

Fred James

Chief Regulatory Officer

Phone: 604-623-4046

Fax: 604-623-4407

bchydroregulatorygroup@bchydro.com

December 18, 2018

Mr. Patrick Wruck
Commission Secretary and Manager
Regulatory Support
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Mr. Wruck:

**RE: British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Site C Clean Energy Project
PUBLIC Quarterly Progress Report No. 13 – July to September 2018 (Report)**

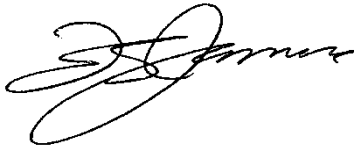
BC Hydro writes to provide its public Report.

Commercially sensitive and contractor-specific information has been redacted.

A confidential version of the Report is being filed with the Commission only under separate cover

For further information, please contact Geoff Higgins at 604-623-4121 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,



Fred James
Chief Regulatory Officer

st/ma

Enclosure (1)

Site C Clean Energy Project

Quarterly Progress Report No. 13

F2019 Second Quarter

July 2018 to September 2018

PUBLIC

Table of Contents

1	Project Status.....	1
1.1	Overview and General Project Status	1
1.2	Post Reporting Period Update	7
1.2.1	Injunction Application Hearing	7
1.2.2	Highway 29.....	8
1.2.3	Completion of Roller-compacted Concrete Buttress for the Powerhouse.....	8
1.3	Major Accomplishments, Work Completed, Key Decisions and Key Issues.....	8
1.3.1	Construction and Engineering	8
1.3.2	Safety	18
1.3.3	Aboriginal Consultation.....	24
1.3.4	Litigation	24
1.3.5	Permits and Government Agency Approvals	26
1.3.6	Environment.....	28
1.3.7	Labour, Employment and Training and Building Capacity Initiatives.....	31
1.3.8	Community Engagement and Communication	34
1.4	Key Procurement and Contract Developments	39
1.4.1	List of Major Contracts Awarded (in excess of \$50 million)	40
1.4.2	Large Contracts to Date (Excess of \$10 million).....	40
1.4.3	Contract Management	40
1.5	Plans During Next Six Months	42
1.6	Impacts on Other BC Hydro Operations.....	42
1.7	Site Photographs.....	42
2	Project Schedule	43
2.1	Project In-Service Dates	43
3	Project Governance, Costs and Financing	44
3.1	Project Governance	44
3.2	Project Budget Summary	45
3.3	Project Expenditure Summary	45
3.4	Internal Project Financing versus External Borrowings to Date	47
4	Material Project Risks.....	48

List of Figures

Figure 1	Site C Project Components	2
Figure 2	An Artist’s Rendering Depicts the Site C Earthfill Dam, Generating Station and Spillways, Substation, Transmission Lines and Reservoir	3
Figure 3	Map of Main Civil Works Area	9

List of Tables

Table 1	Project Status Dashboard	6
Table 2	Quality Management Non-Conformity Report Metrics	16
Table 3	WorkSafeBC Inspections and Orders.....	19
Table 4	Ministry of Energy, Mines and Petroleum Resources.....	21
Table 5	Safety Metrics	23
Table 6	Summary of Proceedings with Hearings or Decisions Pending.....	25
Table 7	Site C Jobs Snapshot.....	32
Table 8	Public Enquiries Breakdown.....	36
Table 9	Major Project Contracts and Delivery Models	39
Table 10	Major Project Construction Contracts Awarded.....	40
Table 11	Key Milestones for Activities Planned during the Next Six Months (October 2018 to March 2019).....	42
Table 12	Project In-Service Dates.....	43
Table 13	Project Budget Summary	45
Table 14	Total Project Expenditures - Updated Budget Compared to Forecast and Life to Date – Updated Budget Compared to Actual Expenditures to Sept. 30, 2018 (\$ million Nominal).....	46
Table 15	Actual Fiscal 2019 Project Expenditures Compared to 2018/19 to 2020/21 Service Plan (\$ million Nominal).....	46
Table 16	Material Project Risks.....	48

Appendices

- Appendix A Site Photographs
- Appendix B Summary of Individual Contracts Exceeding \$10 Million
- Appendix C Project Progression
- Appendix D Detailed Project Expenditure
- Appendix E Workforce Overview
- Appendix F Site C Construction Schedule

1 Project Status

This Quarterly Progress Report No. 13 (**Report No. 13**) provides information concerning the Site C Clean Energy Project (**Project**) covering the period from July 1, 2018 to September 30, 2018.

1.1 Overview and General Project Status

Site C will be a third dam and hydroelectric 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. In December 2014, after a three-year-long independent environmental assessment by the federal and provincial governments, the Project received approval from the provincial government to proceed. Construction on the Project began in July 2015.

The Project includes the following key components (refer to [Figure 1](#) and [Figure 2](#)):

- Access roads in the vicinity of the site and a temporary construction access bridge across the Peace River at the dam site;
- Construction of two temporary cofferdams across the main river channel to allow for construction of the earthfill dam;
- Worker accommodation at the dam site, with other workers being housed off site and in the region;
- The realignment of segments of Highway 29;
- Shoreline protection at Hudson's Hope;
- Two new 500 kilovolt AC transmission lines that will connect the Site C facilities to the existing Peace Canyon Substation, along an existing right-of-way;
- An 800-metre-long roller-compacted concrete buttress to enhance seismic protection;

- An earthfill dam, approximately 1,050 metres long and 60 metres high above the riverbed;
- A generating station with six 183 MW generating units; and
- An 83-kilometre-long reservoir that will be, on average, two to three times the width of the current river.

Figure 1 Site C Project Components

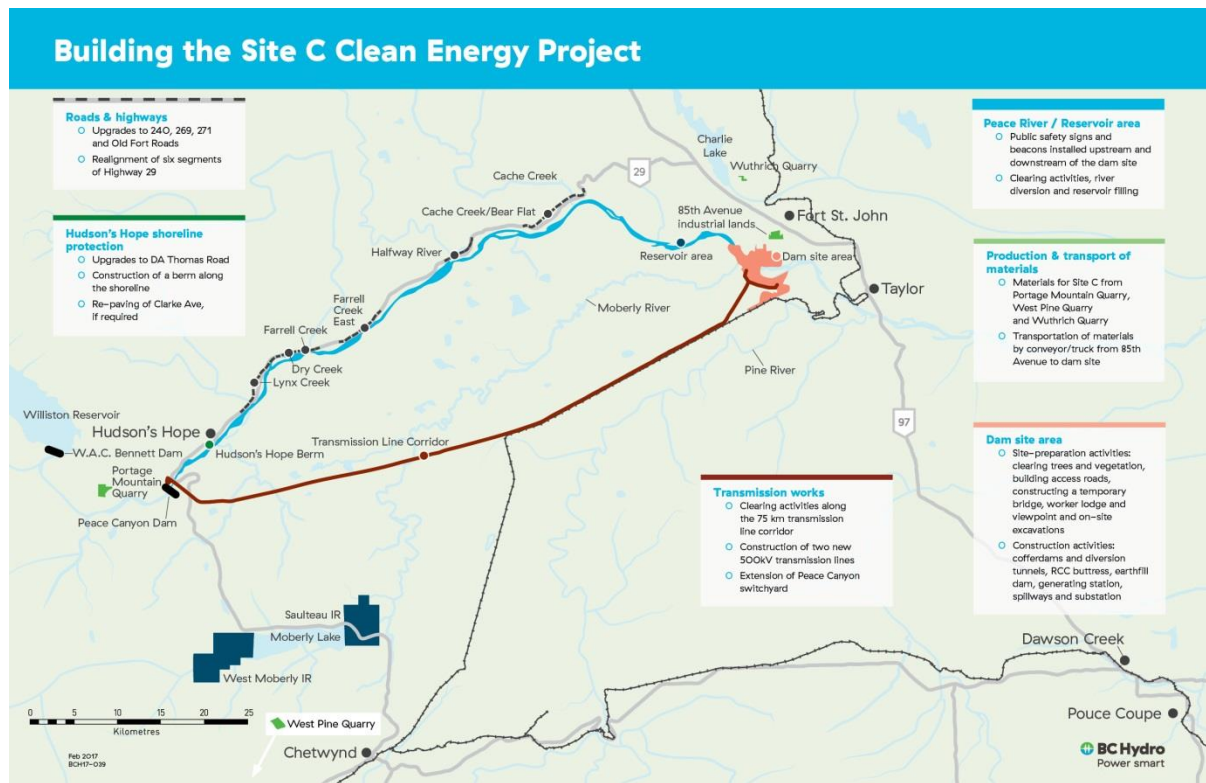
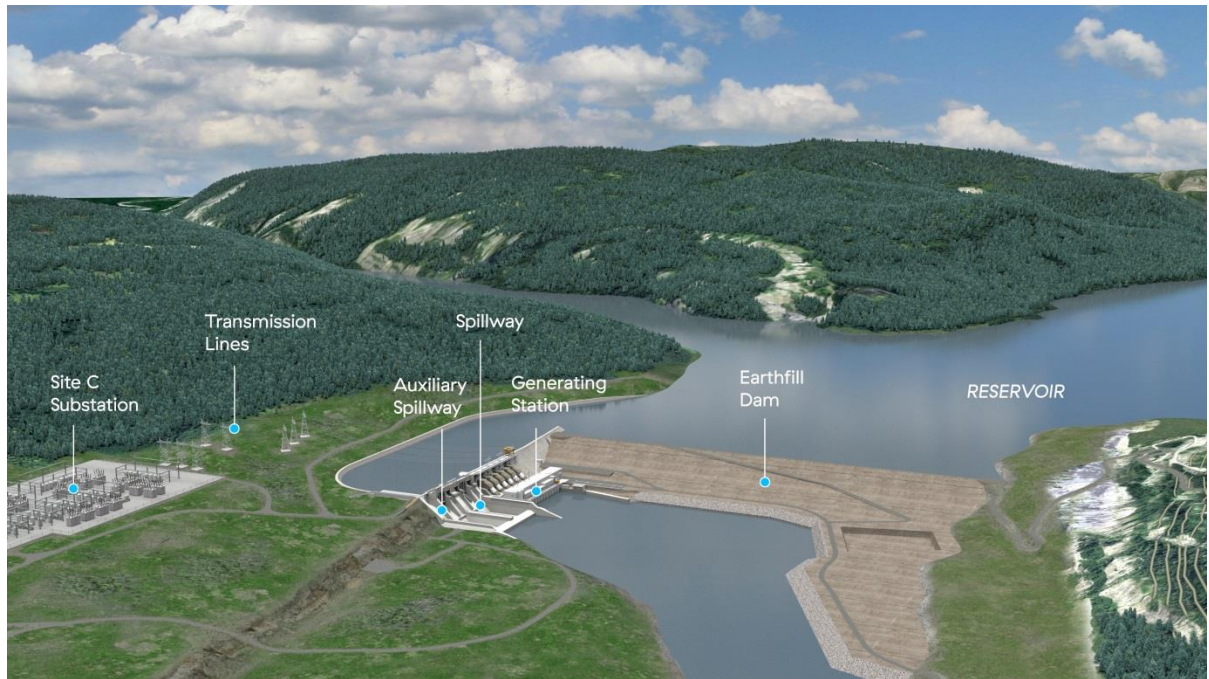


Figure 2 An Artist's Rendering Depicts the Site C Earthfill Dam, Generating Station and Spillways, Substation, Transmission Lines and Reservoir



Significant Project updates that occurred during the period from July 1, 2018 to September 30, 2018, include:

- On June 29, 2018, a small rock movement occurred in a localized area above and to the west of the diversion tunnel inlet portal number 2. There were no workers in the area at the time of the incident. A remediation plan was implemented and the issue was resolved. This small slope movement was not related to the tension cracks that occurred on the north bank in 2017. This issue was related to a localized shear zone in bedrock material while the tension cracks were related to the overburden materials and slope conditions.
- Left bank excavation, to allow access to the inlet and outlet portals, was completed in August 2018. On August 23, 2018 and September 20, 2018 excavations began from the inlet portal of the first and second diversion tunnels, respectively. The tunnels will be used to temporarily reroute the Peace River

in 2020 to allow work to begin on construction of the dam across the main river channel. For more information, refer to main civil works in section [1.3.6.4](#).

