SITE C CLEAN ENERGY PROJECT

MONTHLY FIELD STUDIES SUMMARY

May and June 2012

The Site C Clean Energy Project (Site C) is now in Stage 3, the environmental and regulatory review phase, which will include an independent environmental assessment. Stage 3 work includes conducting environmental and engineering field studies on and around the Peace River between the Williston Reservoir and the Alberta border.

An overview of studies that will be taking place in May and June 2012 is below. Additional study activities may occur; notice of these studies will be posted at www.bchydro.com/sitec.

Overview
Socio-Economic Studies
♦ Agricultural Assessment Study
♦ Heritage Study Program
♦ Forestry Surveys
♦ Socio-Economic Assessment
Wildlife Studies
♦ Garter Snake Hibernacula Study
♦ Dragonfly Study
♦ Bat Study
♦ Amphibian Survey
♦ Avian Study Program
♦ Fisher Study Program
Vegetation Assessments
♦ Rare Plants Study
♦ Habitat Mapping Ground Surveys
Physical Environment Studies
♦ Geomorphology and Sediment Transport Studies
♦ Climate and Air Quality Monitoring
Fish and Aquatic Studies
♦ Peace River Fish and Fish Habitat Inventories
♦ Peace, Pine, Moberly and Halfway River Fish Movement
♦ Aquatic Productivity and Modelling Study
Engineering Investigations
♦ Geotechnical Investigations and Instrumentation Monitoring
♦ Adit Construction

Some field studies may require access to public and private land. BC Hydro will obtain permission before accessing private property and will notify property owners who may be directly impacted by helicopters. Ongoing regular BC Hydro work, in addition to the Site C field study activities outlined here, may be taking place on the Peace River and tributaries. This work is related to BC Hydro's Peace River water license requirements program or other operations work.

Field study updates are available at **www.bchydro.com/sitec** and in the Community Consultation offices in Fort St. John and in the Pearkes Centre in Hudson's Hope.

For further information, please contact:
Kate O'Neil, Community Relations
Office: 250-785-3415 Cell: 250-793-5416

PO Box 2218
Vancouver BC V6B 3W2
Toll-free: 1 877 217 0777
sitec@bchydro.com
bchydro.com/sitec

Community Consultation Offices:
9948 100th Avenue
Fort St. John BC V1J 1Y5
Tel: 250 785 3420

Pearkes Centre
10801 Dudley Street
Hudson's Hope BC V0C 1V0

BC hydro REGENERATION

May and June 2012

Study Name	Description	Timing
Socio-Economic Studies – Agricultural Assessment Study	BC Hydro is conducting an agricultural assessment study for the Site C project. Building on work from 2011, the field program will verify and refine agricultural resource mapping. The study will update and gather additional data on agricultural resources in the study area and will involve inspections of the land to assess soil capability. It may involve subsurface testing, consisting of periodic shovel tests supplemented in some cases by use of hand augers. Soil samples may be taken off-site for laboratory testing of agricultural capability parameters including texture, pH, salinity, etc. The lab analyses will not be carried out for contamination testing purposes. Surveys will occur within sites that will be directly affected by the proposed project, along the transmission line, dam site, Highway 29 realignment areas and within the areas included within the project erosion impact line.	June – September 2012
Socio-Economic Studies – Heritage Study Program	Starting in June and running through October, BC Hydro will be continuing the Heritage Study Program of the Site C project area. The assessment will identify, record and evaluate archaeological, historical and palaeontological 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 2012
Socio-Economic Studies – Forestry Surveys	Forestry surveys will be completed on the north and south banks at the proposed dam site and Moberly River area, the Jackfish Lake Road area, and within and adjacent to sites that will be directly affected by the proposed project within the broader Peace Region.	May – November 2012

May and June 2012

Study Name	Description	Timing
	Survey teams, typically comprised of two technicians per team, will be using topographical equipment and a global positioning system (GPS) to conduct the field work. Surveys will include further detailed assessment of proposed clearing boundaries and temporary road access locations. Access will be primarily by road and boat. When the use of helicopter access is determined to be the best method for assessing the proposed route, property owners will be notified in advance.	
Socio-Economic Studies – Socio-Economic Assessment	BC Hydro is undertaking a socio-economic assessment, which will include all components of the Site C project and covers topic areas including: economic, land and resource use, socio-community, visual resources, human health, and First Nations community assessments. Socio-Economic study team members will be following up with local government, government agencies, businesses and First Nations communities to gather and confirm baseline information within each potential effect topic areas. The visual resources field program will take place over several days in June with photos confirming existing visual conditions from key visual receptor sites around the project area including dam site, reservoir, and transmission line.	May - September 2012 *Effects assessment phase*
Wildlife Studies – Garter Snake Hibernacula Study	BC Hydro is conducting additional surveys to determine if garter snake winter hibernacula are present within and adjacent to sites that will be directly affected by the proposed project within the broader Peace Region. Field data will be used to revise the habitat ratings and generate a final map depicting known and potential hibernacula sites. Access will be by road and foot.	May – September 2012
Wildlife Studies – Dragonfly Study	BC Hydro is conducting a dragonfly study to address data gaps regarding the dragonflies and damselflies, collectively known as Odonates, present in the vicinity of the proposed project area.	May – August 2012

