

Quarry Development Plan – West Pine Quarry

Site C Clean Energy Project

Revision 1: June 5, 2015

Table of Contents

Revision History 2

1.0 Background..... 3

 1.1 The Site C Clean Energy Project 3

 1.2 West Pine Quarry..... 3

2.0 Purpose and Scope 4

3.0 Development Plan Basis 4

4.0 West Pine Quarry - Operations..... 5

 4.1 Production Plan..... 5

 4.2 Quarry Operations..... 7

 4.3 Access 8

 4.4 Safety and Environmental Management 8

 4.5 Site Reclamation and Future Use..... 9

5.0 References 10

Figures..... 11

Appendix A. *Mines Act* Notice of Work

Appendix B. Agreement Between MOTI and BC Hydro.....

1.0 Background

1.1 The Site C Clean Energy Project

The Site C Clean Energy Project (the Project) will be the third dam and generating station on the Peace River in northeast B.C. The Project will provide 1,100 megawatts of capacity and about 5,100 gigawatt hours of energy each year to the province's integrated electricity system. The Project will be a source of clean, reliable and cost-effective electricity for BC Hydro's customers for more than 100 years.

The key components of the Project are:

- an earthfill dam, approximately 1,050 metres long and 60 metres high above the riverbed;
- an 83 kilometre long reservoir that will be, on average, two to three times the width of the current river;
- a generating station with six 183 MW generating units;
- two new 500 kilovolt AC transmission lines that will connect the Project facilities to the Peace Canyon Substation, along an existing right-of-way;
- realignment of six segments of Highway 29 over a total distance of approximately 30 kilometers; and
- construction of a berm at Hudson's Hope.

The Project will also include the construction of temporary access roads, a temporary bridge across the Peace River, and worker accommodation at the dam site.

1.2 West Pine Quarry

The British Columbia Ministry of Transportation and Infrastructure (MOTI) operates the West Pine Quarry on crown land under a map reserve, file number 8005674. The quarry can be accessed by Highway 97 and Canadian National Rail as both are parallel to its southern boundary. There is also a rail siding along the southern boundary of the quarry. The site location is shown in Figure 1.

Field investigations and evaluations identified the rock to be a highly metamorphosed limestone with high strength. The limestone unit contained two intersecting joint sets yielding a blocky appearance; dip and dip direction of the joint sets were approximately 70- 80°/090° and 30-35°/225°. Joint spacing ranged from 0.3 m to 3.0 m. The average rock density was about 2,700 kg/m³, which is an adequate density value for permanent riprap.

For the Site C Clean Energy Project (the Project), only the larger riprap product and a smaller amount of riprap bedding will be used. All other rock material will be considered a by-product of the riprap production. This material and the remaining intact bedrock, however, will be available for use by MOTI.

An agreement with MOTI allows BC Hydro to obtain temporary riprap material from the West Pine Quarry during Year 1 construction. Site C will require the material for the construction of the erosion protection for the temporary construction bridge across the Peace River

and for access road construction on the south bank of the Peace River. This volume of material will be produced within the existing boundaries of the MOTI quarry. The quarry site will remain an active quarry under the control of MOTI therefore the storage of the surplus material is an important consideration for them.

2.0 Purpose and Scope

The Project will require riprap material for constructing the erosion protection for the temporary construction bridge across the Peace River and for access road construction on the south bank of the Peace River.

West Pine Quarry, an existing riprap source operated by MOTI, has been identified as the preferred source of riprap for Year 1 (2015) construction requirements. The quarry is located on the north side of Highway 97 approximately 75km southwest of Chetwynd, BC and 162km south of the proposed Site C project site (via existing and proposed roads) as shown in Figure 1.

The purposes of this plan are to support permitting requirements; and to guide use of the quarry site during construction.

The scope of this plan is the first year of quarry use by the Project.

3.0 Development Plan Basis

This Plan has been developed based on the following information:

- Approximately 20,000 m³ of high quality rock riprap will be required for Year 1 of the Project. No riprap bedding material will be required for Year 1.
- The yield of useable riprap is estimated to be 30% by weight. Therefore, on average, the total weight of rock excavated will be 3.33 times the weight of riprap required
- Riprap bedding materials will be screened from the coarser surplus material after riprap selection
- Bulking factors were applied to excavated and quarried volumes. A bulking factor represents the volume increase (expressed as a percent) that a material undergoes when removed from its natural state, and is applied to estimate the total volume of quarried or excavated material. Different materials have different bulking factors based on their ability to reconsolidate once excavated. A bulking factor of 1.2 means that a volume of naturally existing material will undergo an increase of 20 per cent once excavated and placed in its final location. Based on an understanding of similar materials within the province the following bulking factors were applied:
 - Bedrock Bulking Factor = 1.6

- Overburden Bulking Factor = 1.2
- Densities are estimated as: 2.70 tonne/m³ for in-situ rock; 1.9 tonne/m³ for riprap; 2.20 tonne/m³ for riprap bedding; and 2.0 tonne/m³ for surplus material
- Processed riprap will be hauled either by highway legal haul trucks or by Canadian National Rail. If hauled by rail to the dam site area, riprap will be unloaded and stockpiled at Septimus Siding. If hauled by trucks, it is expected that the riprap will be hauled directly to the construction areas for placement.
- Based on field observations, riprap up to 600 mm in diameter is stockpiled and large rock blocks, up to 1,200 mm in diameter, are available in limited supply.
- Based on field observations, the thickness of overburden is less than 500 mm deep.
- By-product material will be stockpiled at West Pine Quarry for future use by others.

4.0 West Pine Quarry - Operations

4.1 Production Plan

The planned material volumes for quarry use by the Project throughout the construction period are shown in Table 1.

Table 1: Material Volumes for West Pine Quarry

Description	Quantity	Unit
Riprap Bedding	274,600	m ³
Riprap	594,500	m ³
Total Placed Riprap Bedding and Riprap	869,100	m³
Total In-Situ Rock to be Extracted	1,600,000	m ³
Surplus Rock Stockpiled at West Pine	2,300,000	Tonne

In order to produce the amount of temporary riprap material that will be necessary for Year 1 road and bridge construction, areas for storage of surplus rock and overburden will be utilized in areas already intended for that use within the quarry site. Figure 2 illustrates the current development of West Pine Quarry and the boundaries of the property. An existing quarry face will be used to continue with the drilling and blasting required to produce the volumes needed for the project.