- On July 1, 2018, BC Hydro assumed prime contractor responsibilities for the right bank cofferdam area. BC Hydro is now accountable for coordinating the work in this area to ensure the safety of the workers. For more information, refer to section [1.3.7](#).
- On August 25, 2018, the Site C generating station and spillways contractor initiated their permanent works with the first concrete placement in the Site C powerhouse. The placement was about 340 m³ and was completed approximately three weeks ahead of schedule. In total, the contractor will place approximately 670,000 m³ of concrete before the project is complete. For more information, refer to generating station and spillways in section [1.3.6.4](#).
- In August 2018, BC Hydro completed its structured decision making process which involved consultation to inform the selection of the Cache Creek/Bear Flat realignment option (referred to as Cache Creek East). The selected realignment option is located north of the original route and is approximately 240 metres away from a potential Indigenous burial site and 370 metres from an area identified by First Nations to be of cultural importance. This option is the second shortest route of the three considered, meets provincial design and safety requirements, and includes a longer bridge at the Cache Creek crossing. On September 4, 2018, BC Hydro announced the new alignment for Highway 29 at Cache Creek East. For more information, refer to Highway 29 in section [1.3.6.4](#).
- The generating station and spillways balance of plant request for supplier qualifications and the request for proposals for the generator terminal equipment (equipment that connects the generators to the unit transformers) both received a sufficient number of good responses. Two more equipment supply contracts were posted on BC Bid over the summer period.

- The September 2018 employment statistics showed the highest workforce numbers to date on the project. These numbers will likely start trending downward towards the winter season due to the seasonal nature of construction work, Peace River Hydro Partners completing the roller-compacted concrete work for the season in November 2018, and the field season for environmental and heritage contractors winding down. For more information, refer to section [1.3.7](#).
- In the month of September 2018, two environmental incidents occurred on the Site C project. The first was related to a significant rain event that exceeded the treatment and holding capacity of the water management systems on the south bank. This resulted in the discharge, into the Peace River, of approximately four million litres of storm water that had come into contact with naturally occurring acidic rock. The second event was an issue of non-compliance, where water was pumped into a vegetated area connected to a wetland at the western end of Septimus Siding (Area 30). These incidents are detailed in section [1.3.6.4](#).
- BC Hydro donated \$70,000 to support seven Peace Region non-profit organizations through its Generate Opportunities (GO) Fund.
- A landslide occurred above Old Fort Road on September 29, 2018. The slide location is off the dam site area, approximately 1 km downstream of our Gate 'B' entrance to the dam site area. There is no evidence that the slide is related to Site C or any of the work taking place on the project. Operations at the project site have not been impacted and work is continuing as planned.

These, and other, project updates are detailed in this report. [Table 1](#) provides a dashboard based on the Project's status as at September 30, 2018.

Table 1 Project Status Dashboard

● Green: No Concerns; ● Amber: Some Concerns but in Control; ● Red: Serious Concerns

Status as of:	September 2018	
Overall Project Health	●	During the quarter, overall project health did not change from last quarter and remains amber. The project continues to remain on time and on budget, however, several critical milestones to reach river diversion are being tracked and safety continues to be an area of focus. In the month of September 2018, two environmental incidents occurred related to the care of water.
Scope	●	Scope changes have been minimal and the changes are expected to be managed within contingency.
Schedule	●	The project is on track for the overall in-service date of 2024. Achieving river diversion in September 2020 remains one of the project's most critical milestones.
Cost	●	The project budget (\$10.7 billion including Treasury Board Reserve) was approved by the board of directors in February 2018. The costs associated with the third Amending Agreement to the Main Civil Works Contract can be managed within the existing contingency budget and as a result, there is no impact to the overall project budget.
Regulatory, Permits & Tenures	●	Permits are on track and are meeting schedule requirements with 265 permits/authorizations obtained to date and an estimated 154 permits/authorizations remaining. Additionally, nine annual environmental reports, required through either federal or provincial authorizations, were finalized and distributed this quarter.
Environment	●	In the month of September 2018, two environmental incidents occurred on the Site C project. The first was related to a significant rain event that exceeded the treatment and holding capacity of the water management systems on the south bank. This resulted in the discharge, into the Peace River, of approximately four million litres of storm water that had come into contact with naturally occurring acidic rock. The second event was an issue of non-compliance, where water was pumped into a vegetated area connected to a wetland at the western end of Septimus Siding (Area 30). These two incidents resulted in no enforcement actions from the Canadian Environmental Assessment Agency, an Environmental Assessment Office order to implement measures to control runoff water and sediment transport prior to starting operations in Septimus Siding, and a review by the Water Comptroller of the discharge of approximately four million litres of partially treated storm water into the Peace River during the 55 mm rain event on September 8 and September 9, 2018. Environment Canada is also investigating the release of the storm water into the Peace River.
Procurement	●	The request for supplier qualifications for the balance of plant contract closed on August 31, 2018 and five responses were received with evaluations underway. The first of ten equipment supply request for proposals closed on September 17, 2018 and four responses were received. BC Hydro is negotiating a First Nation direct award for a portion of the Highway 29 - Cache Creek West work so that construction can begin in October.
Indigenous Relations	●	Six of ten agreements are fully executed and in implementation. BC Hydro and the Ministry of Transportation and Infrastructure continued working with Indigenous communities, and others, exploring the feasibility of three alternate route options for Cache Creek East to reduce its effects on potential Indigenous burial sites and areas of cultural importance identified by First Nations. Using a structured decision making process, informed by Indigenous input and interests, BC Hydro notified Indigenous communities and property owners of the selection of the final realignment for Cache Creek East on September 4, 2018. BC Hydro is continuing to engage with Nun wa Dee Stewardship Society to respond to concerns related to cultural and heritage resource mitigations, including concerns in the Cache Creek East area.

Status as of:	September 2018	
Litigation	●	In January 2018, two Treaty 8 First Nations (West Moberly First Nations and Prophet River First Nation) each filed treaty infringement claims, followed by an interim injunction application filed by West Moberly First Nations. These claims assert, among other things, that the Site C Project is an infringement of their rights under Treaty 8. The injunction sought to stop the Site C Project pending the trial of the treaty claim. The injunction hearing began July 23, 2018 and concluded in September 2018. A decision was issued on October 24, 2018 denying the application for an injunction.
Safety	●	Safety continues to be an area of focus this quarter. BC Hydro assumed prime contractor responsibilities for the right bank cofferdam area and is now accountable for coordinating the work in this area to ensure the safety of the workers. Since BC Hydro assumed this role, there have been no serious safety incidents in the right bank cofferdam area. During the quarter, there were seven contractor medical attention treatment injuries and one contractor lost time injury. There were two serious contractor near misses and one serious contractor injury incidents. There were no public safety incidents. For details refer to section 1.3.7 .
Stakeholder Engagement	●	BC Hydro continues to work with the communities, regional district and stakeholder groups on the implementation of various community agreements.
Quality	●	The pilot process for evaluating quality across each of the sub-projects has been implemented. On a monthly basis, the quality inputs are gathered and assessed for the engineering, manufacturing and construction activities associated with each sub-project. While there are specific activities where quality risks have been identified, they are being actively managed by BC Hydro and the responsible contractor. The overall quality rating for each of the major sub-projects (main civil works, generating station and spillway civil works, turbines and generators, and transmission), for this quarter, is good. The assessment of the quality practices across the project is nearing completion and a report is expected in November 2018.

1.2 Post Reporting Period Update

There are a number of project updates that occurred subsequent to the reporting period:

1.2.1 Injunction Application Hearing

The Supreme Court of British Columbia hearing of an injunction application filed by West Moberly First Nations was held during the periods July 23 to August 3, 2018 and September 4 to September 7, 2018. Subsequent to the reporting period, on October 24, 2018, the B.C. Supreme Court dismissed the application for an injunction that could have stopped some, or all, construction work on Site C. For more information, refer to section [1.3.4](#).

1.2.2 Highway 29

Construction of the Cache Creek West segment of Highway 29 started in early October 2018.

1.2.3 Completion of Roller-compacted Concrete Buttress for the Powerhouse

The roller-compacted concrete buttress for the Site C powerhouse was completed on October 5, 2018. This is a significant milestone on the Site C project. The final placement of roller-compacted concrete occurred ten days ahead of schedule. In total, our contractor placed 414,000 cubic metres of roller-compacted concrete. Our generating station and spillways contractor can now prepare to begin construction of the powerhouse on top of the roller-compacted concrete buttress.

1.3 Major Accomplishments, Work Completed, Key Decisions and Key Issues

1.3.1 Construction and Engineering

1.3.1.1 Construction

Refer to [Appendix F](#) for the full construction schedule.