May and June 2012

Study Name	Description	Timing
	Surveys will occur within the Peace River valley, within and adjacent to sites that will be directly affected by the proposed project, along the transmission line, and within the broader Peace Region between May and August 2012. This field study will build on the surveys BC Hydro conducted in 2008. Sampling will be conducted by a dragonfly expert and field technician. A variety of aquatic habitats will be sampled, including bogs, gravelly and muddy streambeds, riverbanks, marshy areas, roadside ditches, river backchannels, and beaver impoundments. Accessing properties for the field studies will be through a mix of road, quad and foot. A boat may be required to access some portions of the river where there are no roads to access the required locations.	
Wildlife Studies – Bat Study	BC Hydro is conducting bat surveys to determine species presence and assess the potential for summer roost sites and hibernacula. Surveys will occur within and adjacent to sites that will be directly affected by the proposed project, along the transmission line, and within the broader Peace Region. Accessing properties for the field studies will be ground based (foot and vehicle).	April – September 2012
Wildlife Studies – Amphibian Survey	BC Hydro is conducting amphibian surveys to collect additional baseline data on amphibian species known to occur within the Peace River corridor and surrounding area. Surveys will occur within and adjacent to sites that will be directly affected by the proposed project, along the transmission line, and within the broader Peace Region. Surveys will focus on walking the shoreline and shallow sections of water bodies identified as potentially suitable amphibian breeding sites. Accessing properties for the field studies will be through a mix of road, quad and foot. A boat may be	May – October 2012

May and June 2012

Study Name	Description	Timing
	required to access some portions of the river where there are no roads to access the requisite locations.	
Wildlife Studies - Avian Study Program	BC Hydro will be conducting avian field studies within and adjacent to the Peace River valley between Hudson's Hope and the Alberta border. The objectives of the studies are to gather baseline data on the presence and habitat use of select bird species. Work will include ground based surveys (boat, foot and/or vehicle based). Surveys will be completed using a combination of call playbacks, point counts and nest searches.	April – September 2012
Wildlife Studies – Fisher Study Program	BC Hydro is conducting a study to further the understanding of fisher habitat use and movement patterns in and adjacent to the Peace River Valley. The study area extends from the Peace Canyon Dam to the confluence of the Pine and Peace Rivers on both sides of the Peace River. Fishers are members of the weasel family. They are about 60 cm in length and weigh 3 to 5 kg (6 to 11 lbs). Animals that have been fitted with radio-transmitters will be located monthly, via fixed-wing aircraft flights. Weekly locations will be obtained during ground visits during the breeding season to identify den sites (April through June). Weekly locations will also be obtained all year in some areas. Habitat assessments will be conducted at key fisher locations (e.g., den sites, rest sites) to document characteristics associated with the site.	December 2010 – April 2013
Vegetation Assessment – Rare Plants Study	BC Hydro is conducting rare plant surveys to collect additional baseline data on locally, provincially, nationally and globally rare plants within the proposed project area. This field study will build on the rare plant surveys BC Hydro conducted in 2005, 2006, 2008 and 2011. Surveys will occur within the Peace River valley, within and adjacent to sites that will be directly	June – October 2012

May and June 2012

Study Name	Description	Timing
	affected by the proposed project, along the transmission line, and within the broader Peace Region. Rare plant surveys will take place over a minimum of two sample periods, widely-separated across the growing season, to ensure that plants with different times of emergence and flowering are sampled in their prime condition. Specimens may be collected for later confirmation of field identification. Photos will be taken to record occurrences and when it may not be appropriate to remove a specimen due to small numbers of individual plants. Accessing properties for the field studies will be through a mix of road, quad and foot. A boat may be required to access some portions of the river where there are no roads to access the required locations.	
Vegetation Assessment – Habitat Mapping Ground Surveys	Terrestrial Ecosystem Mapping (TEM) surveys and ground truthing for the wildlife species models will be completed in the Peace Region. The surveys will verify the results and increase the accuracy of the 1:50,000 biophysical map of the region that was updated in 2010 and conduct the ground truthing needed to finalize draft wildlife species models. Several ecosystems mapped on the TEM may represent ecological communities at risk. These sites will also be targeted for field sampling in order to verify the occurrence of these communities. Field sampling will be conducted by foot and or boat.	May – October 2012
Physical Environment Studies – Geomorphology and Sediment Transport Studies	BC Hydro is continuing geomorphology and sediment transport studies from 2010 and 2011. These studies will characterize baseline river geomorphology, or shape of the river channels, and sediment transport rates at sites along the Peace River and its tributaries. They will be used to assess the potential effects of the Site C project on river geomorphology, and specifically, potential changes in	April – November 2012

