BC Hydro
Power smart

September 28, 2023

Mr. Mark Jaccard
Chair and CEO
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, B.C. V6Z 2N3

Dear Mr. Jaccard:

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. 30

Today, we are filing Site C Quarterly Progress Report No. 30 that covers the period of April 1 to June 30, 2023.

The report notes the Site C project's overall health for the quarter remained "yellow." It also notes the project continues to be managed within the budget that was approved in 2021.

Overall, the Site C project is about 80 per cent complete and remains on schedule to have all six generating units in-service in 2025. At this time, I want to provide the Commission with an update on the progress we achieved over the summer construction season and the work that still lies ahead to achieve reservoir filling.

In July, the earthfill dam was completed, having reached the elevation required for reservoir filling. Work began on the dam in 2021 and took three construction seasons to complete. In total, nearly 16 million cubic metres of earthfill material was placed.

With thousands of instruments that collect and report data on its performance, the Site C earthfill dam will be the most-instrumented dam in the BC Hydro system. This will help ensure the dam continues to perform well and meets the Canadian Dam Association's highest safety standards, including the ability to withstand a major earthquake (one in 10,000-year).

In early September, we successfully completed the conversion of one of the tunnels that currently diverts the Peace River around the dam site. Tunnel conversion work began in mid-June and involved installing four large rings to restrict the flow of water. The completion of tunnel conversion is another important project milestone that needed to happen for reservoir filling to occur, as well as a key project risk that is now behind us.

As this progress report notes, there is a possibility that reservoir filling could occur this fall, which is earlier than the approved schedule. While we continue to plan for reservoir filling this fall, there are still several key work areas that need to be completed to safely

achieve the earlier fill date. Most notably, these areas include the approach channel, spillways, intake structures, and tailrace area.

At the same time, work also continues in Peace region communities to prepare Indigenous groups, property owners, key stakeholders and the public about the new reservoir.

Safety has always been – and always will be – our top priority at BC Hydro, and this priority will not change before, during, or after the reservoir is filled. We're building public awareness around reservoir filling through community outreach, advertising in traditional and social media, and public signage on the reservoir and at reservoir-access points.

When BC Hydro begins to fill the reservoir, there will be new hazards to manage such as floating vegetation and shoreline instability. These hazards will be present during reservoir filling and for at least one year afterwards as the shoreline continues to stabilize. We're asking the public to stay off the reservoir until it has been determined safe.

The next progress report – Quarterly Progress Report No. 31 – will be filed in December 2023.

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

Yours sincerely,

Chris O'Riley
President and Chief Executive Officer
BC Hydro

BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

F2024 First Quarter

April 1, 2023 to June 30, 2023

PUBLIC

Table of Contents

List of Figures

List of Tables

Appendices

1 Executive Summary

1.1 Overview and General Project Status

Site C will be the third dam and hydroelectric generating station on the Peace River in northeastern British Columbia (**B.C.**). Once complete, Site C will provide 1,100 megawatts of capacity, and produce about 5,100 gigawatt hours of energy per year – enough to power the equivalent of 450,000 homes per year in B.C.

Construction on Site C began on July 27, 2015.

Quarterly Progress Report No. 30 covers the period April 1 to June 30, 2023 (the reporting period).

As of June 30, 2023, the Site C Project (**the Project**) is approximately 78% complete. BC Hydro remains on track to complete the Project within the approved budget of $16 billion and the Project final unit in-service date of 2025.

The overall Project health status remains “amber” as a number of potential risks remain, as outlined in this report. BC Hydro continues to work collaboratively with the Project Assurance Board, special advisor Peter Milburn, Ernst & Young Canada, the Technical Advisory Board, and independent international dam experts to actively manage ongoing Project risks. The Technical Advisory Board and independent international dam experts continued to review and confirm that the Project designs are appropriate, safe and serviceable over the long operating life of Site C.

During the reporting period, the Project made considerable progress on many dam site work fronts, including the earthfill dam, generating station, approach channel, spillways, and tailrace. Of significant note, the tunnel conversion process, which is one of the key remaining construction activities required for reservoir filling, began during this reporting period. During tunnel conversion, four large rings are installed inside one of the tunnels that is currently diverting the Peace River around the dam site to restrict the flow of water through the tunnel. Advances also occurred off the dam site, including the completion of the Highway 29 realignment and substantial completion of the reservoir clearing program.

The Project remains on track to achieve the approved schedule, which includes the first generating unit to be placed in service by December 2024 (first unit in service), and all six generating units in service by the end of 2025 (final unit in service).