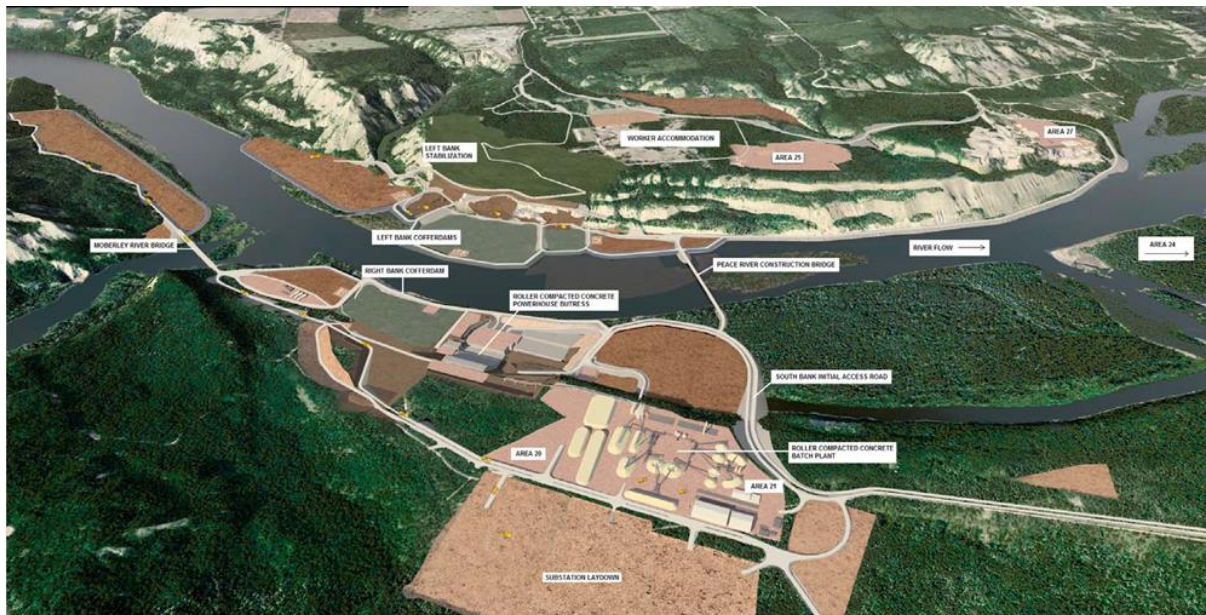
Main Civil Works

The scope of the contract includes the construction of the following major components:

- Diversion works (including two approximately 11-metre diameter concrete-lined tunnels approximately 750 m in length);
- Excavation and bank stabilization (approximately 26 million cubic metres of overburden and rock excavation);
- Relocation of surplus excavated material (including management of discharges);
- Dams and cofferdams (including a zoned earth embankment 1,050 metres long and 60 metres above the present riverbed and stage 1 and 2 cofferdams);

- Roller-compacted concrete (including a buttress approximately 800 metres long with 2 million cubic metres of concrete);
- Haul roads; and
- Inlet and outlet portals.

Figure 3 Map of Main Civil Works Area



Construction progress at site currently is split between work on the left bank and right bank.

Left Bank

Work activities on the left bank are to stabilize the slope with a mass excavation, stabilize the diversion inlet and outlet portals and excavate a set of diversion tunnels in preparation for river diversion and construction of the earthfill dam.

The activities during this period focused on diversion tunneling to enable diversion of the Peace River in 2020.

The activities currently underway or completed include:

- The till haul road is in operation to support the planned construction works;
- Left bank excavation to allow access to the inlet and outlet portals was completed in August 2018;
- Stabilization of the diversion inlet portal, which included benched excavation above the inlet portal to allow work to commence on construction of the inlet portals. On June 29, 2018, a small rock movement occurred in a localized area above and to the west of the diversion tunnel inlet portal #2. A remediation plan was implemented and the issue was resolved which allowed the excavation of both diversion tunnels to start in the quarter.
- The top heading excavation on tunnel #1 commenced on August 23, 2018 and the top heading excavation on tunnel #2 started on September 20, 2018. Diversion tunnel excavation is expected to continue through to July 2019; and
- Excavation of the outlet portal is progressing. The excavation of the outlet portal will provide access to additional tunneling fronts on the diversion tunnels and is scheduled to be completed in December 2018.

Right Bank

The right bank scope of work includes the excavation of the powerhouse, spillways and dam, and placing roller-compacted concrete for the foundations to support the powerhouse, dam and spillway structures. The current activities on the right bank include:

- Excavation of the right bank drainage tunnel to allow for spillway and dam abutment excavation. The right bank drainage tunnel excavation is targeting to be complete in January 2019;
- Excavation of the spillway apron had the first five of seven blocks completed in September 2018;

- The 2018 aggregate production in support of roller-compacted concrete placement and cast-in-place concrete placement started in March 2018 and has progressed to support all roller-compacted concrete placements;
- Placement of roller-compacted concrete for the powerhouse buttress was completed 10 days earlier than the October 15, 2018 milestone date, and five of seven blocks of the spillway apron were also completed; and
- Planning is currently underway for 2019 roller-compacted concrete placements at the spillway buttress to optimize work activities.

In-River Work

When the river is diverted in 2020, upstream and downstream cofferdams will be in place in the Peace River to provide safe access for the main dam construction. The current in-river work includes dredging in support of stage 1 cofferdams.

Earthfill Dam

Work on the earthfill dam commenced in October 2018.

Generating Station and Spillways

The generating station and spillways civil contractor started permanent work in August 2018. As of October 3, 2018, a cumulative total of 6,663 m³ of concrete was placed compared to a plan of 3,612 m³. Concrete placements are now being performed in three work areas including the powerhouse; service bay; and coupling chamber. The contractor is approximately two weeks ahead of schedule and plans to place a total of 20,000 m³ of concrete by January 1, 2019.

The fabrication of the powerhouse bridge cranes began in July 2018. This work is on schedule. The cranes will be delivered in February 2019.

The gate supplier delivered anchors for the draft tube gates to site. Anchors for the intake gates are the next deliverables due in January 2019.

Turbines and Generators

The turbines and generators contractor is on schedule for design, procurement and manufacturing of the turbines and generators. The contractor continues the assembly and welding of embedded turbine components in its temporary manufacturing facility at site on the right bank. The contractor's São Paulo factory will supply the majority of turbine generator components, and has produced all the cast steel parts for the first turbine, and are now casting components for the second turbine. Kick-off meetings for various other turbine and generator components in the São Paulo factory have been held concurrently with visits to three of the contractor's subcontractors for supply of insulating materials, rough machining and stator lamination punchings. Based on the current powerhouse construction schedule, the contractor will commence turbine installation in the powerhouse by summer 2020. There are no known concerns in meeting this schedule. Current areas of focus include ensuring quality of the manufactured components and that contract specifications are met.

BC Hydro visited the contractor's São Paulo facility in May 2018 for contract progress review, subcontractor evaluation and quality inspections. Additional inspections and testing are planned as the work progresses to ensure contract specifications are met, and during September 2018 BC Hydro's local inspector commenced full time work in the São Paulo factory. Active communication with the contractor and resolving issues early in the manufacturing process are part of the strategy to ensure quality.

Effective October 1, 2018, the contractor reorganized their worldwide hydro operations, and combined the Canada and USA boards of management. The new North American board is headquartered in York, Pennsylvania. This change in board structure should not affect progress or quality of the turbines and generators work at Site C.

Transmission and Substation

The transmission sub-project is on schedule and on budget. Clearing of the transmission line right of way is planned to resume in December 2018.

Substation construction is in progress, including site preparation, foundation construction, grounding grid installation and installation of high voltage electrical equipment. The transformer assembly contract milestone was achieved a few days ahead of schedule. The control building supplier has substantially completed the supply and erection of the control building, with fit-out now in progress by the substation contractor.

The construction of access roads on the transmission line right-of-way is in progress but behind schedule, and has caused BC Hydro to miss a contractual hand-over of the roads to the transmission line contractor. Impacts of the missed hand-over are being mitigated by prioritizing the work and ensuring access to critical work areas.

The transmission line construction contractor completed the development of a marshalling yard near Moberly Lake and has received all of the 2018 overhead conductor deliveries and five of the eight lattice tower deliveries. Assembly of tower components has begun at several structure sites, to facilitate tower erection later in the year. Investigative works, including helical pile testing and geotechnical testing, are in progress.

The expansion of the Peace Canyon outdoor switchyard is in progress, including site preparation, foundation construction and steel erection. The factory acceptance testing of the gas-insulated switchgear was completed successfully in September 2018, and the gas-insulated switchgear is being prepared for shipping to Canada.

In the next quarter, substation construction will continue, including completion of the 2018 civil works, installation of the AC/DC station service system, and installation of the telecommunications equipment. The line contractor will begin installation of helical pile foundations, and will assemble and erect transmission structures. Transmission line construction access roads will be completed by the First Nations contractor. Expansion of the Peace Canyon outdoor switchyard will continue, with civil work being completed in 2018.

Highway 29

The creation of the Site C reservoir requires realignment of segments of Highway 29. In order for the highway to remain accessible once the reservoir is created and the dam is operating, the permanent realignment must be completed by spring 2023.

BC Hydro and the Ministry of Transportation and Infrastructure continued working with Indigenous communities and others, exploring the feasibility of three alternate route options for Cache Creek East to reduce its effects on potential Indigenous burial sites and areas of cultural importance identified by First Nations. All investigations for this segment of the Cache Creek realignment were completed through the summer of 2018, including geotechnical investigations and drilling.

In August 2018, BC Hydro completed its structured decision making process for the selection of the realignment option. The selected realignment option, which was developed through consultation, is located north of the original route and is approximately 240 metres away from a potential burial site and 370 metres from an area identified by First Nations to be of cultural importance. This option is the second shortest route of the three considered, meets provincial design and safety requirements, and includes a longer bridge at the Cache Creek crossing. On September 4, 2018, BC Hydro announced the new alignment for Highway 29 at Cache Creek East.

The majority of geotechnical investigations were completed for Halfway River and western segments of Highway 29 during the summer of 2018.

As part of the development of the Portage Mountain Quarry, BC Hydro completed trial blasts in summer 2018 to assess the production yields and quality of rock. The final assessment and report will be ready in November 2018. This quarry is planned to be developed to supply rip rap materials for certain sections of Highway 29 realignment and to construct a river shoreline protection berm for the District of Hudson's Hope.

In the next quarter, construction activities for the western four kilometres of the highway realignment at Cache Creek West are planned to start in early October 2018. Design of all remaining sections will continue and the property acquisition process will begin for Cache Creek East realignment.

A temporary detour option for Cache Creek East will be implemented to address potential road flooding of this section when the river diversion takes place in 2020. The Highway 29 realignment must be completed prior to inundation in 2023.

Reservoir Clearing

Clearing of the lower reservoir was substantially complete in 2017 minus 12.9 hectares of trees not previously cleared due to environmental constraints. Clearing of remaining trees and clean-up of wood waste in this area was re-initiated in September 2018 and work will continue through the fall.

Contract packages for clearing and access were assembled and released to identified First Nations contractors in the Moberly River drainage and eastern reservoir areas. Existing road upgrades are planned in these areas during the fall and winter in preparation of accessing clearing areas in the same time frame. Additional contract packages for clearing and access in the Cache Creek drainage and middle reservoir areas will be compiled and released later in fall 2018. Clearing in the areas included in these contract packages are required to be completed by spring 2020 and prior to river diversion.

Inventory collection of the middle and western reservoir areas progressed and will continue into the fall 2018. This work will be used to develop the clearing and access plans for these areas which will be used to help support submissions for regulatory approvals.

Properties negotiated and obtained access permissions within and in proximity to the eastern reservoir for clearing purposes from fall 2018 through to fall 2019 and winter 2019. Property negotiations continue in other areas of the reservoir.

All clearing is scheduled for completion by spring 2023 prior to reservoir inundation.

Quality Management

Implementation and monitoring of Quality Control and Quality Assurance Plans are required of all contractors. [Table 2](#) below identifies quality management non-conformity instances during the quarter ending September 30, 2018.

