penstock Diversion
- Excavation and Clearing Procedures
- Concrete Works
- Work Camps
- Rock blasting

The hydroelectric operation will be based on conventional technology whereby water is diverted from the reservoir at the intake dam through the power tunnel/ penstock to the turbines at the powerhouse facility. At the turbines, the hydraulic energy is converted to mechanical energy and a generator will convert the



mechanical energy to electrical energy. The Project powerhouse facility will house three vertical axis Francis type turbines. The diverted water will then be discharged through the tailrace back into More Creek. Electricity generated at the facility will be transmitted to the Bob Quinn substation via a 13 km transmission line.

**Table 6. Preliminary Project Parameters**

Power Output:	75 MW
Energy Output:	348 GWh/yr
Max Diverted Flow:	80 m <sup>3</sup> /s
Gross Head:	118 m
Dam Crest elevation	498 m AMSL
Minimum Lake elevation	468 m AMSL
Access Roads	~1 km of newly constructed access
Powerhouse (tailrace elevation):	~380 m AMSL
Power Tunnel:	5.5 m x 5.5 m and 1000 m long
Penstock	150 m length
Powerhouse	35 m x 75 m
Diversion Tunnel during construction	12 m x 12 m, and 200 m long
Powerline Length/ Voltage:	13 km/ 287 kV
Intake Structures:	Dam/ spillway/ integral chute/ intake
Dam	Max height at center: 85 m
Dam crest	290 m in length; 4-5 m wide
Work Camp	150 m x 75 m
Gravel pit or quarry	400 m x 400 m
Staging areas	100m x 200m
Intake Structures:	Dam/ spillway/ intake

### Access

Access to the Project site will be via 11.5 km of existing access road of which, approximately, the first 5 km is a forestry road that intersects Highway 37 just north of Devil Creek. The remaining access road was constructed by Galore Creek Mining Corp for the Galore Creek Project. It is anticipated that approximately 1 km of newly constructed access roads will be needed to access the powerhouse and intake from the existing Galore Creek access road. The road will be most extensively used during construction and will be used periodically during operations for maintenance and operations.

Project Activities and Phases

AHC plans to submit a Project application for the Environmental Assessment Certificate and Environmental Impact Statement to the BC EAO and CEAA, respectively, in Q4 of 2017. It is anticipated that Project construction would commence by Q2 of 2018 and the commercial operation date would be in Q1 2020. The plant is expected to operate for upwards of 100 years. An overview of the main Project milestones for the BC EAO and CEAA (the Agency) environmental assessment process are provided in the table below.

<b>Main Project Milestones include:</b>		<b>Target Date</b>
<b>BC EAO</b>	<b>CEAA</b>	
Submission of Project Description to BC EAO	Submission of Project Description to CEAA	Q3 2016
20 day Public comment period	20 day Public comment period	Q3 2016
Section 10 order issued by BC EAO under the <i>Environmental Assessment Act</i> (EAA) issued	Agency (CEAA) issues Notice of Determination	Q3 2016
Procedural order under section 11 of EAA issued by BC EAO		Q4 2016
BC EAO issues the Application Information Requirements following Public Comment Period	Agency (CEAA) issues Notice of Commencement	Q4 2016***
	Public comment period on draft Environmental Impact Statement (EIS) Guidelines	Q1 2017***
	Agency (CEAA) issues final EIS Guidelines to Proponent	Q1 2017
Application Prepared and Submitted to BC EAO	Public comment period on EIS Guidelines	Q1 2017**
	EIS submitted to Agency (CEAA)	Q1 2018**
Application Evaluated by BC EAO for Completeness	Public comment period on draft EA report	Q1 2018**
Application Review Phase and Public Comment Period	Agency (CEAA) issues EA report	Q3 2018**
Environmental Assessment Certificate (EAC) issued	Environmental Assessment Decision Statement issued by the Agency (CEAA)	Q4 2018**
Concurrent provincial and federal permit approvals		Q4 2018**

\*\*The target dates provided within the above table are conservative estimates. The Main Project milestones outlined may occur at an earlier date than the date provided in the above table.

\*\*\* The period between Environmental Assessment commencement by the Agency (CEAA) (i.e. issuance of Notice of Commencement) and the EA Decision Statement issued by the Agency provides the government

with 365 days for review (excluding periods where the Proponent is required to follow-up on issues that may be identified).

The phases of the More Creek Project includes and will occur in the following order: development and permitting, construction phase I, construction phase II, commissioning and de-mobilization, site restoration, operations and decommissioning. The table below lists each phase of the Project, the target date for each phase, and the associated activities with each phase of the Project.

<b>Main Project Milestones include:</b>	<b>Target Dates</b>	<b>Activities</b>
Development and Permitting	Q1 2016 – Q2 2018	<p>Conduct baseline data assessments for aquatic resources, terrestrial resources, hydrological resources, archaeological resources, and traditional use studies.</p> <p>Make submission to the BC EAO and CEAA as part of their respective environmental assessment processes.</p> <p>Engage with First Nation and public stakeholders with interests over the Project area.</p>
Construction Phase I	Q3 2018**	<p>Site preparation and mobilization</p> <ul style="list-style-type: none"> <li>- Clearing and logging works</li> <li>- Setting up work camps and related services (i.e. sewage treatment)</li> <li>- Access road construction</li> <li>- Grubbing, stripping, and excavation activities for the powerhouse site</li> <li>- Gravel pit and Quarry construction</li> </ul>
Construction Phase II		<p>Project infrastructure construction and placement</p> <ul style="list-style-type: none"> <li>- Assemble concrete plant</li> <li>- Blasting for the diversion tunnel and placement of penstock</li> <li>- Placement of cofferdam</li> <li>- Placement of roller compact concrete for dam body and concrete for intake structure</li> <li>- Installation of powerhouse foundation, steel frame, and mechanical items</li> <li>- Transmission line construction and substation upgrades</li> </ul>
Commissioning and De-mobilization	Q4 2019**	<ul style="list-style-type: none"> <li>- Installation of turbines and generators at the powerhouse and their controls</li> <li>- Take-down of work camp and concrete plant and construction equipment</li> <li>- Plant commissioning and testing</li> </ul>
Site Restoration		<ul style="list-style-type: none"> <li>- Re-vegetation of construction areas that are not required for permanent operations</li> <li>- Reservoir filling at approved rates ( it is estimated that filling the reservoir will take 6-7 months)</li> <li>- Final plant commissioning</li> </ul>
Operations	Q1 2020**- Q1 2120	<ul style="list-style-type: none"> <li>- In-service date of first Project phase</li> <li>- Commercial Operation Date of Project facility</li> <li>- Operation of Project facility:</li> </ul>