Benches will be mined through drilling and blasting of either 5 m benches using double benching technique or 10 m benches using single benching. Bulldozer work and ancillary drilling and blasting may be required to enable access to steep areas by tracked blast hole

drills. Blasting will be undertaken and planned in such a manner to create level working surfaces for loading equipment.

Table 2 - Planned Benching Detail

Case	Slope Azimuth (Dip Dir.)	Bench Face Angle	Bench Height (m)	Berm Width (m)	Overall Wall Angle	Schematic of Bench Configuration
Wall Sub-Parallel to Bedding	210 to 280	45	10 (Double Benched)	8	36	
Wall Oblique to Bedding	All Others	80	10	8	46	

Loading will be done by either hydraulic excavators or wheel loaders. Pit haulage will be by dump truck or loader to a quarry run stockpile or directly offsite as product. Riprap and riprap bedding material and rock fill material may be stored in live stockpiles for haulage offsite though the preference will be to haul directly from the quarry to the construction sites.

Drilling and blasting will be required for excavation of the limestone rock in the quarry. A track mounted percussion drill rig capable of drilling holes from 75 mm up to 150 mm is suggested.

The details of the blast hole patterns, sub-drilling, blast hole inclination, etc. are subject to blasting tests to be carried out in the initial stages of the mining development. The contractor and their blast engineer must determine the blasting parameters to achieve the required riprap and rock embankment products.

In accordance with the quantity distance tables provided under the Explosives Act and Regulations, the D4 and D7 distances will be 175 m and 480 m respectively, for 10 tonnes of storage of ammonium nitrate prill and 140 m and 380 m respectively, for 5 tonnes of storage of ammonium nitrate prill. Ammonium nitrate prill will be stored off-site. The blasting operation will conform to the applicable laws and/or regulation (e.g. timing of blasts during the day, etc.).

Blasted rock will either be loaded by a wheeled loader or a tracked excavator. The use of a tracked excavator could enable some degree of sorting of blasted muck for riprap prior to loading trucks for hauling off site. To maximize the use of the mined rock from the quarry, it

may be subject to screening to recover the riprap material classes required. This will be undertaken by tipping the mined material, either directly from the mine trucks or via a wheeled loader over a screen. The oversize material will then be stockpiled for transport off site for use in construction and the undersize portion may be further screened for reducing the fines or stockpiled on site.

Haulage off site will be done by highway legal trucks; on site haulage will be done using rock trucks up to 40 tonne capacity. Roads could be maintained into the quarry for highway legal trucks such that the required quantity of blasted rock can be hauled directly to the construction sites as opposed to re-handling from a quarry stockpile. An assumed minimum mining width of 25 m to allow trucks to turn within the pit, as well as a safety berm of roughly 3 m in width will be required.

4.2 Quarry Operations

The quarry is an existing operation run by MOTI and will be operated in a consistent manner. The Province's Aggregate Management Principles have been established to ensure that aggregate activities are undertaken in compliance with health and safety standards and environmental protection requirements. The reference documents are:

- Aggregate Operators Best Management Practices Handbook for British Columbia, 2002, Ministry of Energy and Mines (MOEM 2002)
- Health and Safety: A Practical Guide for Aggregate Operations, 2007, Ministry of Energy, Mines and Petroleum Resources, Mining and Minerals Division (MOEM 2007)

Following is a summary of quarry operation considerations:

- The main areas for excavation will be in the southern portion of the site and stockpiling will be in the northern half of the site as shown in Figure 2.
- The maximum volumes proposed for extraction will be based on the suitability and quality of the materials as they were processed. The materials unsuitable for use for dam construction will remain within the site and will be stockpiled for future use by MOTI
- The site may contain a trailer office, maintenance and storage area and will address sediment/erosion control measures.
- Potable water for the office and service area and water for dust control will be brought to the site from an offsite location
- Extraction requires drilling, blasting and processing, such as sorting, prior to riprap being removed from the site.
- Blasting materials will be commercially available. Delivery will be by bulk mix and loading pump trucks. No explosives will be stored on site. Blasting activities will be in

accordance with WorksafeBC, the Mines Act (BC) the Explosives Act (Canada), the Transportation of Dangerous Goods Regulations (Canada) and the Motor Vehicle Act (BC)

- The material will be delivered to the dam site using highway-legal haul trucks. Haul trucks or loaders will move between the areas on the site, as required
- The equipment required for operations will be as follows with the number of equipment pieces to be determined at a later stage:
 - Loaders (to loosen and remove material and process material at the screening and crushing plants, and stock pile)
 - Bulldozers (to push material for stripping stockpiles and loosen blasted materials)
 - Rock drills
 - Highway legal haul trucks (to transport the material to the dam site)
 - Water Trucks (to control dust as required)
 - Personnel Site Pick-ups (for onsite mobility)
 - Service vehicle (mechanic, fuel trucks)
- The facilities which may be located on site include:
 - A small mobile office;
 - Potable water storage;
 - Mobile screen (500 tph)

4.3 Access

The quarry can be accessed via Highway 97. Truck haul will be limited to the public roads between the quarry area to the dam site, namely Highway 97, Highway 29 and Jackfish Lake Road. Existing petroleum development and forest service resource roads on the Jackfish Lake Plateau will also be used for road transportation.

Access will be closed to the public during the length of the extraction operations.

4.4 Safety and Environmental Management

The contractor will be expected to adhere to the environment and safety requirements described in the Construction Environmental Management Plan (CEMP) and the Construction Safety Management Plan (CSMP).