**Table 2 Quality Management Non-Conformity
 Report Metrics**

Contract	Reported this Period	Closed this Period	Reported to Date	Closed to Date	Open as at September 30, 2018
Main Civil Works	107	196	1,037	947	90
Turbines and Generators	1	5	24	20	4
Generating Station and Spillways Civil Works	15	3	15	3	12
Large Cranes	3	3	3	3	0
Transmission	9	7	47	42	5

Within the main civil works contract, the top three disciplines with the most non-conformities reported to date are earthworks (375), quality (177) and tunnel (157). Outstanding non-conformities are being resolved and reviewed weekly through face-to-face meetings with management from BC Hydro and the contractor.

The four turbines and generators non-conformities that remain open as at September 30, 2018 relate to equipment being manufactured at the on-site shop and runner casting. BC Hydro has accepted the corrective actions proposed by the contractor and the non-conformities will be closed before the associated equipment is released.

The 15 non-conformities reported in this period for the generating station and spillways civil works contract are minor in nature, and are related to the contractor ramping up its concrete batching and placement activities for the generating station. Corrective actions and verification to close-out have been reviewed and accepted by BC Hydro. For the 12 open non-conformities, the contractor is preparing its plans for remedial action and will be submitting to BC Hydro.

The nine non-conformities reported in this period for the transmission contracts were minor in nature; corrective actions and verification to close-out were reviewed by BC Hydro. For the five open non-conformities, contractors are implementing corrective action plans that were reviewed by BC Hydro. There have been more surveillance audits by BC Hydro and effective preventative action plans by contractors to minimize non-conformities.

1.3.1.2 Engineering

Design alternates were completed for the outlet portal and construction of the roller-compacted concrete in order to support the construction schedule. The few remaining main civil works construction drawings are being released in accordance with project schedule requirements. Several batches of drawings were released for the generating station and spillways between July and September 2018 and the contract was also updated during this period with a revised schedule for the release of remaining construction drawings based on the contractor's most recent schedule and requirements.

Construction support is underway for the large cranes, hydromechanical equipment, and the generating station and spillways contracts, with a focus on supporting the concrete placements for the generating station and spillways contract. Model testing was completed for the lower level spillway gates during the quarter.

The specifications and modelling for the balance of plant contract are progressing. The request for supplier qualifications for the balance of plant contract closed and five responses were received. Evaluations are underway. The equipment supply specifications combined are 70 per cent complete. Five of the nine equipment supply contracts have been posted to BC Bid. Design continues to be advanced on the protection and control systems and is on schedule. Implementation design is at 100 per cent level for the 500 kV lines and the right bank substation. Peace Canyon gas insulated switchgear design is in progress and is nearing the 100 per cent level. Planning for Highway 29 final design has been updated to meet project schedule

requirements. Phase one of the geotechnical field investigations was completed in September 2018. Contract negotiations commenced for Cache Creek West construction. The preferred alignment for Cache Creek East was selected in consultation with First Nations and stakeholders.

The Technical Advisory Board completed a site visit in August 2018 and several conference calls were completed in August and September 2018 to discuss some final details on the spillway construction drawings. Technical Advisory Board meeting #19 was held from October 9 to 12, 2018.

1.3.2 Safety

Safety continues to be an area of focus. On July 1, 2018, BC Hydro assumed prime contractor responsibilities for the right bank cofferdam area. BC Hydro is now accountable for coordinating the work in this area to ensure the safety of the workers. With the arrival of Aecon-Flatiron-Dragados-EBC Partnership, the generating station and spillways civil contractor, to site earlier this year, BC Hydro recognized there may be safety risks having two major contractors working in such close proximity to each other. By taking this on, BC Hydro will focus on ensuring the work is progressed safely and in accordance with the schedule. In addition, BC Hydro included staffing the area with site safety coordinators and occupational safety and health specialists, as well as establishing the systems to coordinate work and minimize safety risks. Since BC Hydro's assumed this role, there have been no serious safety incidents in the right bank cofferdam area.

For the overall project during the quarter, there were seven contractor medical attention treatment injuries and one contractor lost time injury. There were two serious contractor near misses and one serious contractor injury in this reporting period. There were no public safety incidents.

Regulatory Inspections and Orders

The project received seven safety regulatory inspections from WorkSafeBC and one from the Ministry of Energy, Mines and Petroleum Resources during the period. One of the eight inspections resulted in no safety regulatory orders. A total of 15 orders were associated with the remaining inspections – eight orders from WorkSafeBC and seven orders from the Ministry of Energy, Mines and Petroleum Resources. [Table 3](#) and [Table 4](#) below show the details of the safety regulatory inspections that occurred during the quarter ending September 30, 2018.

Table 3 WorkSafeBC Inspections and Orders

Risk Level	Theme	Inspection reports and orders received	Date of Inspection
Inspection #1: WorkSafeBC attended site in response to a reported failure of shotcrete support structure in bench -9 left bank inlet portal. The incident is under investigation by WorkSafeBC.			
Low	Workplace Inspection	Order #1: The contractor did not initiate a special inspection when bench -9 shotcrete wall support structure failed in the left bank inlet portal.	July 2018
Inspection #2: This inspection is part of WorkSafeBC's 2018 Construction High Risk Strategy Initiative which includes supervision, struck by, struck against and using the right tool for the job. The goal of this initiative is to increase the awareness of the health and safety responsibilities.			
Low	Equipment Inspection	Order #1: Start of shift inspection The operator failed to report defects and conditions affecting the safe operation of the equipment to the supervisor or contractor. The computer display screen which indicates slope for the Bell RNN710 rock truck was malfunctioning. The malfunction of the rock truck was not documented or reported prior to use of the equipment.	July 2018
Low	Equipment Inspection	Order #2: Manuals and information The contractor failed to ensure the operation manual was available on location for the Bell RNN710 rock truck.	
Inspection #3: This inspection was conducted at the Fire Hall building and river access location on the right bank. The general rescue practices implemented by this prime on site were discussed.			

Risk Level	Theme	Inspection reports and orders received	Date of Inspection
Low	Emergency Preparedness	Order #1: The contractor failed to conduct a risk assessment in a workplace in which a need to rescue workers from water may arise and utilizing the river boat.	July 2018
Inspection #4: The inspection was conducted due to a reported failure in the batch plants areas: <ul style="list-style-type: none"> • Roller-compacted concrete batch plant refrigeration facility • Conventional vibrated concrete batch plant refrigeration facility 			
High	Equipment Inspection	Order #1: The contractor failed to ensure and investigate the sight glass of the roller-compacted concrete batch plant refrigeration facility had led to an unplanned release of R-404A refrigerant. The contractor was advised to have a qualified person/contractor to inspect the roller-compacted concrete refrigeration facility to determine the cause of the failure, determine if the design of the facility meets local requirements and provide solutions to resolve any deficiencies.	August 2018
Low	Equipment Inspection	Order #2: The contractor failed to ensure and investigate the malfunction of the refrigerant pump in the conventional vibrated concrete batch plant refrigeration facility had led to an unplanned release of R-404A refrigerant. The contractor was advised to have a qualified person/contractor to inspect the conventional vibrated concrete refrigeration facility to determine the cause of the failure, determine if the design of the facility meets local requirements and provide solutions to resolve any deficiencies.	
Inspection #5: During a general site tour the inspector observed a partially uprooted tree leaning with 1.5 tree lengths of the roadway on the Septimus Road – Area 28.			
High	Risk Management	Order #1: The contractor failed to ensure any dangerous trees, loose rocks, stumps or other unstable materials that are hazardous to road users must be removed or cleared for a safe distance back from roadsides or roadside banks.	August 2018
Inspection #6: The contractor had requested two workers from another employer to be present to map the rock wall in close proximity to a rock drilling and rock scaling with air lance in the left bank diversion tunnel. The two activities were generating visible dust that is known to contain crystalline silica. The rock drill was using an ineffective dust collection system and was not using the water suppression system at the time of observation and the two mapping workers were not using respiratory protection.			
High	Hazardous Materials Exposure Control	Order #1: The contractor failed to ensure that effective dust control is in place and that all workers present are following proper procedures.	September 2018

Risk Level	Theme	Inspection reports and orders received	Date of Inspection
<p>Inspection #7: The inspection was conducted on September 12, 2018 in the gravel crushing operations and a discussion occurred between the contractor and WorkSafeBC inspectors to review any area accessible to workers had to be guarded to meet either CSA Z432-94 and ASME B20.1-1993. The contractor was cautioned that the plastic guarding in place may not be sufficient to contain failures and materials being ejected from the equipment.</p> <p>Due to the temperatures and equipment selection, WorkSafeBC advised the contractor that the crusher and associated equipment require having proper mechanical ventilation, designed to good engineering principles. A suggested standard is "Industrial Ventilation - A manual of Recommended Practice". The contractor also provided with local exhaust ventilation guidance.</p> <p>WorkSafeBC advised the contractor that guarding and ventilation must be in place in order for the equipment to run.</p>			
Low	Hazardous Materials Exposure Control	No orders were issued.	September 2018

Table 4 Ministry of Energy, Mines and Petroleum Resources

Risk Level	Theme	Inspection reports and orders received	Date of Inspection
<p>Inspection #1: An inspection was conducted at the West Pine Quarry's fuel island, crusher plant, pit operation and haul roads:</p>			
Low	Equipment Inspection	Order #1: The contractor failed to ensure the fuel island delivery hose for fueling equipment was equipped with a self-sealing break-away fitting to prevent a spill in the event the hose was inadvertently pulled apart.	July 2018
High	Log Out Tag Out	Order #2: The contractor failed to ensure the worker locked-out and tagged out before working on the haul truck. However, the worker did have the key out of the equipment.	
Low	Equipment Inspection	Order #3: The contractor failed to ensure that all accessible sections of the crusher's conveyor belt be provided with a pull cord to stop the conveyor in an emergency and the controls shall be rearranged so the workers will have to manually reset the equipment before restarting the conveyor.	
Low	Equipment Inspection	Order #4: The contractor failed to ensure the v-belts that operates the cooling fan on the generator is enclosed, covered or guarded.	

Risk Level	Theme	Inspection reports and orders received	Date of Inspection
Low	Emergency Preparedness	Order #5: The contractor failed to ensure that all emergency exits are clearly marked and designed to provide a quick unobstructed exit in the power van.	
Low	Equipment Inspection	Order #6: The contractor failed to ensure all shoulder barriers are at least $\frac{3}{4}$ of the height of the largest tire on any vehicle hauling on the road.	
Low	Equipment Inspection	Order #7: The contractor failed to ensure all haul trucks on the mine site are being operated with their certified gross vehicle weight rating or manufacture's maximum permissible gross vehicle weight. In addition, the contractor failed to ensure that the installed side boards on the haulage trucks, which increases the volume of the material that could be hauled, have appropriate approved written procedure or the Chief Inspector's approval.	

[Table 5](#) below identifies the project safety metrics during the quarter ending September 30, 2018.

