SITE C CLEAN ENERGY PROJECT

MONTHLY FIELD STUDIES SUMMARY

October 2014

The Site C Clean Energy Project is continuing to conduct environmental and engineering field studies on and around the Peace River between the Williston Reservoir and the Alberta border to inform detailed mitigation and monitoring planning as part of the project's environmental assessment process. Project construction will not take place unless Site C receives environmental certification, regulatory permits and authorizations, and approvals to proceed.

This notice provides a list of field work planned for October 2014. Helicopters may be required for some of this work. BC Hydro will obtain permits, and complete environmental management plans and archeological assessments as required.

Overview
Environment Studies
• Heritage Study Program
• Heritage Mitigation Field Trial at the Dam Site
• Beaver Study
• Jackfish Lake Moose and Elk Monitoring Program
• Peace River Turbidity and Suspended Sediment Monitoring
• Climate and Air Quality Monitoring
Engineering Investigations
• Traffic Counts
• Distribution Line Site Inspections
• Geotechnical Investigations and Soil Resistivity Testing Along Transmission Right-of-Way
• Geotechnical Investigations: West Pine and Wuthrich Quarries
• Dam Site Investigations
• Visual Inspections for Environmental and Archaeological Assessments
• South Bank Construction Access Road Site Inspections
• Instrumentation Monitoring

Current and previous field study activities are available at **www.sitecproject.com/news-and-information/field-study-notices** and in the Community Consultation offices in Fort St. John and in the Pearkes Centre in Hudson's Hope.

Regular and ongoing BC Hydro work may also be taking place on the Peace River and tributaries related to BC Hydro's Peace River water licence requirements or other operations work.

For further information, please contact:
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October 2014

Study Name	Description	Timing
Environment Studies – Heritage Study Program	BC Hydro will be continuing the Heritage Study Program of the Site C project area. The assessment will identify, record and evaluate archaeological sites and further investigate previously recorded archaeological sites located within the proposed Site C project area; assess potential impacts by the Site C project to these sites; and recommend mitigation options. The majority of the work will be shovel tests, as well as visual inspections of areas with good soil exposures, such as freshly tilled fields. Crews will be primarily on foot, with land access by road or boat, supported occasionally by helicopter or all-terrain vehicles.	June – October 2014
Environment Studies – Heritage Mitigation Field Trial at the Dam Site	BC Hydro is conducting a field trial of proposed mitigation measures for project-related effects on archaeological resources within the dam site. This field trial has been designed in consultation with the B.C. Archaeology Branch and is authorized by permits issued under the *Heritage Conservation Act* (HCA). This field trial will test the systematic data and recovery methods proposed as mitigation measures for project-related effects on archaeological resources. Systematic excavation will take place at 18 heritage sites that comprise a representative sample of site classes and environmental settings of sites located in the dam site. The majority of the work will involve excavations by shovels and trowels at each of the designated sites. Sites will be accessed primarily by road and boat, supported occasionally by helicopter or all-terrain vehicles.	August – October 2014

October 2014

Study Name	Description	Timing
Environment Studies – Beaver Study	BC Hydro is conducting a beaver survey to update baseline information about the current population. The survey will document the number and spatial locations of beaver lodges, dams and food caches. The study will take place along the Peace River between the Peace Canyon Dam and the B.C./Alberta border, including the lower sections of the following Peace River tributaries (Halfway River, Cache Creek, Moberly River, Pine River, Beatton River, and Kiskatinaw River). Surveys will be primarily conducted by air, supported by some boat and ground based surveys.	October 2014
Environment Studies – Jackfish Lake Moose and Elk Monitoring Program	BC Hydro is conducting a moose and elk monitoring study on the south bank of the Peace River, around the Jackfish Lake Road area, between the Peace River and Chetwynd, and in the area of the transmission corridor right-of-way. The first phase of the study took place between winter 2012 and spring 2013, and involved the capture and outfitting of 32 moose and elk with GPS collars. An additional 12 animals were captured in the winter of 2014. Phase II involves tracking collared animals for up to two years, and phase III, the final phase, will involve removing the collars from the study animals following the monitoring period. Ground based track surveys will also be conducted to document road crossings.	December 2012 – April 2015 *Phase II, tracking collared animals, occurs between May 2013 and April 2015.*
Environment Studies – Peace River Turbidity and Suspended Sediment Monitoring	BC Hydro is continuing the collection of baseline turbidity and suspended sediment data in the Peace River to inform the evaluation of potential effects of project construction on water quality as it relates to fish habitat and municipal/ industrial water supplies. In 2014, BC Hydro will continue maintenance and operation of six turbidity monitoring stations located on either river bank both upstream and downstream of the Site C dam site, as well as just upstream of the town of Taylor and at the Spectra	April – December 2014