Management measures to be implemented during quarry operation will include:

- Gate access will be maintained to control access
- Berms will be constructed at the top edges of excavations to control movement within the quarry
- Portable toilet facilities will be used within the quarry area and near the project site offices. These facilities will be maintained as required. If trailer type washroom stations were to be used onsite, the grey water created will be disposed of into a suitable tank and then pumped out and trucked to the municipal treatment location
- The planning and installation of a lighting system, if required, for the safe operation of the site will follow guidelines in the Aggregate Operators Best Management Practices Handbook (MOEM 2002). The goal will be to facilitate safe and secure operations for the extraction, processing and stockpiling locations while minimizing offsite visual nuisance. Lighting will be needed for the quarry property, inside buildings and their entrances, extraction faces, haul roads, stockpiles, equipment, and vehicles. Lighting will be directed downward or shielded by buildings to minimize off-site spill and glare. The lighting of road junctions and site entrances will be kept to the minimum required for safety purposes
- Other site management features will include:
 - Sediment control, and oil control separation
 - Control of noxious weeds through vegetation cover or seeding where required
 - The provision of a truck wash for noxious weeds control
 - Maintenance of road surfaces to reduce vibration
 - Control of air emissions and wind generated dust

In order to manage the potential disturbance to caribou from quarry activities:

- Blasting is prohibited at the West Pine Quarry from January 1 to March 31.
- Blasting levels are limited at the West Pine Quarry to no greater than historical levels from May 15 to June 14.

4.5 Site Reclamation and Future Use

West Pine Quarry will continue to operate as a rock quarry under the jurisdiction of the MOTI (reference Appendix B). Slopes will be stabilized and drainage features will be established to control drainage. Seeding to control noxious weeds will be done on soil slopes and overburden stockpiles.

5.0 References

Front Counter BC - *Notice of Work* – Tracking number 100115027 (Form)

Ministry of Transportation and Infrastructure (July 30, 2014) – *Letter of Approval –MOTI Quarries: West Pine, Wuthrich and Del Rio* (file:36835-3ProjMan) (Letter)

Ministry of Energy, Mines and Petroleum Resources, Mining and Minerals Division (MOEM). 2009. November 2009. *Aggregate Management Principles*, <http://www.empr.gov.bc.ca/Mining/Aggregate/BMP/Pages/default.aspx>

Ministry of Energy, Mines and Petroleum Resources (MOEM), Mining and Minerals Division, 2007. *Health and Safety: A Practical Guide for Aggregate Operations*

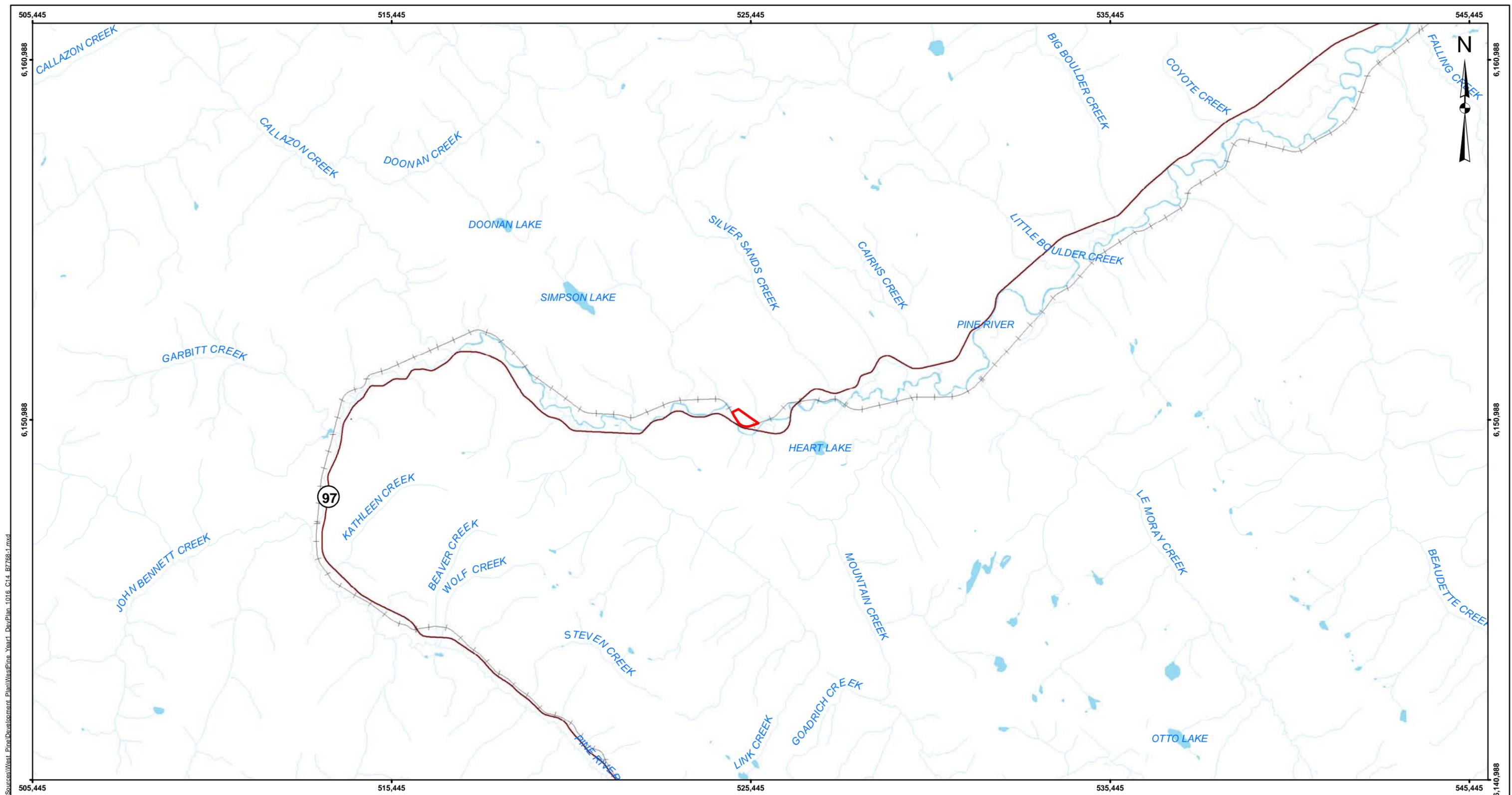
Ministry of Energy and Mines (MOEM), April 2002. *Aggregate Operators Best Management Practices Handbook for British Columbia. Volumes 1 (Introduction and Planning) and Volume 2 Best Management Practices*, <http://www.empr.gov.bc.ca/Mining/Aggregate/BMP/Pages/default.aspx>