Table 5 Safety Metrics

	Reported this Period (July 1, 2018 to September 30, 2018) ¹	Reported since Inception (July 27, 2015) ²
Fatality ²	0	0
Serious Injury ² (permanently disabling)	0	1
Lost Time Injury	1	16
Lost Time Injury Frequency (number of injuries resulting in lost time per 200,000 hours worked) ³	0.11	0.27
Severity Rate (number of calendar days lost due to injury per 200,000 hours worked) ³	34.50	14.92
Contractor near miss incidents	170	883
Employee near miss incidents	22	102
Public near miss incidents	0	6
Equipment/property damage reports ⁴	41	403
WorkSafeBC orders	8	101

A near miss incident is an unplanned loss of control event that could have resulted in an injury but did not because of effective barriers or the person was missed/out of harm's way. Contractors and employees are encouraged to report near misses to gain an opportunity to prevent future incidents. Generally, BC Hydro considers increased near miss reporting as positive and indicative of a stronger or improving safety culture.

¹ Numbers are subject to change due to timing of when data is retrieved and when injury is categorized.

² Excludes health events unrelated to work standards.

³ BC Hydro is now capturing safety metrics data each week from our two prime contractors which includes hours worked. Submissions have improved during the reporting period, resulting in improvements in the timeliness and accuracy of the safety metrics.

⁴ Types of equipment and property damage include vehicle damage, motor vehicle accidents, minor electrical fire damage, etc. Equipment damage data is collected through contractor monthly reports not the BC Hydro Incident Management System.

1.3.3 Aboriginal Consultation

Pursuant to the Environmental Assessment Certificate and Federal Decision Statement, BC Hydro is required to consult with 13 Indigenous groups with respect to the construction stage of the Project. This consultation includes provision of information on construction activities, support for the permit review process, and review and implementation of mitigation, monitoring and management plans, and permit conditions.

Accommodation offers were originally extended to ten Indigenous groups. Six agreements have been fully executed and are in various stages of implementation. One agreement is in legal drafting. To date, Impact Benefits Agreements with Doig River First Nation, Halfway River First Nation, Saulneau First Nation and McLeod Lake Indian Band, and a Project Agreement with Dene Tha' First Nation have been publicly announced.

1.3.4 Litigation

The details of the various proceedings and hearings with decisions pending are summarized in [Table 6](#) below. The hearing of the interim injunction application filed by the West Moberly First Nations seeking to stop the construction of Site C pending hearing of their treaty infringement claim commenced on July 23, 2018 and after ten days of argument was adjourned by the B.C. Supreme Court. The hearing resumed on September 4, 2018 and concluded on September 7, 2018. The B.C. Supreme Court issued a ruling denying the application for an injunction on October 24, 2018.

**Table 6 Summary of Proceedings with Hearings or
 Decisions Pending**

Description		Date
B.C. Supreme Court: Treaty Infringement Claims		
West Moberly First Nations Prophet River First Nation	Notice of Claims filed Trial date	January 15, 2018 To be determined
West Moberly First Nations	Injunction application filed Hearing date	January 31, 2018 Fourteen days of argument took place during the periods July 23 to August 3, 2018 and September 4 to September 7, 2018. A decision denying the application for an injunction was issued on October 24, 2018.
B.C. Court of Appeal:		
Prophet River First Nation West Moberly First Nations	Appeal filed Hearing date	November 30, 2016 May 31, 2018 Appeal abandoned (due to inactivity)
Environmental Appeal Board		
C. London	Hearing date	Written hearing of the matter concluded in October 2018. Awaiting the decision of the Environmental Appeal Board.
Other Proceedings		
Building Trades v. BC Hydro	Civil claim filed Response to claim filed	March 2, 2015 April 10, 2015

1.3.5 Permits and Government Agency Approvals

1.3.5.1 Background

In addition to the Environmental Assessment Certificate, the Water License and the Federal Decision Statement, provincial permits and federal authorizations are required to construct the Project. Timing of the application for these permits and authorizations is staged and aligned with the construction schedule, availability of detailed design information, and by project component. Approximately 419 permits will be required throughout the life of the project. Prior to the reporting period, 250 permits had been received and are being actively managed. During the reporting period, 15 new permits were received in accordance with the schedule. BC Hydro has developed a coordinated First Nations consultation process with the Ministry of Forest, Lands, Natural Resource Operations and Rural Development to assist with the government permit workload. This coordinated consultation process was implemented in January 2018.

1.3.5.2 Federal Authorizations

Federal authorizations are required under the *Fisheries Act* (Fisheries and Oceans Canada) and the *Navigation Protection Act* (Transport Canada). All major federal authorizations for construction and operation of the Site C dam and reservoir were received in July 2016. At this time, no further *Fisheries Act* authorizations are anticipated. Additional *Navigation Protection Act* approvals for discrete works in the reservoir (e.g., shoreline works, debris booms and Highway 29 bridges) are anticipated to be issued at the regional level.

On May 4, 2018, BC Hydro submitted an application to amend the *Navigation Protection Act* approval for the main civil works due to changes to the design of the spillway. Transport Canada is currently reviewing this application.

1.3.5.3 Provincial Permits

The plan for obtaining Site C provincial permits involves a phased approach to the submission of applications to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development based on project components and the construction schedule.

Provincial permits are required primarily under the *Land Act*, *Water Sustainability Act*, *Forest Act*, *Heritage Conservation Act*, and *Mines Act*. The majority of the permits are administered by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development and the Ministry of Energy, Mines and Petroleum Resources.

Approximately 367 provincial permits and approvals will be required throughout the life of the project. As of this reporting period, 226 permits have been obtained with another 20 permit submissions pending approval.

1.3.5.4 Environmental Assessment Certificate

On July 24, 2018, BC Hydro submitted two requests to amend Environmental Assessment Certificate #14-02. The first request is related to the design of the Halfway River Bridge within the Halfway River Highway 29 realignment, one of the segments of Highway 29 that must be realigned due to flooding of the Site C reservoir (the other segments are Lynx Creek, Dry Creek, Farrell Creek, Farrell Creek East, and Cache Creek). The second request pertains to BC Hydro's proposal to use West Pine Quarry, in addition to the already approved Portage Mountain Quarry, as a source of quarry and excavated material for the construction of the Highway 29 realignment, Hudson's Hope shoreline protection, and areas along the reservoir requiring protection during reservoir filling.

Both amendment requests are currently under review by the Environmental Assessment Office.

As with any large construction project, refinements to the design are expected. There are no material impacts to the cost of the project as a result of the proposed amendment requests.

1.3.5.5 Permitting Improvement

In order to efficiently and effectively manage the large volume of permits required for the project, BC Hydro continues to engage with regulators, Indigenous groups and contractors to share information, seek feedback, and identify process improvements. Process improvements implemented include the following:

- BC Hydro continues to facilitate meetings with the Regional Office of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development, the Comptroller of Water Rights and contractors to ensure permit applications are coordinated, timely and sufficient;
- Regular permitting forums are being held with Indigenous groups to share information on upcoming permit applications and to seek feedback before applications are submitted to regulators; and
- BC Hydro has implemented a coordinated First Nations consultation process with the Ministry of Forest, Lands, Natural Resource Operations and Rural Development to assist with the government permit workload.

1.3.6 Environment

1.3.6.1 Mitigation, Monitoring and Management Plans

The Environmental Assessment Certificate and Federal Decision Statement conditions require the development of draft and final environmental management, mitigation and monitoring plans, as well as the submission of annual reports on some of these plans.

Focus remains on minimizing sediment and erosion across the dam site, care of water, hydrocarbon management, invasive weed control and finding a solution to the

pH and metal limits required by the Water Comptroller as the background conditions throughout the site make compliance challenging.

On the left bank, L3, which is the main channel through the dam site, is nearing completion of construction with substantial sediment control features constructed. Additionally, large portions of the left bank have been revegetated and are less susceptible to erosion as a result.

On the right bank, the site is managing the impacts of exposed, naturally occurring potentially acid generating rock with installation of a temporary care--of--water system. An on-site mobile water treatment plant was added to the system in July 2018 to augment the collections and retention system by treating water for high metal content and low pH prior to discharge into the Peace River. The system is comprised of ditches, pumps, holding ponds, sediment ponds and the treatment plant, as well as other treatment options.

1.3.6.2 Environmental Compliance Inspections and Enforcement

Inspectors from the B.C. Environmental Assessment Office, the Water Comptroller and the Canadian Environmental Assessment Agency performed approximately 75 hours of inspection between July and September 2018. This resulted in no enforcement actions from the Canadian Environmental Assessment Agency, one Environmental Assessment Office order to implement measures to control runoff water and sediment transport prior to starting operations in Septimus Siding, and a review by the Water Comptroller of the discharge of approximately four million litres of partially treated storm water into the Peace River during a 55 mm rain event on September 8 and September 9, 2018. Environment Canada is also investigating the incident related to the discharge of storm water into the Peace River.

The discharge was a relatively small volume of approximately 34 litres per second over a 26-hour period into a flow of approximately 1,200,000 litres per second. As such, the water was immediately diluted with no harmful effects observed. The

Environmental Assessment Office order has been rectified and BC Hydro, along with its main civil contractor, is in the process of determining what further actions may be possible to prevent a similar storm water discharge event in the future. Removal of the acidic rock has begun and pumping capacity has been increased.

BC Hydro has performed more than 24,100 inspections with a compliant or partial compliant result of 94 per cent across all contractors and works areas.

During the quarter, the independent environmental monitor continued weekly inspections with a focus on hydrocarbon management, waste disposal, erosion and sediment control, dust management and wildlife management. Overall, the weekly inspections indicated general environmental compliance across the dam site. Improvement has been noted relating to observations for excessive greasing of equipment and hydrocarbon spills, as well as gas cylinder storage issues.

1.3.6.3 Heritage

In accordance with a number of Environmental Assessment Certificate and Federal Decision Statement conditions, the Site C Heritage Resources Management Plan addresses the measures that will be used to mitigate the adverse effects of the Project on heritage resources.

The 2018 heritage field program is focused on field work to meet regulatory requirements for pre-construction archaeological impact assessments (in areas not accessible until now), and systematic data recovery at selected archaeological sites. This year's field season was initiated in mid-May 2018 with up to 60 archaeologists and First Nations representatives active on site and submitted 21 archaeological interim reports to the BC Archaeology Branch and Indigenous Groups per *Heritage Conservation Act* permit terms and conditions. During this quarter, heritage reviews of contract documents, contractor environmental plans and construction readiness plans were performed to ensure compliance. Two *Heritage Conservation Act* permit

amendments were received and two heritage chance finds were reported in this quarter.

1.3.6.4 Agriculture Mitigation and Compensation Plan – Framework

As part of the Site C Agricultural Mitigation and Compensation Plan, BC Hydro has established a \$20 million fund to support agricultural production and related economic activity in the Peace Region. The fund is governed by a regional decision-making board made up of representatives from five regional agricultural organizations, the Peace River Regional District, three agricultural producer members-at-large and one Peace River Valley agricultural producer. Northern Development Initiative Trust was selected as the fund administrator in a public request for proposals process with a contract concluded on August 8, 2018. The board and fund administrator have been working to develop a financial management plan for the \$20 million fund. The money will be transferred into the BC Hydro Peace Agricultural Compensation Fund once BC Hydro approves the financial management plan prepared by the fund administrator and receives feedback from the board.