Project Description (Federal)

	<ul style="list-style-type: none"> <li>- Maintenance of Project facility: i.e. access road grading/ dust suppression/ snow ploughing or de-icing, periodic clearing along transmission line corridor, concrete spot repairs, and mechanical equipment maintenance (i.e. fluid changes)</li> <li>- Facility Monitoring: i.e. long-term environmental operations monitoring plans (e.g. water quality, flow monitoring)</li> <li>- Periodic systems testing</li> </ul>
Decommissioning and Abandonment	<ul style="list-style-type: none"> <li>- There are no current plans for the decommissioning and abandonment of the facilities and infrastructure related to the proposed Project. No decommissioning or abandonment phases are scheduled at this time. It is anticipated that rehabilitation efforts to extend the facility life span will be considered following the life span of the facilities' equipment and components.</li> </ul>

\*\*The target dates provided within the above table are conservative estimates. The Main Project milestones outlined may occur at an earlier date than the date provided in the above table.

\*\*\* The period between Environmental Assessment commencement by the Agency (CEAA) (i.e. issuance of Notice of Commencement) and the EA Decision Statement issued by the Agency provides the government with 365 days for review (excluding periods where the Proponent is required to follow-up on issues that may be identified).

### Waste Management

It is anticipated that minimal waste streams will be generated by the Project (waste streams may include waste rock, air emissions, domestic/ industrial waste); however, any waste streams generated will be actively managed. The majority of waste streams generated will be during the construction phase of the Project and may include woody debris, acid rock generation, air emissions from fuel combustion by actively hauling vehicles and other work vehicles, vehicle maintenance, dust emissions from actively hauling vehicles and the use of explosives, industrial waste resulting from construction materials and processes, and domestic wastes generated by working crews and operators.

The Project has the potential for acid rock generation; however, rigorous rock testing for this potential will be conducted throughout Project construction. Acid rock management systems including appropriate stockpiling procedures and disposal procedures will be implemented throughout the life of the Project.

Waste management systems will separate industrial and domestic wastes. Where appropriate, reduce, reuse or recycle strategies will be implemented to mitigate waste disposal requirements. The Project will use permitted landfills for waste disposal and appropriate waste collection areas for recyclables and hazardous waste products and sewage effluent. All waste management systems will incorporate best management practices to prevent spills, fire, and wildlife attraction issues.

### Regional Setting

The proposed More Creek Hydroelectric Project is located within the Kitimat-Stikine Regional District. The population in the Kitimat-Stikine Regional District was estimated at 37,361 in 2011<sup>3</sup>. Nearly 21,251, residents live within five incorporated municipalities in this district. The closest municipalities to the Project area include Stewart, approximately 87 km to the south, and New Hazelton, approximately 260 km to the southeast. Stewart has a population of approximately 494 and New Hazelton has a population of approximately 666 as of 2011<sup>3</sup>.

The Project is within the Cassiar-Iskut-Stikine Land and Resource Management zone based on the Cassiar-Iskut-Stikine Land and Resource Management Plan (LRMP). The LRMP identified the key sectors within the LRMP area as the following: mining, tourism, retail and construction. However, forestry, fishing and agriculture were also identified at a much smaller scale. The economic sectors that the Project overlaps with predominantly include mining and hydroelectric development. The economy of the LRMP is heavily reliant on the natural resource industry and public administration sectors. The Alaska border is approximately 95km away from the vicinity of the Project.

Provincial Parks in the region include Mount Edziza Provincial Park located approximately 30 km to the north, Kinaskan Lake Provincial Park located approximately 49 km to the northeast, and Ningunsaw Provincial Park located approximately 22 km to the southeast of the proposed Project. There are no federal lands located within the Project area. The nearest National Park is the Gwaii Haanas National Park Reserve and Haida Heritage Site located approximately 450 km from the Project site.

The Project area is within a region of British Columbia that is characterized as having small scattered communities typically located along highway infrastructure. No permanent, seasonal or temporary residences have been identified as occurring in the Project area based on a preliminary desktop overview using IMAP BC and Frontcounter BC's Discovery tool. It is anticipated that during consultation with Project stakeholders any residences present within the Project area, used for permanent, seasonal or





temporary uses, will be identified. The nearest community to the Project is Iskut which is located approximately 90 km away.

The Project is within the asserted traditional territory of the Tahltan. The asserted traditional territory of the Tahltan is located along the Alaskan/Canadian border and includes part of the Yukon Territory encompassing about 93,500 km<sup>2</sup>. The main reserves of the Tahltan First Nation are located at Telegraph Creek which is home to about 400 residents, of which approximately 350 are of Tahltan ancestry.<sup>1</sup> Dease Lake is another local community located about 50 km north of the Stikine River and is the junction to Telegraph Creek; the present population numbers at Dease Lake are approximately 475 of which approximately 45% are Tahltan.<sup>1</sup> A list of some of the nearest aboriginal reserves to the More Creek Hydroelectric Project site are provided below. Aboriginal reserves listed below and marked with an “\*” are occupied, unmarked reserves are either unoccupied or no data is available.