May and June 2012

Study Name	Description	Timing
	water turbidity, fish habitat and areas of erosion or deposition. Suspended sediment gauging stations, including turbidity sensors anchored to the river bed with a cable running up the river bank to data loggers housed in metal cases, will be re-installed at six of the locations used in 2010 and 2011 (Peace River, Kiskatinaw River, Pine River, Halfway River, Moberly River and Farrell Creek). There will be regular site visits between April and October 2012 to collect data, check equipment and perform maintenance. Field crew access will be by boat and foot.	
Physical Environment Studies - Climate & Air Quality Monitoring in the Peace River Valley	BC Hydro is collecting climate and air quality data from eight 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 will be gathered, including: air temperature, humidity, wind speed and direction, fog frequency and density, and precipitation. Monitoring of particulate matter (mixture of solid particles and liquid droplets in the air) will be conducted at Old Fort and Halfway River. This data will be used to establish baseline conditions and to inform the effects assessment of the Site C project on in-valley climate and air quality in the area. Stations are visited regularly to retrieve data. Access to the monitoring stations is by vehicle and foot.	May and June 2012 *Ongoing monitoring from February 2009.*
Fish and Aquatics Studies – Peace River Fish and Fish Habitat Inventories	The 2012 fish and fish habitat inventories will build on data from previous years to expand knowledge of the Peace River fish communities and contribute to existing baseline data and the current understanding of fish and fish habitat in the Site C study area. The study areas are as follows: • The Peace River study area includes from the Peace Canyon Dam into Alberta. • Halfway, Moberly, Pine and Beatton Rivers • Project activity sites associated with the	May – November 2012

May and June 2012

Study Name	Description	Timing
	construction of the project (e.g., gravel pits, transmission line, highway realignment) The Peace River study period will occur during three seasons: spring (May); summer (August); and fall (October). The Beatton River study will occur in summer (August). Sample effort will be based on the number of sites that can be completed per crew-day using a particular fish capture method. A variety of sampling methods will be employed, including boat electrofishing, backpack electrofishing, and gill nets	
Fish and Aquatics Studies – Peace, Pine, Moberly and Halfway River Fish Movement	Building on the 2010 and 2011 fisheries studies, the 2012 study will build understanding of the movement of fish in the Peace River and its tributaries. The study will also document the abundance and timing of movement of fish that move downstream from the Halfway, Pine and Moberly rivers into the Peace River, and downstream in the Peace River past the proposed Site C dam site during the open water period. The study will further describe the biological characteristics and relative abundance of fish collected by the rotary screw traps. There will be five rotary screw traps placed in the rivers. Each trap is housed in a pontoon structure approximately 4m by 7m and will be operated from May through October. The study area includes the lower sections of the Pine, Halfway and Moberly rivers (one kilometre upstream from the confluence with Peace River), and the Peace River in the immediate vicinity of the Moberly River confluence. Sampling will occur seven days per week. Access to the sites will be by boat.	May – November 2012
Fish and Aquatics Studies – Aquatic	Initiated in 2010, and continued in 2011, the Peace River Aquatic Productivity and Modelling Study assesses current levels of aquatic productivity to	May – November 2012

May and June 2012

Study Name	Description	Timing
Productivity and Modelling Study	predict productivity changes resulting from reservoir creation. In 2012, the study will collect seasonal baseline data to gain an understanding of the current levels of invertebrate, primary production and nutrient dynamics in the system; and assess, determine and run the appropriate predictive modelling for assessing productivity in the current and post reservoir aquatic environment. The 2012 field sampling plan will include the same sampling sites used during the 2010 and 2011 studies: Williston and Dinosaur Reservoirs and the Peace, Halfway, Moberly, Pine and Beatton Rivers.	
Engineering Investigations – Geotechnical Investigations and Instrumentation Monitoring	To gather more information about ground conditions, BC Hydro is continuing geotechnical investigations at the proposed dam site area. The study will include subsurface investigations involving using a drill rig to drill holes. Prior to the start of any drilling, BC Hydro will carry out archaeological and environmental assessments. In most of the drill holes, geotechnical instruments will be installed to monitor ground movement and groundwater levels. There are approximately 80 sites total 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. Over the spring and summer months, some instrumentation sites will have data loggers installed. During the first one to three months following, monthly manual readings may be taken to verify that the instruments are functioning correctly. Subsequently, regular inspections, manual readings and maintenance of instrumentation and data loggers will be carried out every three to six months. This program consists of investigations on both private and Crown land. To maximize safety and efficiency, helicopters will be used periodically to access the south bank at the dam site for the subsurface investigations, as well as instrumentation sites along the south bank.	May – September 2012

May and June 2012

Study Name	Description	Timing
Engineering Investigations – Adit Construction	BC Hydro will commence construction on an adit on the south bank of the Peace River at the dam site. This work will include the excavation of the adit and the installation of ventilation and lighting. Site preparation activities, including environmental and archaeological investigations, were completed this spring. A track mounted drill rig and track mounted and rubber tired support vehicles will be used during the construction. Access to the site will be through existing roads on the south bank of the Peace River.	June – October 2012

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.