Quarry Development Plan – West Pine Quarry
Site C Clean Energy Project

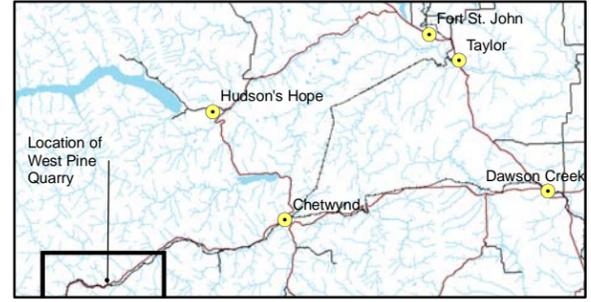
Figures

Figure 1: Key Plan – Location of West Pine Quarry

Figure 2: Development Plan – West Pine Quarry



Path: X:\ArcGIS\Projects\Environmental\Construction_Material_Sources\West_Pine\Development_Plan\WestPine_Year1_Development_Plan_1016_C14_B7768-1.mxd



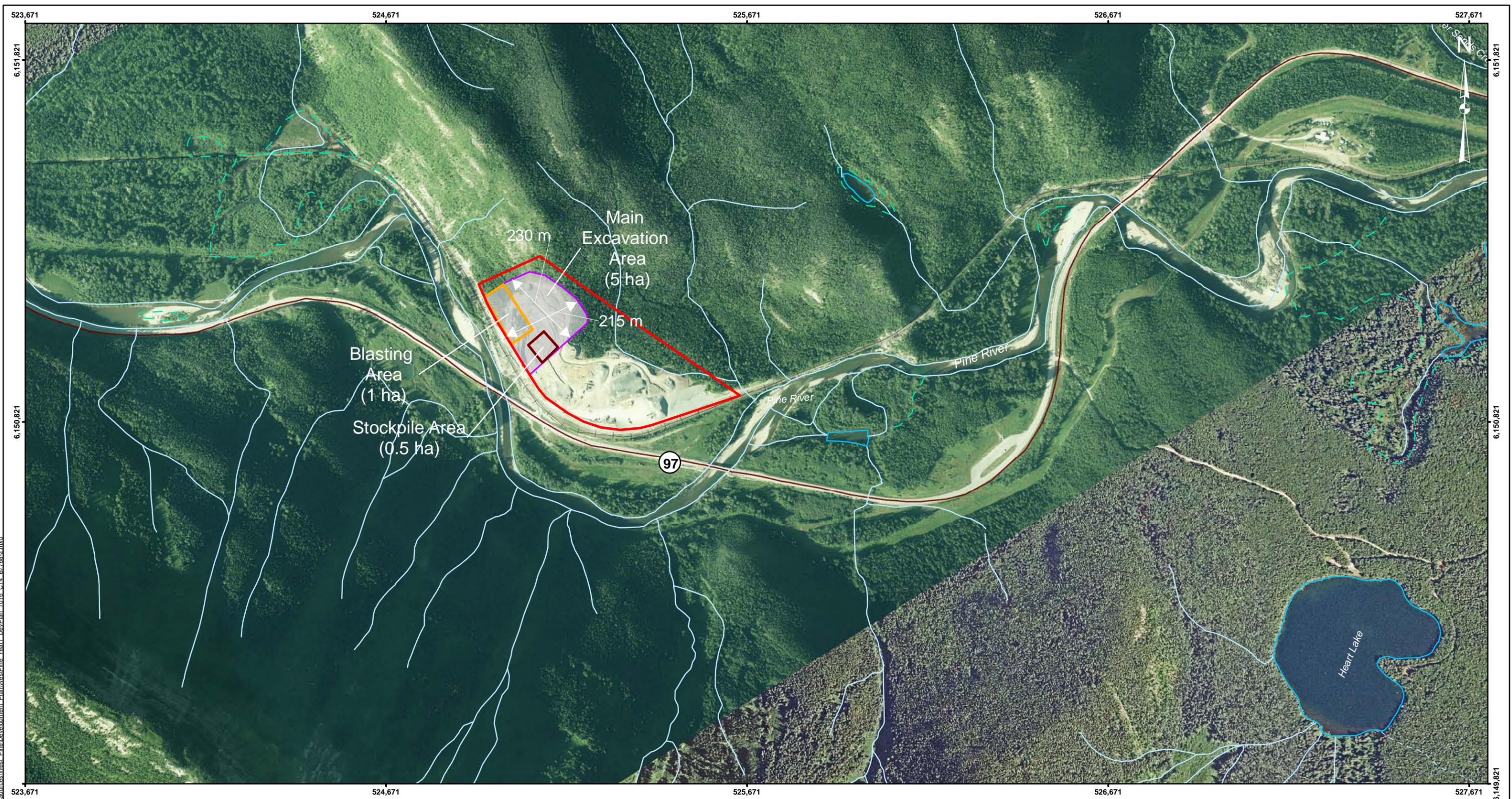
Map Notes:
 1. Datum: NAD83
 2. Projection: UTM Zone 10N
 3. Base Data: Province of B.C.

- Legend**
- West Pine Quarry
 - Existing Highway
 - Existing Railway

1:100,000

0
5km

<p>Figure 1 Key Plan - Location of West Pine Quarry</p>			
Date	November 3, 2014	DWG NO	1016-C14-B7768-1
			R 0



523,671 524,671 525,671 526,671 527,671

6,151,821 6,150,821 6,149,821

230 m
Main Excavation Area (5 ha)
215 m

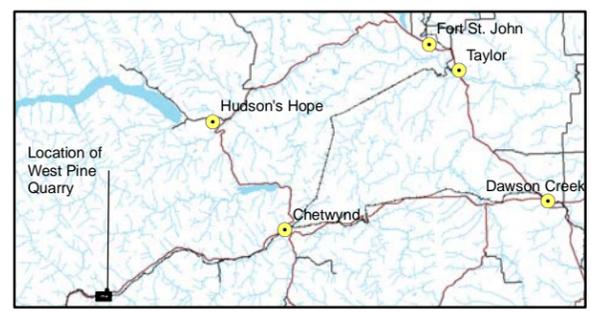
Blasting Area (1 ha)
Stockpile Area (0.5 ha)

Pine River

97

Heart Lake

Path: X:\ArcGIS\Projects\Environment\Construction_Material_Sources\West_Pine\Development_Plan\WestPine_Year1_Development_Plan_1016_C14_B7768-2.mxd



Map Notes:
 1. Datum: NAD83
 2. Projection: UTM Zone 10N
 3. Base Data: Province of B.C.
 4. Orthophotos created from 1:15,000 photos taken Aug. 26th 2011; Data BC WMS.