Iskut 6*	Guhthe Tah 12*	Salmon Creek 3	Upper Tahltan 4
Kluachon Lake 1	Telegraph Creek 6*	Telegraph Creek 6A*	Tahltan Forks 5
Stikine River 7	Classy Creek 8	Tahltan 1	Hiusta’s Meadow 2
Tahltan 10			

\*Occupied as per <http://www.city-data.com/canada/British-Columbia-Index.html>

Iskut 6 and Kluachon Lake 1 Reserves are the closest to the Project area and are located approximately 90 km north northeast from the Project site.

The Project area has been the subject of numerous environmental studies since the 1970s. BC Hydro conducted investigations over the Project area in the late 1970s and early 1980s as well as a site downstream on the Iskut River to determine the feasibility of a hydroelectric project of a similar design to that being proposed herein. BC Hydro conducted studies on fish and fish habitat, wildlife, vegetation, geomorphology, geotechnical studies, archaeology, and hydrology studies. The Proponent anticipates reviewing these studies and including their data in the overall assessment of the Project, where appropriate.

In addition, environmental studies have been conducted in the vicinity and/or over portions of the Project area for the development of the Galore Creek Mine. The Galore Creek Mine has investigated the environmental considerations for their proposed mine access road which traverses along the northern shore of More Creek. The Proponent anticipates reviewing these studies as part of their environmental assessment over the Project area, where appropriate.

Environmental Studies over the Project Area

There are a number of past, active, and future designated projects under CEAA 2012 that are located in the northwestern region of British Columbia. A list of some of the designated projects in the vicinity of the Project and located in northwestern British Columbia are provided in Table 7.

**Table 7. History of CEAA projects in region of the More Creek Hydroelectric Project**

Past Projects	Existing Projects
Eskay Creek Mine	Forrest Kerr Hydroelectric Project
	Northwest Transmission Line
	Red Chris Mine
	Galore Creek Mine

<sup>1</sup> <http://www.tahltan.ca/nation/territory/> Accessed: July 14, 2015

**MORE CREEK HYDROELECTRIC PROJECT**  
Project Description (Federal)

	McLymont Creek Hydroelectric Project
	Schaft Creek Mine
	Volcano Creek Hydroelectric Project

Environmental studies conducted for other designated projects in the vicinity of the More Creek Hydroelectric Project will be reviewed by AHC, as applicable, in the compilation of baseline data and the overall analysis of cumulative impacts on resource development and extraction in the region.

Existing Environment

The Project area is located at the intersection between the Stikine Plateau, the Skeena Mountains, and the Coast Mountains where the western physiographic system meets the interior system. The majority of the Project area is located within the Interior Cedar-Hemlock wet-cold biogeoclimatic zone and the rest of the Project is located within the Engelmann Spruce-Subalpine Fir undifferentiated biogeoclimatic zone. The Project's settings and infrastructure do not encroach on any Provincial or National Park boundaries.

Regionally important plant species, including those on the provincial red and blue lists and those protected under the federal *Species at Risk Act* (SARA), that may be located within the Project area, as defined by the Skeena Stikine Forest District, include, but are not limited to those provided in Table 8 (Ecosystem Explorer BC MOE, 2015).

**Table 8. Regionally important, provincially and federally listed plant species with the potential to occur in the Project area**

Scientific Name	Common Name	Status					CF Priority
		Provincial	BC List	COSEWIC	SARA	Global	
<i>Andraea rupestris</i> var. <i>papillosa</i>		S1(2011)	Red			G5TNR	2
<i>Botrychium ascendens</i>	Unswept moonwort	S3(2015)	Blue			G3(2011)	1
<i>Botrychium crenulatum</i>	Dainty moonwort	S2S3 (2015)	Blue			G3(2011)	2
<i>Carex krausei</i>	Krause's sedge	S2S3(2015)	Blue			G4(1994)	3
<i>Carex lenticularis</i>	Lakeshore sedge	S3(2011)	Blue			G5T5(1988)	
<i>Draba lactea</i>	Milky draba	S3(2015)	Blue			G5(2012)	3
<i>Epilobium hornemannii</i> ssp. <i>behringianum</i>	Hornemann's willowherb	S2S3(2000)	Blue			G5T4(1994)	3
<i>Festuca minutiflora</i>	Little fescue	S3(2015)	Blue			G5(1993)	3
<i>Geum rossii</i> var. <i>rossii</i>	Ross' avens	S2S3(2008)	Blue			G5T5(1994)	3
<i>Hygrophynum alpinum</i>		S3(2015)	Blue			G4G5(2007)	3
<i>Juncus albescens</i>	Whitish rush	S3(2015)	Blue			G5(1989)	
<i>Lescurea saxicola</i>		S3(2015)	Blue			G4G5(1991)	2
<i>Nephroma occultum</i>	Cryptic paw	S2S3(2007)	Blue	SC(2006)	1-SC(2007)	G4(2007)	2
<i>Pedicularis parviflora</i> ssp. <i>parviflora</i>	Small-flowered lousewort	S2(2015)	Red			G4T4(1994)	4
<i>Plantago eriopoda</i>	Alkali plantain	S3(2008)	Blue			G5(1996)	4
<i>Pohlia elongata</i>		S3(2015)	Blue			G4G5(1991)	3
<i>Polemonium boreale</i>	Northern Jacob's ladder	S3(2015)	Blue			G5(1989)	3
<i>Ranunculus pedatifidus</i> ssp. <i>affinis</i>	Birdfoot buttercup	S3(2015)	Blue			G5T5(1991)	3
<i>Rumex arcticus</i>	Arctic dock	S3(2015)	Blue			G5(1991)	4
<i>Silene drummondii</i> var. <i>drummondii</i>	Drummond's campion	S3?(2015)	Blue			G5T5(1997)	4
<i>Ulotia curvifolia</i>		S3(2015)	Blue			G3G5(1991)	2
<i>Warnstorfia tundrae</i>		S2(2015)	Red			GU(2000)	2

Wildlife specific objectives over the Project area have been developed by the Cassiar Iskut-Stikine Land and Resource Management Plan (2000). A large portion of the Project site is located within high value Grizzly Bear and Marten habitat. There is a lesser portion of the Project site that is located in high value Moose habitat. For all three of these species there are specific management objectives identified by the LRMP. There is a proposed Wildlife Habitat Area (WHA) for Grizzly Bears (WHA ID 247345) in the vicinity of the Project area. No other wildlife habitat areas have been identified over the Project site.