1.3.7 Labour, Employment and Training and Building Capacity Initiatives

Labour

To date, unions that have participated in the construction of Site C include: Construction Maintenance and Allied Workers (**CMAW**), the Christian Labour Association of Canada (**CLAC**) Local 68, Canada West Construction Union (**CWU**), Pile Drivers 2402, the Construction and Specialized workers Union (**CSWU**), Local 1611, the International Union of Operating Engineers (**IUOE**) Local 115, and the Ironworkers Local 97, the International Brotherhood of Electrical Workers (**IBEW**), MoveUP and the Teamsters Local 213.

In addition, ten unions affiliated with the BC Building Trades will be working on the installation of the turbines and generators. The International Brotherhood of

Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers (**Boilermakers Union**) members are working on this contract as of September 2017.

The Aecon-Flatiron-Dragados-EBC Partnership (the contractor for the Site C generating station and spillways) has signed a labour agreement for the generating station and spillways civil works with the IUOE Local 115, the CSWU Local 1611 and CMAW.

F&M Installations Ltd. has negotiated labour agreements with the IBEW for the electrical work on the Site C substation, and their civil subcontractor, Jim Dent Construction, has been certified to the CMAW.

Employment

Contractors submit monthly workforce data electronically to BC Hydro. [Table 7](#) shows a snapshot of the total number of construction contractors, non-construction contractors, engineers, and project team workers for this quarter by month.

Table 7 Site C Jobs Snapshot

Month	Number of B.C. Workers ⁵	Number of Total Workers ⁵	Percentage of B.C. Workers (%)
July 2018	2,623	3,301	79
August 2018	2,856	3,561	80
September 2018	2,974	3,746	79

The September 2018 total workforce number is the highest workforce number to date on the project. Seventy nine per cent of the workforce is from British Columbia and 24 per cent are residents of the Peace River Regional District. The onsite contractor number also includes 15 per cent women and a project high of 145 workers working for various contractors as apprentice carpenters, welders, electricians, millwrights, ironworkers, mechanics, boilermakers, labourers and heavy equipment operators.

⁵ Employment numbers provided by Site C contractors and consultants are subject to revision. Data not received by project deadline may not be included in the above numbers. Employment numbers are direct only and do not capture indirect or induced employment.

Refer to [Appendix E](#) for additional workforce information. The number of workers continues to vary as the construction work progresses.

Training and Capacity Building Initiatives

In September 2017, the Contractors Labour Committee agreed to establish an Indigenous labour subcommittee. The purpose of the subcommittee is to support Indigenous training, labour and employment on Site C through communication, consultation, coordination and cooperation among contractors on the Project.

All major Site C construction contractors are invited to participate in this subcommittee. Currently, the following contractors participate in this subcommittee: Aecon-Flatiron-Dragados-EBC Partnership, Saulteau Safety and Security, Peace River Hydro Partners, ATCO Two Rivers Lodging Group, F&M Installations, and Voith Hydro. The subcommittee meets quarterly, or on an as-needed basis.

The subcommittee has developed a number of initiatives, such as:

- established a protocol for distribution of Indigenous candidate resumes;
- developed and implemented the Indigenous Employment and Informational Day;
- reviewed and assisted contractors in contract reporting requirements;
- discussed communication of site-wide policies;
- shared regional cultural events with project contractors;
- shared BC Hydro's Indigenous Employment and Business Development employment and training initiatives;
- reviewed contractors' best practices;
- shared success stories to assist in generating opportunities; and
- reviewed project status and upcoming labour requirements for contractors and how to meet labour demands.

BC Hydro has included apprentice targets in the generating station and spillways civil works contract, the transmission lines and the substation contracts, and BC Hydro procured Highway 29 work. The Aecon-Flatiron-Dragados-EBC Partnership has also committed to providing opportunities for apprentices.

In August 2013, Northern Lights College started distributing the BC Hydro Trades and Skilled Training Bursary Awards. As of August 2018, 241 students had received bursaries, including 100 Indigenous students who have benefitted from the bursary in programs such as electrical, welding, millwright, cooking, social work, and many others.

BC Hydro continues to work with local employment agencies to ensure that as job opportunities become available, they are posted on the WorkBC website as well as on the Fort St. John Employment Connections website. In August 2018, Site C contractors reported 748 workers on site from the Peace River Regional District. This is a total of 24 per cent of the construction and non-construction contractor's workforce.

Both major contractors on site, Peace River Hydro Partners and Aecon-Flatiron-Dragados-EBC Partnership, are exploring opportunities for electrical and carpentry apprentice training on site. Specifically, as the project ramps up, Aecon-Flatiron-Dragados-EBC Partnership will be developing initiatives for both on and off site pre-apprenticeship programs. Peace River Hydro Partners has reported apprentices in the heavy equipment operator and labourer trades through a new training program in partnership with CLAC and the Industry Training Authority.

1.3.8 Community Engagement and Communication

1.3.8.1 Local Government Liaison

The Regional Community Liaison Committee, which is comprised of local elected officials and local Indigenous groups, met on September 19, 2018 for a tour of the dam site. The next meeting is scheduled for November 28, 2018. A total of

11 communities have participated as committee members, including eight local governments and four local Indigenous groups (McLeod Lake Indian Band, Doig River First Nations, Saulteau First Nations and Blueberry River First Nations) as well as the two MLAs for Peace River North and Peace River South. Representatives from the Ministry of Transportation and Infrastructure and the Project's major contractors, including Peace River Hydro Partners, Aecon-Flatiron-Dragados-EBC Partnership, Voith Hydro and ATCO Two Rivers Lodging Group, also regularly attend the meetings as invited guests.

The Hudson's Hope Community Engagement Committee met on October 2, 2018.

1.3.8.2 Business Liaison and Outreach

BC Hydro continued to implement its business construction liaison and outreach by attending local chamber of commerce meetings in Fort St. John and Chetwynd. During this reporting period, the project team sent out three notifications to the Site C business directory.

1.3.8.3 Community Relations and Construction Communications

BC Hydro continued to implement its construction communications program during this reporting period. The program includes updating and maintaining the project website www.sitecproject.com with current information and photos of construction and providing information to local and regional stakeholders as required.

Construction Bulletins

Bi-weekly construction bulletins were issued throughout this reporting period. These bulletins are posted on the project website and sent by email to the web-subscriber list.

Public Enquiries

In total, BC Hydro received 525 public enquiries between July 1, 2018 and September 30, 2018, compared to 504 in the previous quarter. The majority of these

enquiries continued to be about business and job opportunities, with limited construction impact concerns from local residents. [Table 8](#) shows the breakdown of some of the most common enquiry types.

In total, BC Hydro has received 8,602 enquiries since August 2015.

Table 8 Public Enquiries Breakdown

Enquiry Type ⁶	July 2018	August 2018	September 2018
Job Opportunities	113	141	109
Business Opportunities	43	20	27
General Information	13	5	4
Construction Impacts ⁷	2	2	1
Other ⁸	8	23	14
Total	179	191	155

1.3.8.4 *Communications Activities*

Based on a search using the media database Infomart, there were 186 stories in B.C. news media between July 2018 and September 2018 on the Site C Project, compared to 205 stories in the previous quarter.

1.3.8.5 *Housing Plan and Housing Monitoring and Follow-Up Program*

BC Hydro and BC Housing signed a Contribution Agreement on July 19, 2016 related to the development, construction and operation of a building in Fort St. John comprised of 50 residential rental units. This agreement is the outcome of detailed discussions between the two partners to find the most appropriate approach to meeting the Project’s environmental assessment conditions and the housing terms of the Community Measures Agreement with the City of Fort St. John. The agreement structured the financial contribution from BC Hydro to enable viable financial

⁶ This table is a sample of enquiry types and does not include all enquiry types received.

⁷ The nature of the construction impact inquiries is primarily air quality, noise and traffic conditions.

⁸ “Other” accounts for enquiries related to a variety of other topics, such recreation access near construction sites, property owner correspondence, or requests for site tours.

operation of the affordable housing units in the near-term and viable financial operation of all 50 units of affordable housing in the longer term.

The housing project is under construction by Western Canadian Properties Group with interior finishing underway. Construction is on track for substantial completion by December 2018 with occupancy in February 2019. BC Hydro is working with BC Housing on a head lease for the units in the building that BC Hydro wishes to rent.

1.3.8.6 *Labour and Training Plan*

In accordance with Environmental Assessment Certificate Condition 53, a Labour and Training Plan was developed and submitted to the Environmental Assessment Office on June 5, 2015.

This plan, as well as Environmental Assessment Certificate Condition 45, includes reporting requirements to support educational institutions in planning their training programs to support potential workers in obtaining Project jobs in the future. This report was issued to the appropriate training institutions in the northeast region of B.C. in July 2016, July 2017 and July 2018. The next report will be issued in July 2019.

This plan and Environmental Assessment Certificate Condition 45 also require the establishment of a daycare. This measure is being implemented through a contribution agreement with School District 60 in the North Peace. The daycare opened on August 1, 2018 as part of a new school in Fort St. John. School District 60 selected the YMCA of Northern B.C. as daycare operator.

1.3.8.7 Health Care Services Plan and Emergency Service Plan

The Project health clinic is contracted by BC Hydro with Halfway River International SOS Medical Ltd., a partnership between Halfway River First Nations and International SOS. The clinic continues to operate in its permanent location within the Two Rivers Lodge, and based on camp occupancy was staffed 24/7 during this period with a nurse practitioner and advanced care paramedics. BC Hydro and the clinic operator continue to liaise with the local health care community.

The clinic provides workers with access to primary and preventative health care and work-related injury evaluation and treatment services and is currently open seven days a week, 24 hours a day. Since opening the Project health clinic, there have been a total of 7,104 patient interactions. During the reporting period, there were 1,106 patient interactions, of which 307 were occupational and 799 non-occupational. Several preventive health themes were promoted to workers including: insect stings and bites, overdose awareness and physical activity.

1.3.8.8 Property Acquisitions

During this quarter, BC Hydro continued to access private properties to inform design and mitigation options for the Site C Project. BC Hydro also finalized consultation with private property owners, which informed the structured decision making process impacting their properties in Cache Creek/Bear Flat (Cache Creek East).

In the next quarter, BC Hydro will review the design and commence negotiations with private property owners about acquiring property rights for the Hudson's Hope shoreline protection project. BC Hydro will also access private properties to undertake reservoir clearing activities, which are scheduled for winter 2018.

1.4 Key Procurement and Contract Developments

The Project procurement approach was approved by the board of directors in June 2012 for the construction of the Project. The procurement approach defined the scope of the major contracts and their delivery models, as summarized in [Table 9](#) below.