© BC Hydro 2014 - all rights reserved. This map is for information purposes only and accuracy is not guaranteed.

- Legend**
- West Pine Quarry
 - Blasting Area
 - Stockpile Area
 - Main Excavation Area
 - Existing Highway
 - Existing Railway
 - TRIM - Lake
 - TRIM - River (Definite)
 - TRIM - River (Indefinite)
 - TRIM - Swam/Marsh

1:10,000 0 125 250 500 m

<p>Figure 2 Development Plan - West Pine Quarry</p>			
Date	November 14, 2014	DWG NO	1016-C14-B7768-2 R 0

Construction of the Site C Clean Energy Project is subject to required regulatory approvals including environmental certification

Quarry Development Plan – West Pine Quarry
Site C Clean Energy Project

Appendix A. *Mines Act* Notice of Work



Notice of Work

Tracking Number: 100115027

APPLICANT INFORMATION

Name: British Columbia Hydro and Power Authority
Doing Business As: Site C Clean Energy Project
Phone: 604-699-7208
Fax: 604-695-5290
Email: bettina.sander@bchydro.com
BC Incorporation Number:
Extra Provincial Inc. No:
Society Number:
GST Registration Number: R1214541
Contact Name: Seth Oldham
Mailing Address: 600 Bentall IV-1055 Dunsmuir Street
Vancouver BC V7X 1V5

SETUP QUESTIONS

Please enter some preliminary information for your application.

Are you an individual or an organization? Organization
Are you applying on behalf of the applicant? No

TECHNICAL INFORMATION

APPLICATION INFORMATION

Type of Notice of Work: Quarry - Construction Aggregate
Is this a New Permit or an Amendment to an existing permit for this property? New Permit

MINE INFORMATION

Do you have an existing mine number? No
Name of the property: West Pine (Lemoray) Quarry
Tenure Numbers: 908037 (MOTI)
Crown Grant / District Lot Numbers: 8005674
Directions to site from nearest municipality: West Pine Quarry is located on the north side of Highway 97, approximately 75 km southwest of Chetwynd, B.C. and 1621 km south of the Site C project site (via existing and proposed roads). The site is located on NTS map sheet 93O/10 and BCGS map sheets 93O.057 and 93O.058.
Geographic Coordinates of Mine: **Latitude:** 55.5066890 **Longitude:** -122.6010114

INFORMATION ABOUT PROPOSED ACTIVITIES

Activities to be undertaken: Blasting
Sand & Gravel / Quarry Operations

FIRST AID

Proposed First Aid equipment on site: To be determined by contractor - based on WorksafeBC First Aid assessment

Level of First Aid Certificate held by attendant: Occupational First Aid Level 2

DESCRIPTION OF WORK PROGRAM

If you prefer to upload a document, please enter "see attached document" and attach the document in the "Document Upload" step later in the application under "Other".

Sufficient details of your work program to enable a good understanding of the types and scope of the activities that will be conducted:

Plans are to drill, blast, sort and then transport approx. 20,000 m3 of rip rap to the Site C dam site area. The remaining yield unsuitable for rip rap would be stockpiled within the Quarry for future uses.

TIME OF PROPOSED ACTIVITIES

Proposed start and end date: Feb 1, 2015 to Oct 1, 2015
Is the work year round or only seasonal? Seasonal

Please remember that you need to give 10 days notice to the Inspector of Mines of your intention to start work, and 7 days notice of your intention to stop work.

ACCESS

Access presently gated: Yes
Key provided to the Inspector: Yes

PRESENT STATE OF LAND

Please identify what the present state of the land is where you would like to undertake your activities. If some of the questions do not apply to you please enter n/a in the space provided.

Present condition of the land: The area is currently an active MOTI quarry, adjacent to Hwy 97.
Type of vegetation: The West Pine Quarry is situated within the wet, cool Finlay-Peace variant of the Sub-Boreal Spruce Biogeoclimatic Zone (SBSwk2). Mapping identified the following forested ecosystems within the proposed quarry: Hybrid white spruce-Oak fern, Lodgepole pine-Huckleberry-Cladina, White spruce-Huckleberry-Highbush-cranberry, Black spruce-Lodgepole pine-Feathermoss, White Spruce-Devil's club. Forests ranged in age from pole sapling (20-40 years) through mature forests (80-240 years). One wetland ecosystem Narrow-leaved cotton-grass-Shore sedge was also mapped.

Rare plant surveys were conducted within the proposed quarry area. No rare plants were found.

Physiography: Tree covered outside disturbed area, mountainous terrain ranging from elevation of 750 m to 950 m at quarry development site.
Current means of access: The quarry can be accessed by Highway 97 and by rail line.
Old equipment: N/A
Recreational trails / use: Pine Le Moray Provincial Park within 1 Km.

ACCESS TO TENURE

Do you need to build a road, create stream crossings or other surface disturbance that will not be on your tenure? No

LAND OWNERSHIP

Application area in a community watershed: No

Proposed activities on private land: No

Proposed activities on Crown land: Yes

Licence of Occupation: No

Have you applied for a Licence of Occupation? Yes

File number of application: Currently under screening review by Front Counter, no file number is assigned

Activities in a park: No

CULTURAL HERITAGE RESOURCES

Cultural Heritage applies to a large spectrum of heritage resources that is defined as "an object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people."

The Archaeology Branch of the Ministry of Forests, Land and Natural Resource Operations is responsible for the administration of the Heritage Conservation Act as it applies to archaeological sites. The Archaeology Branch has developed guidelines for companies engaged in natural resource extraction to aid in planning for and avoiding or managing impacts to protected archaeological sites.