Based on the breeding bird atlas of British Columbia (accessed December 21, 2015), there is the potential for 144 bird species to occur in the Project area. Of these bird species 112 would be protected under the federal *Migratory Bird Convention Act* (1994). Regionally important wildlife species, including those on the provincial red and blue lists and those protected under the federal *Species at Risk Act* (SARA), that are located within the Skeena Stikine Forest District include, but are not limited to those listed in Table 9 (BC Ecosystems Explorer MOE, 2015)



**Table 9. Regionally important, provincially and federally listed animal species within the Skeena Stikine Forest District including species with the potential to occur in the Project area (blue).**

Scientific Name	Common Name	Status					CF Priority
		BC List	Provincial	COSEWIC	SARA	Global	
<b><i>Mammal Species</i></b>							
<a href="#">Alces alces</a>	Moose	Yellow	S5(2015)			G5(2006)	6
<a href="#">Gulo gulo</a>	Wolverine		S3(2015)	SC(2014)		G4(2005)	2
<a href="#">Gulo gulo luscus</a>	Wolverine, <i>luscus</i> subspecies	Blue	S3(2010)	SC(2014)		G4T4(1996)	2
<a href="#">Marmota caligata</a>	Hoary Marmot	Yellow	S5(2015)			G5(1996)	5
<a href="#">Martes americana</a>	Marten	Yellow	S5?(2015)			G5(2015)	
<a href="#">Myotis lucifugus</a>	Little Brown Myotis	Yellow	S4(2015)	E(2013)	1-E(2014)	G3(2012)	5
<a href="#">Ochotona collaris</a>	Collared Pika	Blue	S3S4(2015)	SC(2011)		G5(2015)	2
<a href="#">Odocoileus hemionus</a>	Mule Deer	Yellow	S5(2015)			G5(1996)	6
<a href="#">Oreamnos americanus</a>	Mountain Goat	Blue	S3(2015)			G5(1996)	1
<a href="#">Pekania pennanti</a>	Fisher	Blue	S3(2015)			G5(2005)	2
<a href="#">Rangifer tarandus</a>	Caribou		S3?(2015)			G5(2006)	2
<a href="#">Rangifer tarandus pop. 15</a>	Caribou (northern mountain population)	Blue	S3(2010)	E/SC(2014)	1-T/SC(2005)	G5T4T5(2013)	2
<a href="#">Tamiasciurus hudsonicus</a>	Red Squirrel	Yellow	S5(2015)			G5(2016)	5
<a href="#">Ursus americanus</a>	Black Bear	Yellow	S5(2015)	NAR(1999)		G5(2003)	6
<a href="#">Ursus arctos</a>	Grizzly Bear	Blue	S3?(2015)	SC(2002)		G4(20000)	2
<b><i>Herptile Species</i></b>							
<a href="#">Ambystoma macrodactylum</a>	Long-toed Salamander	Yellow	S4S5(2010)	NAR(2006)		G5(2015)	4
<a href="#">Anaxyrus boreas</a>	Western Toad	Blue	S3S4(2010)	SC(2012)	1-SC(2005)	G4(2008)	2
<a href="#">Rana luteiventris</a>	Columbia Spotted Frog	Yellow	S4(2010)	NAR(2000)		G4(2008)	2
<b><i>Gastropod Species</i></b>							
<a href="#">Lymnaea atkaensis</a>	Frigid Lymnaea	Blue	S3S5(2015)			G4G5(2006)	4
<b><i>Insect Species</i></b>							
<a href="#">Boloria epithore sigridae</a>	Western Meadow Fritillary, sigridae subspecies	Blue	S2S4(2013)			G5T3(2001)	3
<a href="#">Polites draco</a>	Draco Skipper	Blue	S3(2013)			G5(2016)	4
<a href="#">Somatochlora kennedyi</a>	Kennedy's Emerald	Blue	S3S4(2015)			G5(2015)	4
<b><i>Bird Species</i></b>							
<a href="#">Accipiter gentilis laingi</a>	Northern Goshawk	Red	S2B(2010)	T(2013)	1-T (2003)	G5T2(2008)	1
<a href="#">Aegolius acadicus</a>	Saw-whet Owl	Yellow	S5B,S5N (2009)			G5(1996)	5
<a href="#">Aquila chrysaetos</a>	Golden Eagle	Yellow	S4S5B(2015)	NAR(1996)		G5(2011)	4

MORE CREEK HYDROELECTRIC PROJECT

Project Description (Federal)