Table 9 Major Project Contracts and Delivery Models

Component	Contract	Procurement Model	Anticipated Contract Timing
Worker Accommodation	Worker accommodation and site services contract	Design-Build-Finance-Operate-Maintain	Completed
Earthworks	Site preparation contracts	Predominantly Design-Bid-Build	Completed
	Main civil works contract	Design-Bid-Build	Completed
Reservoir/Transmission Clearing	Multiple reservoir clearing contracts to be awarded over seven to eight years	Design-Bid-Build	Five contracts completed (lower and east reservoirs)
Generating Station and Spillways	Turbines and generators contract	Design-Build	Completed
	Generating station and spillways civil works contract	Design-Bid-Build	Completed
	Hydromechanical equipment contract	Supply Contract	Completed
	Balance of plant equipment supply	Supply Contracts	F2019 to F2020
	Balance of plant contract	Design-Build/ Design-Bid-Build	F2019 to F2021 Request for Supplier Qualifications closed on August 31, 2018
Electrical and Transmission Infrastructure	Transmission lines construction contract	Design-Bid-Build	Completed
	Site C substation contract	Design-Bid-Build	Completed
	Peace Canyon substation upgrade contract	Design-Build	Completed
Highway 29 Realignment	Design-Bid-Build in partnership with B.C. Ministry of Transportation and Infrastructure with anticipated contracts being awarded from 2018 to 2022.		

1.4.1 List of Major Contracts Awarded (in excess of \$50 million)

Since inception of the Project, seven major construction contracts (e.g., greater than \$50 million in value) have been awarded: worker accommodation, north bank site preparation, main civil works, turbines and generators, generating station and spillways civil works, transmission line construction and hydromechanical equipment. The contracts were procured through a public competitive process and awarded based on a rigorous evaluation process within the budget established for each contract. A list of contracts in excess of \$50 million awarded to September 30, 2018 is shown in [Table 10](#) below.

Table 10 Major Project Construction Contracts Awarded

Work Package	Contract Value ⁹ (\$ million)	Current Status
Site Preparation: North Bank	60	Contract executed July 2015
Worker Accommodation	471	Contract executed September 2015
Main Civil Works	2,063	Contract executed December 2015
Turbines and Generators	464	Contract executed March 2016
Generating Station and Spillways Civil Works	1,604	Contract executed March 2018
Transmission Line Construction	113	Contract executed April 2018
Hydromechanical Equipment	69	Contract Executed April 2018

1.4.2 Large Contracts to Date (Excess of \$10 million)

BC Hydro has provided a table in [Appendix B](#) which shows the breakdown to date of the contracts awarded in excess of \$10 million and cumulative variances.

1.4.3 Contract Management

1.4.3.1 Material Changes to the Major Contracts

The main civil works contract is a unit price contract and as such variations in quantities and design are expected over the term of the contract. Since contract award in December 2015, the main civil works contract value has increased by

⁹ Contract value reflects the current value including executed change orders to the end of the reporting period.

\$316 million to reflect approved changes to date. The changes are managed within project contingency.

BC Hydro reached a settlement agreement with the main civil works contractor in July 2018. The majority of the financial and contractual impacts of the settlement have been reflected in this quarter. The addition of the remaining incentive agreements will be reflected in subsequent quarterly results, but all fall within the total cost of the agreement over the life of the project of \$325 million. While the agreement will draw on the project contingency, there is sufficient budget available such that there is no impact to the overall project budget.

1.4.3.2 Contingency and Project Reserve Draws

As a result of the change in timing for river diversion and other factors including an increase in direct and indirect costs, BC Hydro revised the project budget to \$10.7 billion, which was approved by the provincial Treasury Board in January 2018 and the BC Hydro board of directors in February 2018. This revised budget includes contingency of \$858 million and reserve subject to the control of Treasury Board of \$708 million.

Refer to [Table D-3](#) for more detailed information regarding contingency and project reserve draws.

1.5 Plans During Next Six Months

[Table 11](#) below presents the key milestones for activities planned during the next six months that reflect a plan to complete river diversion in 2020.

Table 11 Key Milestones for Activities Planned during the Next Six Months (October 2018 to March 2019)

Milestone Name	Milestone Plan (February 2018 or Control Date)	Forecast/Actual	Variance	Control Date Status
5L5 Construction Starts	October 2018	October 2018	0	On Track
5L6 Construction Starts	October 2018	October 2018	0	On Track
Complete Powerhouse Roller Compacted Concrete – Upper	October 2018	October 2018	0	On Track
Laydown Area 23 Access to GSS - Partial Release	October 2018	October 2018	0	On Track
Outlet Portal Stabilization Ready for Tunnelling	April 2019	December 2018	(4)	On Track
Right Bank Drainage Tunnel Excavation, Support & Drainage Complete	September 2019	February 2019	(7)	On Track
Primary Anchor for INOG and INMG Provided	March 2019	March 2019	0	On Track

1.6 Impacts on Other BC Hydro Operations

For the reporting period, there were no material impacts on the generation operation at the W.A.C. Bennett and Peace Canyon dams, or on water management at the Williston and Dinosaur reservoirs.

1.7 Site Photographs

Refer to [Appendix A](#) for site construction photographs.

2 Project Schedule

2.1 Project In-Service Dates

As filed with the British Columbia Utilities Commission Inquiry respecting Site C on October 4, 2017, BC Hydro identified that the river diversion milestone will move from 2019 to 2020. This did not impact the overall in-service dates, as shown in [Table 12](#) below.

Table 12 Project In-Service Dates

Description/Status	Final Investment Decision Planned In-Service Date ¹⁰	Updated Plan (February 2018)	Forecast Date	Status and Comments
5L5 500kV Transmission Line	October 2020	October 2020	October 2020	On track
Site C Substation	November 2020	October 2020	October 2020	On track
5L6 500kV Transmission Line	July 2023	August 2023	August 2022	On track
Unit 1 (First Power)	December 2023	December 2023	December 2023	On track
Unit 2	February 2024	February 2024	February 2024	On track
Unit 3	May 2024	May 2024	May 2024	On track
Unit 4	July 2024	July 2024	July 2024	On track
Unit 5	September 2024	September 2024	September 2024	On track
Unit 6	November 2024	November 2024	November 2024	On track

¹⁰ Based on plan at Final Investment Decision, December 2014.

3 Project Governance, Costs and Financing

3.1 Project Governance

With increased internal and external oversight of project performance, BC Hydro is confident the project will be delivered on time and within the updated budget.

Examples of measures implemented this quarter include:

- A clear process has been identified and put in place to match contingency drawdowns to specific events in the risk register.
- Updates to the Project Assurance Board's terms of reference were approved by the BC Hydro Board of Directors in September 2018. The changes clarify roles and responsibilities of the Project Assurance Board, the BC Hydro Board, the Technical Advisory Board, Government and others.
- A full project schedule risk analysis was completed and work has commenced on an integrated cost and schedule risk analysis.

3.2 Project Budget Summary

[Table 13](#) below presents the updated budget approved in February 2018, represented in nominal dollars.

Table 13 Project Budget Summary

Description	Updated Budget Approved February 2018 (Nominal \$ million)
Dam, Power Facilities, and Associated Structures	4,548
Offsite Works, Management and Services	1,845
Total Direct Construction Cost	6,393
Indirect Costs	1,456
Total Construction and Development Cost	7,849
Contingency	858
Interest During Construction	1,285
Project Cost, before Treasury Board Reserve	9,992
Treasury Board Reserve	708
Total Project Cost	10,700

* Budget values are rounded to the nearest \$5 million and include allocations of contingency.

3.3 Project Expenditure Summary

[Table 14](#) provides a summary of the updated budget for the total Project, the current forecast total Project cost and the variance between the two. It also presents the cumulative updated budget amount planned to September 30, 2018 compared to the cumulative actual costs incurred to September 30, 2018 and the variance between the two.

Table 14 Total Project Expenditures - Updated Budget Compared to Forecast and Life to Date – Updated Budget Compared to Actual Expenditures to Sept. 30, 2018 (\$ million Nominal)

Description	Total Project			Life to Date, to September 30, 2018		
	Updated Budget	Forecast	Variance	Updated Budget	Actual Expenditures	Variance
Total Project Costs	9,992	9,992	0	2,835	2,899	(64)
Treasury Board Reserve	708	708	0	0	0	0
Authorized Project Cost	10,700	10,700	0	2,835	2,899	(64)

[Table 15](#) below provides a summary of the F2018-F2019 Service Plan Project expenditures for Fiscal 2019 year-to-date, the actual Project expenditures for Fiscal 2019 year-to-date and the related variance.

Table 15 Actual Fiscal 2019 Project Expenditures Compared to 2018/19 to 2020/21 Service Plan (\$ million Nominal)

Description	2018/19 to 2020/21 Service Plan Fiscal 2019 YTD	Actual Expenditures Fiscal 2019 YTD	Variance
Total Project Costs	482.6	544.6	(62.0)
Treasury Board Reserve	-	-	-
Authorized Project Cost	482.6	544.6	(62.0)

Variations between the plans to date amounts occur due to differences in the timing of project implementation activities. The variance of \$62 million between actual and plan life to date is primarily due to unplanned expenditures for main civil works for claims settlement and schedule advancements for generating station and spillways expenditures work. These are partially offset by a shift of some mitigation and compensation and reservoir clearing expenditures. Further details are in [Appendix D](#).

3.4 Internal Project Financing versus External Borrowings to Date

To date, all project funding has been from internal borrowings and there has been no Site C Project specific debt issued. As part of BC Hydro's debt management strategy, BC Hydro's exposure to variable debt is managed within a board approved range of five per cent to 25 per cent, with a target of 15 per cent. In addition, to lock in low interest rates, since F2017 BC Hydro has hedged \$6.7 billion of its future forecast long-term debt issuances out to F2024 through the use of derivative contracts.

As at September 30, 2018, \$4 billion in hedges have settled with a realized gain of \$122 million and \$2.7 billion of hedges remain outstanding with an unrealized gain of \$138 million.

4 Material Project Risks

This section describes the material project risks. The material project risks are identified through a project risk profile assessment, which are prepared on an ongoing basis. As the project progresses through implementation phase, the material project risks will evolve to reflect the current risks facing the project.

Refer to [Table 16](#) below for a list of the material project risks. Please note the risk format has changed from previous reports. Risk categories seen in previous reports have changed to individual risks to provide greater insight and to align with how risks are managed and reported across the project. The previous risk categories have been included in the first column as a cross reference.