Are you aware of any protected archaeological sites that may be affected by the proposed project? No

FIRST NATIONS ENGAGEMENT

In making decisions on authorizations, the government will be fulfilling its responsibility to consult, and where appropriate, accommodate First Nations. The government takes this responsibility seriously and encourages the applicant to engage First Nations early and often as part of any planned development.

Establishing good relations with First Nations who might be affected by a proposed development is a key part of any successful mining operation. The Ministry of Energy and Mines encourages applicants to engage and information share with First Nations that might be affected by a proposed development prior to submitting an application. The earlier in the life of a proposed activity that the avenues of communication are established the greater the likelihood that the relationships formed will be constructive and beneficial to all parties. A lack of information sharing and engagement by the applicant may result in extended timeframes for decision.

Applicants should keep a detailed record of information sharing and engagement with First Nations on their project in the event the government needs to review it. Information on First Nations information sharing and engagement should include the following: a list of First Nations contacted, whether the activity was modified based on feedback from First Nations, and whether the applicant has entered into any informal or formal agreements with First Nations in connection with the project.

The Consultative Areas Database Public Map Service is an online, interactive mapping tool that allows you to identify First Nations who have treaty rights or asserted or proven rights or title on the land base. More information can be found at <http://www.empr.gov.bc.ca/TITLES/MINERALTITLES/FIRSTNATION/Pages/CAD.aspx>.

Have you shared information and engaged with First Nations in the area of the proposed activity? Yes

Please tell us about your engagements in the field below or attach a your record of engagement by uploading it at the "Document Upload" step later in the application process. If you are attaching your record later, please enter in the text box "See record attached". Please ensure your record does not contain an individual's personal information such as contact information.

Describe your First Nations engagement activities: First Nations engagement activities are described in Section 5.2 of the attached document titled "Component Application Package - West Pine Quarry", dated June 13, 2014.

associated permit applications are currently under screening review with FrontCounter BC, along with other Site C Clean Energy Project permit application packages. This NoW application is to be appended to the West Pine Quarry application package.

As a result of the engagement, are you aware of any cultural heritage resources in the area where the work is proposed?

No

BLASTING

MAPS

Please mark the location(s) of the proposed magazine(s) on the map. Unless this is an area based application also mark the proposed locations of the blast site(s) on the map. The maps will be uploaded at the document upload step later in the application process.

ACTIVITIES WHERE BLASTING WILL TAKE PLACE

Please select the activities to which blasting is related: Sand & Gravel / Quarry Operations

ON SITE STORAGE OF EXPLOSIVES

Are you proposing to store explosives on site? No

Describe how you will get the explosives to the site: The contractor will purchase explosives through an approved supplier who will transport the explosives subject to requirements under the Transportation of Dangerous Goods Regulations.

ADDITIONAL INFORMATION

Only a person with a valid certificate granted under Section 8.2.1 of the Code is permitted to conduct a blasting operation.

SAND & GRAVEL / QUARRY OPERATIONS

MAPS

All plans and sections must indicate the scale and orientation of the drawing and must include:

1) Plan View of Proposed Development illustrating:

- Property boundaries and set back of excavation from property boundary
- Watercourses and drainage (wet, dry or intermittent) on the property and within 150 metres of its boundaries
- All previous surface workings, the final boundaries of proposed excavation, and boundaries of excavation at the end of development described in the Notice of Work
- Access roads, including development roads within the pit and access to the public roads
- All proposed and existing stockpiles (topsoil, overburden, product etc.)
- All settling ponds (for both surface run off and process water) and source of process water
- Buildings and other facilities (fuel/lubricant storage, sanitary facilities, weigh scale, etc.)
- Sediment control structures and the location of any point discharges from the property
- Fencing, berms and/or vegetative buffers.

2) Cross and longitudinal sections of Proposed Development illustrating:

- The original land surface and, if applicable, the groundwater table elevation
- Typical configuration during mining, indicating angle of slope and, where applicable, bench locations
- Proposed configuration on completion of reclamation

3) A copy of the land title/crown land tenure map must be provided.

SOIL CONSERVATION

Average depth of overburden: 0.00 m
Average depth of topsoil: 0.00 m
Measures to stabilize soil overburden stockpiles and control noxious weeds: N/A

LAND USE

Is the site within the Agricultural Land Reserve? No
Does the local government have a Soil Removal Bylaw? No
Official Community Plan for the site:
Current land use zoning for the site: Existing MOTI quarry
Proposed end land use is: Perpetual MOTI quarry
Estimate total minable reserves over the life of the mine:
Estimate annual extraction from site: 20,000 m³/year

Application must be made to the Environmental Assessment Office if estimated extraction for sand/gravel production is 500,000 tonnes/year or 1,000,000 tonnes over 4 years; or if estimated extraction is 250,000 tonnes/year for quarried product.

ACTIVITIES

Click on the "Add Activity" button to add one or more activities. Select your activity out of the list and enter the tonnes, the total disturbed area and the total merchantable timber volume.

Please note that you must notify the Inspector at least two weeks before if you are planning to bring a crusher on site.

Activity	Total Disturbed Area (ha)	Merchantable timber volume (m³)
Excavation of Pit Run	5.00	0.00
Total:	5.00	0.00

Brief description of operation, including proposed work schedule: Drill, blast, sort and stockpile. 7am to 7pm, Monday to Friday

EQUIPMENT

Click on the "Add Equipment" button to add one or more equipment.

Type	Quantity	Size / Capacity
Drill	1	TBD
Excavator	1	CAT 330 (or equivalent)
Bulldozer/Crawler Tractors	1	CAT D9 (or equivalent)
Loader	1	CAT 988 (or equivalent)

Will progressive reclamation be carried out? No

RECLAMATION PROGRAM

Describe the proposed reclamation and timing for this specific activity: West Pine Quarry will remain a Ministry of Transportation and Infrastructure (MOTI) quarry after Site C construction needs are met. MOTI has provided a letter indicating this (attached to the West Pine Quarry Application Package as Appendix D), and will be responsible for the reclamation of the pit as per the requirements of their tenure and governing legislation.