Asio flammeus	Short-eared owl	Blue	S3B,S2N(2015)	SC(2008)	1-SC(2012)	G5(2008)	2
Bombycilla garrulus	Bohemian Waxwing*	Yellow	S5B(2015)			G5(1996)	6
Bubo virginianus	Great Horned Owl	Yellow	S5(2015)			G5(1996)	6
Chordeiles minor	Common Nighthawk	Yellow	S4B(2015)	T(2007)	1-T(2010)	G5(2009)	2
Cinclus mexicanus	American Dipper*	Yellow	S4 (2015)			G5(1996)	5
Coccothraustes vespertinus	Evening Grosbeak*	Yellow	S5(2015)			G5(1996)	2
Contopus cooperi	Olive-sided Flycatcher*	Blue	S3S4B(2015)	T(2007)	1-T (2010)	G4(2008)	2
Contopus sordidulus	Western Wood-Pewee*	Yellow	S5B(2015)			G5(2009)	2
Cyanocitta stelleri	Steller's Jay	Yellow	S5(2015)			G5(1996)	5
Dryocopus pileatus	Pileated Woodpecker*	Yellow	S5(2015)			G5(1996)	4
Empidonax hammondi	Hammond's Flycatcher*	Yellow	S5B(2015)			G5(1999)	5
Euphagus carolinus	Rusty Blackbird	Blue	S3S4B(2015)	SC(2006)	1-SC(2009)	G4(2008)	2
Falcipennis Canadensis	Spruce Grouse	Yellow	S5(2015)			G5(1996)	6
Falco peregrinus	Peregrine Falcon		S3B(2015)	SC(2007)		G4(2000)	2
Falco rusticolus	Gryfalcon	Blue	S3S4B(2015)	NAR(1987)		G5(1996)	4
Glaucidium gnoma	Northern Pygmy-Owl	Yellow	S4B(2015)			G4G5(2009)	3
Hirundo rustica	Barn Swallow	Blue	S3S4B(2015)	T(2011)		G5(1996)	2
Histrionicus histrionicus	Harlequin Duck*	Yellow	S4B,S3N(2015)			G4(1996)	1
Ixoreus naevius	Varied Thrush*	Yellow	S5B(2015)			G5(1996)	5
Junco hyemalis	Dark-eyed Junco*	Yellow	S5B(2015)			G5(2009)	5
Loxia curvirostra	Red Crossbill*	Yellow	S5(2015)			G5(1996)	2
Loxia leucoptera	White-winged Crossbill*	Yellow	S5B(2015)			G5(1996)	5
Myadestes townsendi	Townsend's Solitaire*	Yellow	S5B(2015)			G5(2009)	2
Oreothlypis celata	Orange-crowned Warbler*	Yellow	S5B(2015)			G5(2009)	5
Perisoreus canadensis	Gray Jay	Yellow	S5B(2015)			G5(1996)	6
Phalaropus lobatus	Red-necked Phalarope	Blue	S3S4B(2015)	SC(2014)		G4G5(2005)	2
Picoides arcticus	Black-Backed woodpecker*	Yellow	S4S5B(2015)			G5(1996)	6
Picoides dorsalis	Three-toed Woodpecker*	Yellow	S5B (2015)			G5(2003)	6
Picoides pubescens	Downy Woodpecker*	Yellow	S5B(2015)			G5(1996)	5
Picoides villosus	Hairy Woodpecker *	Yellow	S5B(2015)			G5(1996)	5
Pinicola enucleator	Pine Grosbeak*	Yellow	S5B(2015)			G5(1996)	5
Piranga ludoviciana	Western Tanager*	Yellow	S5B(2015)			G5(1996)	6
Poecile atricapillus	Black-capped Chickadee*	Yellow	S5B(2015)			G5(1996)	6
Poecile gambeli	Mountain Chickadee*	Yellow	S5B(2015)			G5(1996)	6
Regulus satrapa	Golden-crowned Kinglet*	Yellow	S5B(2015)			G5(1999)	5
Selasphorus rufus	Rufous Hummingbird *	Yellow	S4S5B(2015)			G5(2015)	2
Setophaga coronata	Yellow-Rumped Warbler*	Yellow	S5B(2015)			G5(1996)	5
Setophaga townsendi	Townsend's Warbler *	Yellow	S5B(2015)			G5(2008)	5

**MORE CREEK HYDROELECTRIC PROJECT**

Project Description (Federal)

<a href="#">Sitta canadensis</a>	<a href="#">Red-breasted Nuthatch*</a>	Yellow	S5B(2015)			G5(1996)	5
<a href="#">Spinus pinus</a>	<a href="#">Pine Siskin*</a>	Yellow	S5B(2015)			G5(1996)	2
<a href="#">Wilsonia pusilla</a>	<a href="#">Wilson's Warbler</a>	Yellow	S5B(2015)			G5(2009)	2

\*Migratory bird species protected under the Migratory Bird Convention Act, 1994; COSEWIC= Committee on the Status of Endangered Wildlife in Canada; CF=Conservation Frame work. B.C. Conservation Data Centre. 2016. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed May 25, 2016).

The More Creek drainage flows into the Iskut River which subsequently flows into the Stikine River. The Stikine-Iskut River system is known to have twenty (20) fish species which include both catadromous/anadromous and freshwater resident species. Anadromous and catadromous fish species are excluded from the More Creek drainage due to a number of documented fish migration barriers along the Iskut River. Therefore, the fish species that inhabit the More Creek drainage are all freshwater resident fish. A cursory overview of potential fish species inhabiting More Creek is provided in Table 10. The fisheries inventory assessment conducted for the Project will confirm the presence and absence of the fish species with potential to occur within the Project area.

**Table 10. Regionally important, provincially and federally listed fish species including fish species with the potential to occur in More Creek (blue).**

Scientific Name	Common Name	BC List	Provincial	COSEWIC	Global	CF Priority
<i>Catostomus catostomus</i>	Longnose Sucker	Yellow	S5(2010)		G5(2015)	6
<i>Cottus asper</i>	Prickly Sculpin	Yellow	S5(2010)		G5(2015)	5
<i>Gasterosteus aculeatus</i>	Threespine Stickleback	Yellow	S5(2010)		G5(2012)	6
<i>Cottus cognatus</i>	Slimy Sculpin	Yellow	S5(2010)		G5(2015)	6
<i>Lampetra tridentata</i>	Pacific Lamprey	Yellow	S5(2010)		G4(2012)	6
<i>Lota lota</i>	Burbot	Yellow	S4(2004)		G5(2015)	2
<i>Mylocheilus caurinus</i>	Peamouth	Yellow	S5(2010)		G5(2016)	5
<i>Oncorhynchus mykiss</i>	Rainbow Trout	Yellow	S5(2004)		G5(2008)	6
<i>Prosopium williamsoni</i>	Mountain Whitefish	Yellow	S5(2010)		G5(1996)	6
<i>Salvelinus malma</i>	Dolly Varden char	Yellow	S4(2011)		G5(2000)	2
<i>Salvelinus namaycush</i>	Lake trout	Yellow	S4(2004)		G5(2015)	2
<i>Salvelinus confluentus</i>	Bull trout*	Blue	S3S4(2011)	E(2002)	G4(2011)	2
<i>Oncorhynchus clarkia clarkii</i>	Cutthroat Trout*, clarkia subspecies	Blue	S3S4(2004)		G4T4(1997)	2

\* Fish species in More Creek; COSEWIC= Committee on the Status of Endangered Wildlife in Canada; CF=Conservation Frame work. B.C. Conservation Data Centre. 2016. B.C. Conservation Data Centre. 2016. BC Species and Ecosystems Explorer. B.C. Ministry. of Environ. Victoria, B.C. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed May 25, 2016).