Based on the construction progress achieved to date and revised contractual schedules, there is a possibility that reservoir filling could start in fall 2023. This would also provide an opportunity to achieve first unit in service earlier than planned. The timeline for reservoir filling depends on construction progress, meeting the operational requirements of the Peace River system, the continued compliance with environmental regulations, weather constraints and obtaining all remaining regulatory approvals. As of June 30, 2023, the majority of the regulatory approvals required for reservoir filling have been received. BC Hydro remains on track to

receive the remaining required regulatory approvals in advance of reservoir filling. There continues to be uncertainty related to achieving the contractual schedules, and there are identified risks that could adversely affect these schedules. The risks related to achieving an earlier reservoir fill are higher than the risks related to achieving the approved schedule.

The time available to complete the remaining scopes of work is expected to be sufficient for the Project to meet the Project's approved schedule.

The following sections discuss highlights from the reporting period and some of the current risks facing the Project.

1.2 Construction Progress

Considerable progress was made on the Project during the reporting period both on the dam site and off the dam site.

During the reporting period, the placement of materials for the core of the earthfill dam resumed, after being suspended due to the seasonal cold temperatures in the north.

The cumulative progress of material placed for the earthfill dam to June 30, 2023, was approximately 98% of the total planned material placements, with 265,000 cubic metres remaining to be placed out of the total approximately 15.5 million cubic metres of materials. Subsequent to the reporting period, BC Hydro announced at the end of July that it had reached a major milestone on the Site C Project with the completion of the earthfill dam to the elevation required to enable reservoir filling. The next steps involve capping it and building roads across for crews to travel on once the Project comes into operation.

For the generating station and spillways, the concrete placements are approximately 96% complete. The powerhouse concrete is 95% complete, the intakes headworks

concrete is nearing completion, and the spillways concrete is more than 96% complete.

For the balance of plant work activities, the mechanical contractor continued to make good progress constructing the powerhouse drainage and dewatering systems, and completed the system in July 2023. Commissioning is scheduled for mid-August 2023 to support tailrace filling activities.

The electrical contractor commenced installation of the electrical station service in the powerhouse, intakes, and spillways, including the installation of approximately one-third of the 580 kilometres of cables.

Architectural, heating, ventilation and air conditioning work continues. The installation of the fire protection has also started. The permanent upstream fishway is on schedule to be in service for spring 2024.

To address the identified geotechnical issues in the bedrock foundation on the Project's right bank, the installation of 96 large diameter concrete-filled vertical steel piles, to further extend the foundation deeper into the bedrock, is now complete. Construction of the powerhouse pile caps was also completed during the reporting period. Work continues on enhancements to the design of the approach channel above the powerhouse and spillways.

Ongoing reviews by the Technical Advisory Board and the two independent, world-leading dam experts continue to confirm that the design of the foundation enhancements meets the highest safety standards and international best practices.

Off the dam site, a significant milestone was reached subsequent to the end of the reporting period with the completion of the Highway 29 realignment work.

1.3 Upholding Commitments to the Environment, Indigenous Nations and Local Communities

During the reporting period, BC Hydro continued to uphold its commitments to the environment, Indigenous Nations and local communities.

BC Hydro continued to engage, build relationships and find solutions together on topics that are most important to the Indigenous Nations affected by Site C.

BC Hydro continued to secure the appropriate permits, authorizations and leaves to commence construction required for the Project. As of June 30, 2023, 616 of the estimated 647 provincial and federal permits and authorizations have been received.

Work advanced in the areas of environmental monitoring and assessment, as well as in the Project's fish and wildlife habitat, vegetation management and heritage programs. During the reporting period, the temporary fish passage facility operators passed more than 3,800 fish upstream, which is more than the entire 2021 or 2022 operating seasons. The number of fish passed during several days in June 2023 was three to four times higher than the 'peak day' that was observed in prior operating years.

Environmental compliance on the Project remains high. During the reporting period, 15,449 environmental compliance inspections were completed by BC Hydro staff, with a compliant and partial compliant result of 99% across all contractors and works areas.

Indigenous Engagement

BC Hydro continues to advance economic opportunities for First Nations through capacity building and procurement opportunities. Since the beginning of the Project, approximately $734 million in Site C procurement opportunities has been awarded to companies designated by Indigenous Nations, pursuant to BC Hydro's Indigenous Procurement Policy. Working on the Site C Project has helped businesses

designated by Indigenous Nations to build and grow their reputations, expand the scale of their operations, and develop new expertise to compete in the regional economy.

During the reporting period, BC Hydro has continued to work with Indigenous Nations on a variety of initiatives. A meeting of the Environment Forum was held on May 24, 2023, with representatives from several Indigenous Nations in attendance. Topics of discussion included preparations for reservoir filling, the Conservation Officer position funded by Site C in collaboration with Treaty 8 Nations, and updates on the site reclamation program. BC Hydro also met with Indigenous Nations to discuss fish consumption and methylmercury monitoring.