October 2014

Study Name	Description	Timing
	water intake. A service trip was conducted prior to the spring freshet to clean the sensors, replace batteries, perform a calibration check, and collect sediment samples. Additional service and sampling trips will be conducted as required throughout the year. Field crew access will be by boat and foot.	
Environment Studies – Climate & Air Quality Monitoring	BC Hydro is collecting climate and air quality data from monitoring stations on private and BC Hydro owned land between Hudson's Hope and Old Fort, south of Fort St. John. Information on various climate parameters is being gathered, including: air temperature, humidity, wind speed and direction, fog frequency and density, snow depth and precipitation. Monitoring of particulate matter (mixture of solid particles and liquid droplets in the air) is being conducted at Old Fort, Halfway River and 85th Avenue. These data were used to establish baseline conditions that informed the effects assessment of the Site C project on in-valley climate and air quality in the area. BC Hydro is continuing to collect the data to verify actual changes should the project be built and to forecast periods of high tributary inflows for construction planning. BC Hydro also monitors climate within the Peace River watershed in order to forecast periods of high tributary inflows for construction planning. Stations are visited regularly to retrieve data and for maintenance. Access to the monitoring stations is by vehicle, foot and helicopter.	Ongoing monitoring from February 2009.
Engineering Investigations – Traffic Counts	During the months of October and November, BC Hydro is conducting traffic counts at key intersections in Fort St. John, Taylor, Hudson's Hope and Chetwynd to establish current levels of traffic volume. Video recording equipment will be mounted on utility poles or signal poles at 19 locations to collect	October – November 2014

October 2014

Study Name	Description	Timing
	vehicle turning data. There will be no disruption to traffic or traffic operations during this activity.	
Engineering Investigations – Distribution Line Site Inspections	BC Hydro is continuing with site inspections along existing distribution lines that run from the Fort St. John substation on 81 Avenue to the location for the proposed Site C dam to obtain information for proposed distribution lines upgrades to meet the increased need for electricity in the area of the dam site. The inspections will occur on the distribution lines, which run along the following roads: • In the area of 86 Street and 87 Streets, between the Alaska Hwy and 81 Avenue • In the area of 81 Avenue, between 86 Street and 89a Street • 81 Avenue, between 89a Street and 100 Street (265 Rd) • 98 Street, between 81 Avenue and 85 Avenue • 100 Street (265 Rd), between 81 and 85 Avenue • 85 Avenue, between 98 Street and Old Fort Road • Old Fort Road, between 85 Avenue and 240 Road • 240 Road, between Old Fort Road and 269 Road • 269 Road, south of 240 Road to the end of the existing road Engineers will walk the routes of the distribution lines to take photographs of existing overhead distribution lines, assess ground conditions, and gather measurements for determining spacing for poles.	October 2014
Engineering Investigations - Geotechnical Investigations and Soil Resistivity Testing Along Transmission Right	BC Hydro is conducting geotechnical investigations and soil resistivity testing on the south bank of the Peace River starting at Peace Canyon dam, following the existing BC Hydro 138 kV transmission line right-of-way, for approximately 77 km to the north-east.	July – October 2014

October 2014

Study Name	Description	Timing
of Way	The work is to investigate the proposed 500 kV transmission tower foundation locations for the design of the 500 kV transmission lines, which would run from Peace Canyon dam to the substation on the south bank of the Site C dam site. Contractors will be using an auger to drill holes up to 250 mm in diameter. Cuttings generated from the auger will be used to backfill the holes upon completion. To maximize safety and efficiency, it is anticipated that a low and slow flying helicopter will be used to access select boreholes. At select locations, soil resistivity testing will also be carried out to provide information for design of the transmission line grounding system. Resistivity testing measures how much the soil resists the flow of electricity. Work includes inserting a series of 1" diameter metallic test probes into the ground and applying a test current. Visual inspections along the existing transmission line right-of-way will also be conducted to obtain information for proposed VHF installations. BC Hydro will obtain the necessary permissions before assessment work is performed.	
Engineering Investigations - Geotechnical Investigations: West Pine and Wuthrich Quarries	Geotechnical investigations will be carried out at West Pine Quarry and Wuthrich Quarry, both existing Ministry of Transportations and Infrastructure quarries. West Pine Quarry is located approximately 36 km east of MacKenzie and approximately 63 km west of Chetwynd. Wuthrich Quarry is located approximately 10km north of Fort St. John. Investigations will examine the quality of bedrock beyond the existing quarries for rip-rap (large bedrock blocks). Work at West Pine Quarry will include the	August – October 2014