### Potential Environmental Effects

AHC will conduct a complete review of existing studies over the Project area in coordination with multi-year environmental studies over the Project area, where required, to assess the baseline environmental resources including wildlife and fisheries inventories and to analyze potential Project effects on these resources. The impacts to the environment from the pre-development and the environmental investigation phase of the Project are anticipated to be negligible. Impacts to the land from surveys and field studies are expected to be limited to periodic vehicle and foot access which has the potential to cause minor disturbance to the surrounding wildlife. This disturbance would be infrequent, temporary, and reversible in scope.



Potential environmental effects from the Project will be largely associated with the construction phase of the Project and with the development of the water storage reservoir.

During the construction phase of the Project there are potential environmental impacts that may result from:

- Greenhouse gas emissions from the operation of equipment and vehicles on site, and flooded vegetation to create the water storage reservoir.
- Concrete pouring near water courses
- Sedimentation
- Fugitive dust generation from vehicle access to site and movement on site and blasting activities.
- The production of solid nonhazardous construction wastes.
- Machinery and equipment use at the Project site during plant construction and operation has the potential for fuel and/or chemical spills to the soil.
- There is potential for acid rock generation at the site during rock excavation and blasting activities.
- During the Project construction phase, the impacts to wildlife resources may result from noise generation during site construction, disturbance due to site access, and alteration to the landscape for installment of Project infrastructure. Impacts resulting from construction noise will be temporary and reversible. However, noise and physical disturbance to habitat has the potential to result in wildlife avoidance of the Project area. Impacts resulting from infrastructure intrusion on natural habitats will be permanent and irreversible.

The creation of the 2,680 ha water storage-reservoir has the following potential environmental impacts:

- Effects on geology, terrain, and soils may create slope instability and shoreline erosion; alter the underlying soil composition and cause soil disturbance. Soil compaction and altered drainage patterns from Project construction may cause additional soil disturbance.
- Emission of greenhouse gases from the storage reservoir.
- Potential for dust generation.
- Permanent loss of vegetation in the 2,104 ha area that is flooded which will include permanent losses to vegetation communities, potential losses to rare plant communities and rare plant species, and in particular losses to those plant communities associated with low lying riverine areas.
- Surface water flows of More Creek will be impacted by flow regulation at the dam.
- The predicted annual change in surface flows in the Stikine River at the Alaska Boarder is 0%, however, monthly surface flows are predicted to range from an increase of 13% to a decrease of 2%.
- The Project will impact sediment movement both upstream and downstream of the proposed intake.
- The most significant effects of the Project on wildlife and migratory birds will result from the creation of the storage reservoir which is anticipated to flood approximately 2,104 ha of existing wildlife habitat. This flooded area represents permanent alteration of habitat.
- This flooded reservoir may destroy important riparian and terrestrial area used by breeding bird populations.
- Creation of the storage reservoir will displace local wildlife populations and will alter the habitat ranges of wildlife species in the vicinity of the Project area.

Migratory birds are potentially at risk during their breeding season from April to June/July. Impacts to migratory bird breeding season will be mitigated by minimizing vegetation clearing and grubbing activities during this sensitive window, where possible. Sensitive wildlife windows will be identified and included in the final Project Application; where possible, AHC will adhere to the sensitive wildlife timing windows during construction.



The development of the Project access road and transmission line also has the potential to fragment wildlife habitat. Moreover, the human-wildlife interface will increase as a result of Project operations and human access to the Project site. Disturbance to wildlife species as a result of increased human activity in the may also result in wildlife avoidance of the surrounding Project area. The creation of motorized access to the site may increase wildlife vulnerability to hunting.

Noise generated during Project operations at the powerhouse is anticipated to be minor and of a comparable level to the sound created by the natural More Creek drainage. Disturbance to wildlife from noise generated at the Project powerhouse is anticipated to be negligible.

The Project may impact fish and fish habitat during the construction and operation phases. During the construction phase works conducted near the water have the potential to increase sedimentation to the creek, spill toxic materials into the creek, and alter flow regimes for the installation of the intake weir. These impacts will be mitigated through the implementation of best management practices and the development of a construction environmental management plan which shall be adhered to throughout construction.

During operations a number of potential impacts to fish and fish habitat may result from the development of the proposed Project. The intake weir will permanently block fish from moving upstream and downstream of it. Flows in the diversion reach of the Project will be reduced as a result of the flow diversion for energy generation. In addition, the creation of the storage-reservoir will permanently flood existing tributary habitat and areas of off-channel fish habitat upstream of the intake. Changes to More Creek's hydrology and geomorphology have the potential to impact fish and fish habitat as they will alter the sedimentation, hydrology and temperature regimes in More Creek. Consequently, fish life history requirements and life history timing may be impacted.

The storage-reservoir will flood existing vegetation which may increase methyl-mercury production in resident fish populations. The dam spillway also has the potential to create elevated dissolved gas levels in More Creek. Furthermore, tributary and off-channel habitat will also be flooded by the creation of the storage-reservoir.

The diversion reach of the Project will have reduced stream flows. Fish habitat within this reach may be reduced as a result of reduced flows. Less flow may also alter the temperature regime of this section of More Creek and therefore, impact fish life history processes and productivity in this area. Stage changes that result from flow discharge at the tailrace may also have the potential to strand fish unless an adequate operational ramping rate is implemented.