Table 16 Material Project Risks

Previous Quarterly Report Risk Category(s)	Risk Description	Impact and Response Plan Summary
Geotechnical Construction Execution	On the left bank diversion tunnels: Risk that contractor productivity does not meet plan and/or differing geotechnical conditions.	<p>Impact: Potential schedule delay and increased cost.</p> <p>Response: Contractor has increased tunnel construction labour and equipment; contractor has improved work methods and/or additional subcontractors; BC Hydro has provided production incentives through settlement agreement with contractor.</p>
Construction Execution	Risk that productivity for roller-compacted concrete is lower than planned.	<p>Impact: Project schedule not achieved; potential interface issues may arise with other contractors.</p> <p>Response: Physical progress is captured and reported on a weekly basis for key work fronts. Key interface milestones are monitored and discussed on a regular basis. Meetings are held with the contractor on a regular basis.</p>
Construction Execution	Risk that worker accommodation budget is not sufficient.	<p>Impact: Increased cost to cover additional bed nights in camp; possible contractor workforce impacts; increased cost for local lodging and potential impacts on the community.</p> <p>Response: BC Hydro is undertaking an economic analysis of camp expansion based on updated contractor resource information. Analysis to be completed winter 2018/2019.</p>

Previous Quarterly Report Risk Category(s)	Risk Description	Impact and Response Plan Summary
Construction Cost – Labour	Risk that contractor labour rate increases in excess of budgeted amount.	<p>Impact: BC Hydro has included provisions in the major contracts that allow for labour escalation to a prescribed amount, as well as a cost/savings sharing formula based on general industry rates above/below the prescribed amount. Increased pressure on the labour market would likely drive labour wage rates higher, potentially resulting in general industry increases beyond the prescribed amounts</p> <p>Response: BC Hydro has defined contract labour escalation formulas in all major contracts.</p>
Safety	Risk of a safety incident resulting in fatality or disabling injury.	<p>Impact: Serious worker injury or fatality; project delays and associated costs.</p> <p>Response: Implemented senior-level safety steering committee with all prime contractors to address shared safety issues and opportunities, hired permanent senior field safety manager, and holding regular on-site safety conferences.</p>
Geotechnical Construction Execution	For work fronts other than the left bank diversion tunnel: Risk of differing geotechnical conditions.	<p>Impact: Potential schedule delay and increased cost.</p> <p>Response: Completed detailed geotechnical investigations prior to construction; close monitoring and quick intervention to manage construction risk if geotechnical issues arise.</p>
Litigation Indigenous Relations	Risk that Indigenous Nations do not support the project.	<p>Impact: Indigenous Nation’s file legal challenges (e.g. injunction applications) or engage in protest actions that could delay or stop the project work and/or increase costs.</p> <p>Response: Project team to fully support the development of legal response documents; follow court order requirements, if applicable; continue to negotiate Impact Benefit Agreements.</p>

Previous Quarterly Report Risk Category(s)	Risk Description	Impact and Response Plan Summary
Construction Execution	Risk that reservoir clearing not completed for diversion.	<p>Impact: Reservoir not cleared causing diversion delay; outstanding 2018/19 seasonal work moved into next season (2019/20) using up float and increased cost to expedite.</p> <p>Response: Award contracts at start of clearing season (November 18); carry remaining work into 2019/20 season; hire additional contractors/resources for each clearing season.</p>
Construction Execution	Risk that Highway 29 not completed on time for inundation.	<p>Impact: Highway incomplete impacting inundation schedule; additional costs.</p> <p>Response: Increase design resources in peak periods; utilize schedule float; proactively respond to geotechnical issues; proponents to secure steel supply contracts during bid; use Ministry of Transportation Infrastructure specifications; support First Nations contractors to work with qualified builders.</p>
Labour Relations and Stability	Risk that project cannot attract and retain sufficient skilled workers.	<p>Impact: Contractors may not be able to adequately source, supply, attract, and retain sufficient project labour due to workforce demographics, increased competition for labour from other major projects, and the requirement for specialized workers. This may result in potential impacts to schedule, safety, productivity and cost.</p> <p>Response: Contractors provide labour sourcing and supply plans, provide advance notice of foreign workers, and participate in local job fairs. BC Hydro will encourage and facilitate capacity-building initiatives, monitor employee turnover rates and other projects labour conditions.</p>
Foreign Exchange Rate, Interest and Taxes	Risk that BC Hydro's borrowing costs for project are higher than budgeted.	<p>Impact: Rising interest rates increase the project's interest costs above the amount budgeted.</p> <p>Response: BC Hydro has hedged interest rates on approximately 50 per cent of future debt placements through F2024, to reduce the potential impact. The need for additional interest rates hedges is being assessed. Please refer to section 3.4 above for further details.</p>

Previous Quarterly Report Risk Category(s)	Risk Description	Impact and Response Plan Summary
Permits, Approvals and Environmental Compliance	N/A	N/A
Procurement	No longer Material Project Risks	N/A
Construction Cost – Commodities and Equipment		N/A

Site C Clean Energy Project

Quarterly Progress Report No. 13

Appendix A

Site Photographs

Figure A-1 West Pine Quarry Facing North. Photo taken July 3, 2018.



Figure A-2 Roller-compacted Concrete Delivered by Truck to the West Side of the Powerhouse Buttress. Photo taken July 5, 2018.

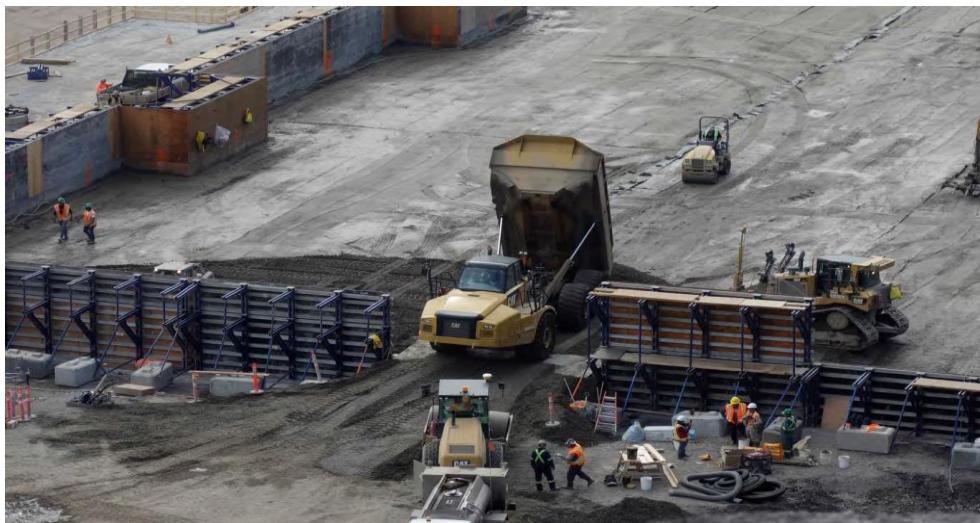


Figure A-3 Overview of the Powerhouse Buttness, Service Bay Pad, Tailrace Wall, and Generating Station & Spillways Laydown Areas. Photo taken July 5, 2018.



Figure A-4 Inlet Cofferdam Facing North; Crane Placing Transformers for the Diversion Tunnel Operations. Photo taken August 2018.



Figure A-5 Transformers Being Winched onto Flat Deck for Deliver to the Substation. Photo taken August 4, 2018.



Figure A-6 Facing North; Equipment Working on Bench 13. Photo taken August 2018.



Figure A-7 Shotcrete Work in Tunnel 1. Photo taken September 2, 2018.



Figure A-8 Hydrovac Trucks Supporting Foundation Preparation for the Spillway Buttress Apron. Photo taken September 5, 2018.



Figure A-9 Removal of Formwork from the East Face of the Powerhouse Buttress. Photo taken September 5, 2018.



Figure A-10 Road Header and Tunnel Entrance Hoarded; Dust Suppression System Raised. Photo taken September 14, 2018.



Site C Clean Energy Project

Quarterly Progress Report No. 13

Appendix B

**Summary of Individual Contracts Exceeding
\$10 Million**

PUBLIC

CONFIDENTIAL
ATTACHMENT

FILED WITH BCUC

Site C Clean Energy Project

Quarterly Progress Report No. 13

Appendix C
Project Progression

PUBLIC

CONFIDENTIAL ATTACHMENT

FILED WITH BCUC

Site C Clean Energy Project

Quarterly Progress Report No. 13

Appendix D

Detailed Project Expenditure

PUBLIC

CONFIDENTIAL

ATTACHMENT

FILED WITH BCUC

Site C Clean Energy Project

Quarterly Progress Report No. 13

Appendix E

Workforce Overview

**Table E-1 Current Site C Jobs Snapshot
 (July 2018 to September 2018)¹¹**

Type of Work	July 2018		August 2018		September 2018	
	Number of B.C. Workers	Number of Total Workers	Number of B.C. Workers	Number of Total Workers	Number of B.C. Workers	Number of Total Workers
Construction and Non-Construction Contractors ¹² (including some subcontractors). Excludes work performed outside of B.C. (e.g., manufacturing)	2,054	2,675	2,262	2,911	2426	3145
Engineers and Project Team ¹³	571	628	594	650	548	601
TOTAL	2,625	3,303	2,856	3,561	2974	3746

Employment numbers provided by Site C contractors are subject to revision. Data not received by project deadline may not be included in the above numbers.

BC Hydro has contracted companies for major contracts, such as main civil works, who have substantial global expertise. During the month of September 2018, there were six workers in a specialized position working for Site C construction and non-construction contractors, which were subject to the Labour Market Impact Assessment process under the Federal Temporary Foreign Worker Program. Additionally, there were 25 management and professionals working for Site C construction and non-construction contractors through the Federal International Mobility Program.

¹¹ Employment numbers are direct only and do not capture indirect or induced employment.

¹² Construction and Non-Construction Contractors includes work performed on Site C dam site, transmission corridor, reservoir clearing area, public roadwork, worker accommodation and services.

¹³ Engineers and Project Team are comprised of both on site and off site workers. The Project Team includes BC Hydro construction management and other offsite Site C project staff. An estimate is provided where possible if primary residence is not given.

**Table E-2 Preliminary Site C Apprentices Snapshot
 (July 2018 to September 2018)**

Month	Number of Apprentices
July 2018	93
August 2018	132
September 2018	145

Data is subject to change based on revisions received from the contractors.

Table E-3 Current Site C Job Classification Groupings

Biologists and laboratory	Carpenters	Inspectors	Construction managers/supervisors	Crane operators	Electricians	Engineers
Foresters	Health care workers	Heavy equipment operators	Housing staff	Heating, ventilation, and air conditioning	Kitchen staff	Labourers
Mechanics	Millwrights	Office staff	Pipefitters	Plumbers	Sheet metal workers	Truck drivers
Underground mining	Welders	Surveyors	Security guards	Boilermakers	Cement Masons	Crane Operators
Ironworkers						

**Table E-4 Aboriginal Inclusion Snapshot
 (October 2017 to September 2018)**

Month	Number of Indigenous Workers
October 2017	132
November 2017	96
December 2017	78
January 2018	118
February 2018	190
March 2018	213
April 2018	163
May 2018	226
June 2018	240
July 2018	255
August 2018	297
September 2018	280

The information shown has been provided by BC Hydro's on-site construction and non-construction contractors and their subcontractors that have a contractual requirement to report on Indigenous inclusion in their workforce.

Employees voluntarily self-declare their Indigenous status to their employer and there may be Indigenous employees that have chosen not to do so; therefore, the number of Indigenous employees may be higher than shown in the table.

As with any construction project, the number of workers, and the proportion from any particular location, will vary month-to-month and also reflects the seasonal nature of construction work. The number of workers will also vary as a contract's scope of work is completed by the contractor.

Women

In September 2018, there were 484 women working for Site C construction and non-construction contractors. The number of women was provided by on-site construction and non-construction contractors and engineers that have a contractual requirement to report on the number of women in their workforce.

Site C Clean Energy Project

Quarterly Progress Report No. 13

Appendix F

Site C Construction Schedule

Table F-1 Site C Construction Schedule



The construction schedule is indicative only and subject to change. The purpose of the schedule is to illustrate the general sequence of construction activity. For details and schedule map change, see the project website. © BC Hydro is exploring options for siting and construction for western portion of the Cache Creek/ Bear Flat* realignment not impacted by the new alignment options. January 2018