If backfilling of pits or pit slopes is proposed in the final configuration for reclamation, details of materials to be used and placement procedures: N/A

Estimated cost of reclamation activities described above: \$0.00

GROUNDWATER PROTECTION

Average depth to the high groundwater table at the proposed excavation:

Elevation of the groundwater table was determined from: Existing area wells
 Test pits
 Test wells drilled for this purpose
 Other: See below.

Measures proposed to protect groundwater from potential impacts of the proposed mining activity: Quarrying activities are to take place on a developed (i.e., existing quarry) rock/pit face.

IMPACT MINIMIZATION

Shortest distance between proposed excavation to nearest residence: 2,500 m

Shortest distance between proposed excavation to nearest residential water source: 2,500 m

Measures proposed to prevent inadvertent access of unauthorized persons to the mine site: West Pine is currently gated with site security measures already in place.

Measures proposed to minimize noise impacts of the operation: N/A: quarry operations will occur on weekdays between 7am and 7pm in an existing quarry.

Measures proposed to minimize the dust impacts of the operation: N/A: quarry operations will occur in an existing rock quarry with minimal dust potential.

Measures proposed to minimize visual impacts of the operation: N/A: existing quarry

TIMBER CUTTING

Total merchantable timber volume: 0.00 m3

No TimberYou have indicated that there is no merchantable timber that will be cut. Therefore a Free Use Permit or a Licence to Cut is not required. If this is not accurate, please correct your entries.

SUMMARY OF RECLAMATION

Based on the information you have provided on the previous screens the Summary of Reclamation is:

Activity	Total Affected area (ha)	Estimated cost of reclamation (\$)
Sand & Gravel / Quarry	5.00	0.00
Subtotal:	5.00	0.00
Unreclaimed disturbance from previous year:	0.00	
Disturbance planned for reclamation this year:	0.00	
Total:	5.00	0.00

OTHER CONTACTS

Please enter the contacts that are applicable to your application.

Contact Info	Type of Contact
Name: Ministry of Transportation and Infrastructure	Tenure Holder
Doing Business As:	

Phone: 250-565-4202
Fax:
Email:
BC Inc. Number:
GST Registration Number:
Contact Name: Tony Bennett, Senior Project Manager
Mailing Address: 213-2011 4th Avenue.
Prince George BC V2L 3H9

OTHER INFORMATION

Is there any other information you would like us to know?

BC Hydro use of West Pine Quarry is with the written permission of the tenure holder, BC Ministry of Transportation and Infrastructure. BC Hydro has indicated that no remediation works will be undertaken as MOTI will continue to use the quarry in perpetuity.

This application is part of the West Pine Quarry Component Application Package, submitted along with other permit applications and supporting documentation to FrontCounter BC starting on April 28, 2014. The application packages are currently under screening review with FrontCounter BC.

The Environmental Impact Statement for the Site C Clean Energy Project is available for download at
http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_project_doc_list_371_r_app.html

Detailed information on the quarry can be found within the EIS (Volume 1, Appendix C4 Draft Construction Materials Development Plans Part 4 West Pine Quarry Development Plan) on the BC Environmental Assessment Office website at the following link:
http://a100.gov.bc.ca/appsdata/epic/documents/p371/d35993/1377112565535_3f6818f00391108d24816e17b74b6b4dc04df98c77657ac56b1e7335f3fe1194.pdf

LOCATION INFORMATION

You are required to complete at least one of the following options for spatial information.

PRIVACY DECLARATION

PRIVACY NOTE FOR THE COLLECTION, USE AND DISCLOSURE OF PERSONAL INFORMATION

Personal information is collected by FrontCounter BC under the legal authority of section 26 (c) and 27 (1) of the Freedom of Information and Protection of Privacy Act (the Act).

The collection, use, and disclosure of personal information is subject to the provisions of the Act. The personal information collected by FrontCounter BC will be used to process your inquiry or application(s). It may also be shared when strictly necessary with partner agencies that are also subject to the provisions of the Act. The personal information supplied in the application package may be used for referrals or notifications as required. Personal information may be used by FrontCounter BC for survey purposes. For more information regarding the collection, use, and/or disclosure of your personal information by FrontCounter BC, please contact FrontCounter BC at 1-877-855-3222 or at:

FrontCounter BC Program Director
FrontCounter BC, Provincial Operation
441 Columbia Street
Kamloops, BC V2C 2T3

Check here to indicate that you have read and agree to the privacy declaration stated above.

REFERRAL INFORMATION

Some applications may also be passed on to other agencies, ministries or other affected parties for referral or consultation purposes. A referral or notification is necessary when the approval of your application might affect someone else's rights or resources or those of the citizens of BC. An example of someone who could receive your application for referral purposes is a habitat officer who looks after the fish and wildlife in the area of your application. This does not apply to all applications and is done only when required.

We have prepopulated some of the fields for your convenience but you can change in the information at any time. Please note that the information might become available to the public if required.

Company / Organization: British Columbia Hydro and Power Authority - Site C Clean Energy Project
Contact Name: Bettina Sander, Regulatory Manager
Contact Address: Suite 600, Four Bentall Centre
1055 Dunsmuir Street
Vancouver BC V7X 1V5
Contact Phone: 604-699-7208
Contact Email: bettina.sander@bchydro.com

I hereby grant permission for the public release of the information provided above. This information will be used to fulfill, if required, the referral and advertising requirements of my application.