It is anticipated that any emissions generated by the Project during development will be entirely offset by the Project during operations when clean, renewable energy will be produced. Where possible, potential Project impacts identified through the terrestrial wildlife and fisheries assessments will be addressed through:

- The development of comprehensive mitigation measures for all phases of the Project
- Changes to Project timing, design and infrastructure placement
- The offsetting of impacts via compensation activities

Where possible, mitigation measures will be implemented into the Project design to reduce impacts to fish and fish habitat, terrestrial habitat and wildlife. During Project construction best management practices will be adhered to and a construction environmental management plan will be developed and implemented with specific parameters defined for working near water. Fish screens at the Project intake and a potential fish passageway will be considered for the Project design. A minimum instream flow release will be

implemented during Project operations to maintain fish and fish habitat within the diversion reach of the Project. The Project will also develop suitable ramping rates to ensure that changes in flow stage-levels will not strand fish downstream of the Project.

### Potential Socio-Economic Effects

AHC is in the preliminary phase of evaluating the socio-economic effects of the proposed Project. The Project will provide a positive economic stimulus to the surrounding community during all phases. During the construction phase it is expected that the most significant economic stimulus will be created. Current estimates expect the construction phase to take approximately two years. Over this period approximately 290 person years (PY) of employment is expected to be created. The Project is expected to create 16 full time operating jobs. It is anticipated that immediate benefits to First Nation and local communities will include the creation of construction and operating jobs in addition to numerous skilled training opportunities. Furthermore, indirect positive economic impacts are anticipated for the region where development support resources are sourced.

The Project is anticipated to be a capital investment of \$275 million excluding the cost of permitting and site studies. In the long term, a reliable and inexpensive source of clean energy may increase the attractiveness of the area to other potential business development.

Potential social effects from the Project may include impacts to the existing land use (LRMP), pressure on existing resources within the region during the construction phase, and impacts to traditional purposes associated with the area overlapped by the Project. The traditional uses in the Project area including country food harvesting activities (fishing, hunting, and berry-picking) will be impacted by the creation of the storage reservoir.

AHC will conduct an assessment specific to impacts to the baseline social conditions of the Project area. Of particular focus will be how the Project will alter the existing land use of the area as prescribed by the LRMP, how service demands of the Project may impact the surrounding region, and how traditional use activities including hunting, fishing, and gathering will be impacted by the Project footprint and Project activities.

### Potential Effects on Human Health

AHC anticipates commencing discussions and evaluation of the Project effects on public and First Nations' health following the submission of the Project Description to CEAA. The objective of AHC is to provide a full evaluation of the Project's effects on public and First Nation's health in the Project Application.

Potential health effects associated with the Project include air quality impacts, contamination of country foods, impacts to drinking and recreational water quality and noise effects. Air quality impacts are anticipated to be most significant during the construction phase when activities have the potential to generate sulphur oxides, nitrogen oxides, particulate matter, and volatile organic compounds. During operation air quality impacts are anticipated to be nominal. Contamination of country foods may be caused by the potential for methylmercury bioaccumulation as a result of the creation of the water storage reservoir. There may be potential for methylmercury bioaccumulation processes to occur as a result of water reservoir creation and this can result in a human health concern when fish populations are used for consumption. AHC will evaluate the potential methyl mercury production from flooded soils and the potential for



bioaccumulation of methyl mercury through the food chain. Drinking and Recreational water quality impacts are expected to be nominal through the implementation of best management practices and water quality monitoring plans; however, equipment use and concrete works have potential to impact water quality. Noise effects will be most substantial during Project construction and will be associated with blasting activities and equipment use on site. Noise generated during construction will be temporary and intermittent; noise generated during operations is anticipated to be nominal.

Potential Effects on Heritage Values

AHC is in the preliminary stages of evaluating the Project’s effects on physical and cultural heritage in the area. It is anticipated that the effects on physical and cultural heritage will be evaluated based on published reports that document the rich cultural heritage and history of the Project area and through direct consultation with Aboriginal groups whose traditional territory is overlapped by the Project.

First Nations and Métis

A list of the First Nations and Métis with traditional territory over the Project area are provided in the Table 12. This list was developed in coordination with Frontcounter BC. AHC anticipates that the complete list of First Nations and Métis with interests in the Project area will be confirmed during the CEAA Project Description review.

**Table 12. Aboriginal Groups that may be interested in or potentially affected by the Project**

<b>Aboriginal Groups</b>					
<b>Organization</b>	<b>Contact Name</b>	<b>Mailing Address</b>	<b>Phone</b>	<b>Fax</b>	<b>Email</b>
Tahltan Indian Band	Chief and Council	PO BOX 46 Telegraph Creek, BC V0J 2W0	250-235-3244	250-235-3244	info@tahltan.ca
Iskut Band	Chief and Council	PO Box 30 Iskut, BC V0J 1K0	250-234-3331	250-234-3200	iskutfirstnations@yahoo.ca
Tahltan Central Government	Chief and Council	Box 69 Tatl’ah (Dease Lake, BC) V0C 1L0	250-771-3274	250-771-3020	http://tahltan.org/contact/
Métis Nation BC		Unit #103 – 5668 192 <sup>nd</sup> Street, Surrey, BC V3S 2V7	604-557-5851	778-571-9402	lshaw@mNBC.ca

Potential Effects on the First Nations and the Métis

Preliminary discussions with First Nations have indicated that the flooded area from the Project may impact traditional use in the area including use of the land for berry picking, mushroom picking, and hunting. As part of the consultation plan conducted for the Project with the First Nations a Traditional Use Study will be conducted to fully assess and mitigate, where possible, impacts to traditional use activities from the development of the Project.

AHC will complete a thorough investigation of potential Project effects on First Nation and Métis health, socio-economic conditions, cultural heritage, and traditional use during the development of the Environmental Impact Statement to be submitted for the Project. The assessment of these effects will be conducted in consultation with aboriginal groups impacted by the Project.