October 2014

Study Name	Description	Timing
	development of a new access road, excavation of exploratory test pits to determine overburden thickness and rotary drilling to investigate the presence of joints and fractures within the rock. Work at Wuthrich Quarry will include engineering field crews walking through the identified area completing field mapping; drilling of exploratory drillholes using an auger drill; digging of exploratory test pits; and clearing of necessary access routes.	
Engineering Investigations – Dam Site Investigations	BC Hydro is continuing the following engineering investigations at the proposed dam site area: • Geotechnical investigations • Geophysical seismic reflection surveys • Trench excavation • Topographic surveys • Site inspections • Construction materials investigations • Danger tree assessment and removal **Geotechnical investigations** will include subsurface drilling on the north and south banks using a drill rig and a backhoe to dig test pits and trenches. On the south bank, drilling investigations and resistivity testing will be carried out along the existing BC Hydro 138 kV transmission line right-of-way, the proposed alignment of the 500 kV transmission line, and in the locations of the temporary and permanent substations. Site preparation for this work may include removal of vegetation as required. At the dam site on the north and south banks, drill holes from historic investigations will be re-drilled to fill with grout. For select drill sites on the south bank, a low and slow flying helicopter will be used to access the site to maximize safety, efficiency and to minimize the impact on the surrounding environment. **Geophysical seismic reflection surveys** will be conducted on both the north and south banks and on the Peace River to characterize geological conditions. Site preparation for this work may include removal of vegetation as required.	June – October 2014

October 2014

Study Name	Description	Timing
	Trench excavation - A trench on the south bank at the proposed dam site will be excavated to assess rock conditions. An excavator will be used for this work, and personnel and equipment will access the site through existing access roads. Site preparation will include removal of trees. **Topographic surveys** will be conducted to establish a survey control network; confirm the accuracy of Light Detection and Ranging (LiDAR) data through ground truthing; and survey the general site topography, the locations of historical boreholes, test pits, and other geotechnical instrumentation locations, and environmental and archaeological features. **Site inspections** or visual surveys will be completed on the north and south banks at the proposed dam site, the Moberly River area and along the transmission line right of way near the Del Rio Pit. Engineers will walk or drive potential access roads to conduct visual surveys of the area to confirm topography and terrain. Work may include taking measurements, surveying and taking photographs. This data is being collected to plan the design for distribution lines, temporary substation, telecommunications, clearing activities and access roads required for construction on the south bank of the Peace River. **Construction materials investigations** may be conducted in the area of the proposed dam site. This work may include engineering field crews walking through the identified area completing field mapping; drilling of exploratory drillholes using an auger drill; digging of exploratory test pits; and clearing of necessary access routes. Site preparation for this work may include removal of vegetation as required. **Other Investigations** such as water sampling, remediation work, potential contaminated site investigations and road maintenance work may be conducted as required throughout the field season. Engineering investigations will be occurring on	

October 2014

Study Name	Description	Timing
	both private and Crown land. Access to the site will be through existing roads on the north and south bank of the Peace River; and boats will be used to transport crews and supplies across the river. Helicopters will be used periodically to access the south bank at the dam site for the subsurface investigations.	
Engineering Investigations – Visual Inspections for Environmental and Archaeological Assessments	BC Hydro is conducting visual inspections of the dam site area, including the right bank terrace and Septimus Siding, and the proposed location of the temporary and permanent substations, to assist with planning and permit preparations to support future field investigations. Work will include archaeological and environmental investigations and assessments of proposed work areas. Field crews will also be traversing the areas on foot. Work may include taking measurements and photographs.	May - October 2014
Engineering Investigations – South Bank Construction Access Road Site Inspections	BC Hydro is conducting site inspections of access roads required for construction on the south bank of the Peace River. These visual surveys will be happening on the petroleum development and forestry service roads north of the Jackfish Lake Road area, between the intersection with Highway 29 at Chetwynd and the proposed dam site. Work will include engineers walking or driving the potential access roads to conduct visual surveys of the area to confirm topography and terrain, and may include taking measurements and photographs. Worker vehicles may be parked on the side of the road where assessments are being conducted.	April – October 2014
Engineering Investigations – Instrumentation Monitoring	BC Hydro is continuing instrumentation monitoring at the proposed dam site and along the reservoir shoreline.	February – October 2014

October 2014

Study Name	Description	Timing
	There are approximately 80 sites throughout the reservoir area where geotechnical instruments are installed. These sites are visited approximately every three to six months throughout the year for reading and maintenance. Access to the sites will be by vehicle, foot and helicopter.	

Note: Access to public and private land may be required in order to complete study work. BC Hydro will obtain permission from land owners and provide notification to BC Hydro leaseholders before entry onto private or leased lands. BC Hydro will adhere to seasonal road restrictions.