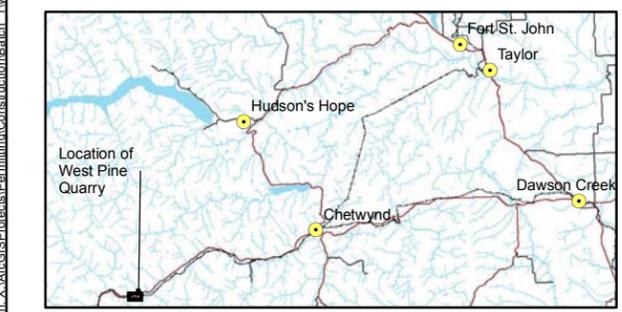
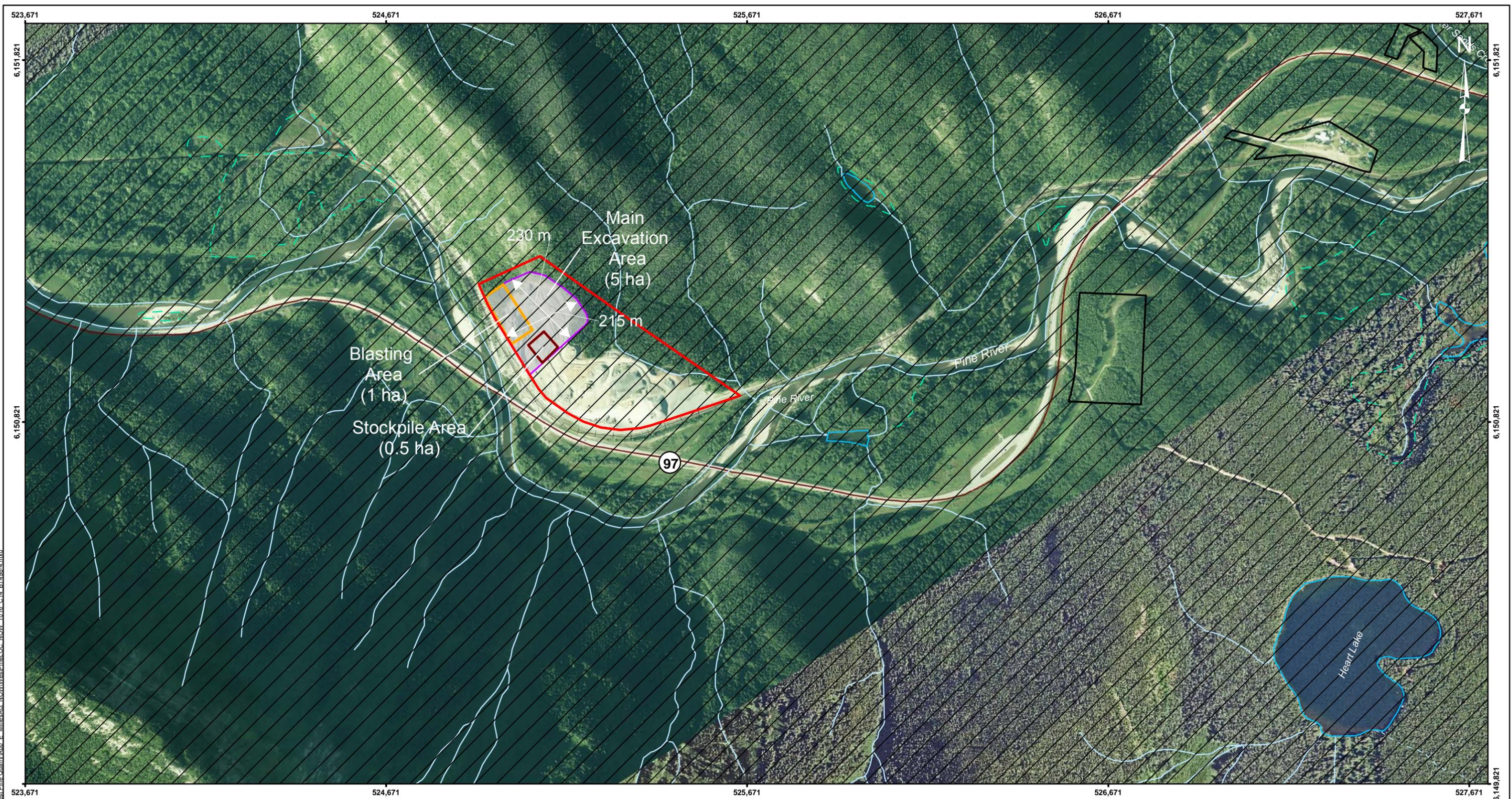
OFFICE

Office to submit application to:

PROJECT INFORMATION

Is this application related to another application(s) or authorization(s) you have previously submitted? No

<i>OFFICE USE ONLY</i>		
Office	File Number	Project Number
	Disposition ID	Client Number

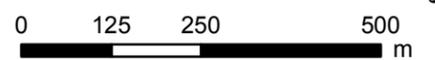


Map Notes:
 1. Datum: NAD83
 2. Projection: UTM Zone 10N
 3. Base Data: Province of B.C.
 4. Orthophotos created from 1:15,000 photos taken Aug. 26th 2011; Data BC WMS.

Legend

- West Pine Quarry LOC Application Area (17 ha)
- Blasting Area
- Stockpile Area
- Main Excavation Area
- Crown Land (Surveyed and Unsurveyed)
- Existing Highway
- Existing Railway
- TRIM - Lake
- TRIM - River (Definite)
- TRIM - River (Indefinite)
- TRIM - Swam/Marsh

1:10,000



<p>Notice of Works Map - West Pine Quarry LOC</p>			
Date	July 30, 2014	DWG NO	1016-C14-B7498-4
			R 0

Quarry Development Plan – West Pine Quarry
Site C Clean Energy Project

Appendix B. Agreement Between MOTI and BC Hydro



July 30, 2014

Sent via email

Don Wharf,
Program Manager, Roads Infrastructure
Site C Clean Energy Project
BC Hydro, Vancouver BC

Your File: 36835-3ProjMan

Dear Don:

Re: MOTI Quarries/Pits: West Pine, Wuthrich and Del Rio

The Ministry of Transportation and Infrastructure (MOTI) approves the use of West Pine Quarry, Wuthrich Quarry and Del Rio Pit by BC Hydro for the Site C Clean Energy Project. These quarries and pit may also be utilized by MOTI for operational purposes during the time of BC Hydro's use.

MOTI confirms that these quarries and pit will be used by MOTI as quarries and pit following BC Hydro's use and after the construction of BC Hydro's Site C Clean Energy Project, should the project receive environmental certification, regulatory approvals and proceed to construction.

MOTI will be responsible for the reclamation of the quarries and pit as per the requirements of their tenure and governing legislation.

Regards,

A (Tony) N. Bennett
Senior Project Manager
Northern Region
Ministry of Transportation and Infrastructure

Cc: Don Shaw, Project Director MOTI
John Bodnarchuk, Project Manager BC Hydro