The development of the Project is anticipated to create economic stimulus in the region. During construction and operation there will be a number of employment opportunities created. The Project will also generate tax revenue for the region. However, the influx of workers in the area has the potential to put a strain on services of nearby communities and nearby infrastructure, particularly during the construction phase when demands will be greatest. Development of the Project will increase access to the More Creek valley. This has the potential to impact country food harvesting and traditional uses in the More Creek valley. Furthermore, development of the storage reservoir for the Project will flood 2,680 ha of land. This flooded area would impact hunting and country food harvesting activities in that area. The flooded area also has the potential to cause methylmercury bioaccumulation which could become a health impact for country foods harvested for consumption.

Consultation with First Nations and the Métis Nation BC

AHC initiated contact with the Tahltan Central Council in Q2 of 2016 and provided the Tahltan Central Council with preliminary Project information. AHC anticipates providing formal Project notification during Q4 2016 to the First Nations and Métis Nation BC whose traditional territory overlaps the Project area. AHC is committed to ongoing consultation with First Nations and Métis Nation BC throughout all phases of Project development, construction and operations. The objective of the consultation process is to inform the First Nations and Métis Nation BC about all Project aspects, to achieve an understanding of the archeological valued environmental components and traditional use over the land, to identify issues and concerns about the Project and to address and/or mitigate those issues or concerns as best possible.

AHC has prepared a preliminary First Nation and Métis Nation BC consultation plan. Detailed documentation of consultation will be undertaken throughout the consultation process to ensure that any concerns and issues identified are fully understood and addressed as best possible. It is anticipated that the consultation process will include in person meetings with First Nation and Métis Nation BC leadership and communities, distribution of information regarding Project details and achieved milestones, inclusion of First Nation and Métis Nation BC in environmental studies over the land, careful tracking and recording of all identified issues and concerns, and the development of mitigation measures in correspondence with First Nations and Métis Nation BC to address those identified issues and concerns as best possible.

A summary of the proposed consultation activity schedule to be conducted by AHC is provided in Table 13.

**Table 13. More Creek Hydroelectric Project anticipated Aboriginal Group Consultation Schedule**

<b>Activity</b>	<b>Anticipated Schedule</b>
Notification with Project Description	Q3 2016
Follow-up on initial Notification via phone call and meeting requests	Q4 2016
Meeting	Q1 2017
Site Visits	Q2 2017
Provide Project Status Update Notification and follow-up on any issues/ comments/ concerns identified during previous consultation	Q3 2017

First Nation Participation in Environmental Studies	Q3 2016 – 2017
Ongoing Consultation to understand First Nation interest in the land including traditional and contemporary use and impacts to that use from the Project	Q1-Q4 2017
Provide Project updates through mail-out and/or email and/or preferred communication methods identified by First Nation	Q1 2017- Q1 2018
Meeting to discuss Environmental Study outcomes	Q3 2017
Open House for Project	Q4 2016- Q1 2017

Government Agency, and Local Government Consultations

Throughout the Project Application and Environmental Assessment process AHC anticipates meeting with federal, provincial, and local government agencies as part of a coordinated review of the Project. It is anticipated that the BC Environmental Assessment Office (BC EAO) and Canadian Environmental Assessment Agency (CEAA) will establish a Working Group to coordinate the review of the Project with all relevant stakeholders and interested parties. AHC will attend meetings with the Working Group to provide pertinent Project details as they relate to work plans, environmental studies, Project design, environmental considerations, mitigation measures, and other details that may be requested by the agencies. AHC has initiated preliminary consultation with the BC EAO, BC Ministry of Forests, Lands, and Natural Resource Operations (MFLNRO), and CEAA to discuss the Project.

Public Consultation

The Project is in its preliminary development stages. At this time, AHC is in the process of identifying all key stakeholders and Aboriginal Groups with interests over the Project area. No consultations with any stakeholders has commenced to date. It is anticipated that formal notification of the Project and consultation will commence with all identified interest groups in 2016. Throughout the EA process the Proponent anticipates holding open houses and engaging in consultation outreach activities with all public stakeholders in the Project area. A preliminary list of communities identified for consultation so far is provided below:

- Communities within the Kitimat-Stikine Regional District;
- Stewart;
- New Hazelton;
- Town of Iskut;
- Town of Dease Lake;
- Town of Telegraph Creek;
- Mineral claims stakeholders including Galore Creek Mining Corporation, Carl Alexander, Van Einsiedel, and Rimfire Minerals Corporation;
- Mineral placer stakeholders including BC Hydro Power Authority and Ministry of Environment Water Stewardship Division;
- Cassiar Forest Corporation;
- Skeena Timber Sales Manager;;
- Highway 37 Power Corporation;
- Northern Hydro Limited;
- Active Guide Outfitter Area held by Heidi Gutfrucht (Object ID 230) located over the Project area; and,

- Galore Creek Mining Corp. co-owned by NovaGold Resource Inc. and Teck Resources Limited.
- AltaGas

#### Authorizations, Permits, and Licenses

AHC will make concurrent applications to the BC EAO for provincial permits under the BC EAO Concurrent Approvals Regulation. The BC EAO submissions would be reviewed by provincial regulatory agencies concurrently with the federal review of the Application by CEAA for an Environmental Assessment Decision.

The Project requires an approved Environmental Assessment Certificate from BC EAO prior to issuance of its provincial permits. Concurrent provincial permit applications for the Project will be coordinated through the Major Projects Office of the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO). Provincial approvals under the following legislation are anticipated for the Project: *BC Environmental Assessment Act* (2002), *BC Land Act* (1996), *BC Water Act* (1996), and *BC Forest and Range Practices Act* (2002).

Similarly, the Project will require a finalized Environmental Assessment Decision Statement prior to issuance of federal approvals. Federal approvals under the following legislation may be required for the Project: *Fisheries Act* (1985), *Navigable Water Protection Act* (1985), and *Canadian Environmental Assessment Act* (2012).

AHC will meet with the provincial and federal agencies prior to the final Application submissions to verify that all permitting requirements for the Project are considered.