During the reporting period, BC Hydro's Indigenous Relations team hosted 12 tours of the dam site and future reservoir area with Indigenous community members. These tours are a meaningful opportunity for Indigenous Nations to see the Project first hand and to prepare for the upcoming changes caused by reservoir filling.

BC Hydro also met with Indigenous Nations to review options for the site location of the future cultural centre. The cultural centre project is an important accommodation for the cultural impacts of Site C. The facility will showcase local Indigenous culture and history in the region, and store and display many of the artifacts uncovered during the construction of Site C.

In June 2023, 539 Indigenous people were working on the Site C Project, which is a new Project high and represents 10% of the total workforce.

Local communities

BC Hydro continued to engage with local communities, elected officials and stakeholders. The Regional Community Liaison Committee, comprised of local elected officials and local First Nations communities, met on June 7, 2023, for a Project update. BC Hydro also continued to implement its construction

communications program, which includes updating the Project website with current information, photos and videos of construction activities, as well as providing information to stakeholders.

During the reporting period, BC Hydro distributed approximately $37,500 to four non-profit organizations in the Peace Region through the Generate Opportunities (**GO**) Fund.

1.4 Impacts from Provincial Wildfires

In May, due to provincial wildfires north of the Site C Project, the Peace River Regional District and City of Fort St. John issued evacuation alerts for the Fort St. John area, including the Site C work area. Work at site was temporarily suspended due to the dynamic situation.

In response, BC Hydro activated the Site C Incident Command and took responsibility for site-wide incident management. BC Hydro also activated the Regional Emergency Operations Centre for the northern region. Refer to section 2.1 for further details.

Fortunately, conditions improved and the evacuation alert was rescinded. No evacuation was required and the brief work suspension did not have a material impact on the Project schedule.

BC Hydro continues to monitor the wildfire situation in the area and has an extensive emergency response plan that can be quickly mobilized if necessary.

1.5 Indigenous Burials

Consultations have been completed with impacted Indigenous Nations regarding site-specific plans for the management of identified burial and cultural sites impacted by reservoir filling, in particular in the Halfway River and Cache Creek / Bear Flats areas.

Based on consultations and field investigations undertaken by BC Hydro and Indigenous Nations, two burial sites were identified in the future reservoir area, which have been registered as heritage sites under the *Heritage Conservation Act*.

BC Hydro has worked closely with affected Nations to develop the most appropriate management options and any community support needs. Despite efforts to reach consensus, some Nations have chosen not to participate in burial management or do not support the management approach.

BC Hydro obtained the required permits from the Archaeology Branch under the *Heritage Conservation Act* prior to conducting archaeological investigations at the two registered burial sites.

After an extensive search effort to locate the potential graves at one of the two locations, which was conducted over several years in collaboration with Indigenous Nations, no remains were found. As a result, BC Hydro will work with participating Indigenous Nations to conduct any ceremonies requested by First Nations prior to inundation.

At the second location, BC Hydro plans to respectfully relocate the confirmed burial, as requested by participating Indigenous Nations. The relocation will occur in August and Indigenous Nations' participation will be supported to monitor the work and conduct ceremonies.

1.6 Property Acquisitions

Property acquisitions required for the Project remain on track. During the reporting period, BC Hydro acquired the remaining land and rights that were required prior to reservoir filling. In addition, acquisitions were completed for some of the land required within the first year of reservoir operations. Land and rights will be required from a further nine landholdings within the first year of reservoir operations.

1.7 Inflationary Pressures

Over the past year, inflationary pressures have had impacts to the Project's costs in areas including contract related costs for higher labour and fuel costs in excess of the amounts to be borne by the contractors, and contract amendments and change orders subject to current market pricing. Going forward, inflation continues to be a risk for future contract change orders, procurements, and the Project's interest during construction costs. In addition, beyond inflationary cost impacts, supply chain challenges are a risk that could potentially cause schedule delays.

1.8 Project Status Dashboard for the Quarter

BC Hydro, with oversight from the Project Assurance Board, is focused on completing the Site C Project within the approved budget of $16 billion and final unit in-service date in 2025, or earlier, without compromising on safety, scope and quality. To report on Project status, BC Hydro uses a dashboard system where key Site C Project areas are classified as red (at risk), amber (moderate issues) or green (on target).

The Project Status Dashboard as of June 30, 2023, is provided in Table 1. There were no changes to the performance indicators from the previous quarter (as of March 31, 2023).

Table 1 Project Status Dashboard

● On Target ● Moderate Issues ● At Risk

Status as of:		June 30, 2023
Overall Project Health	●	As of June 30, 2023, the overall Project health remained "amber." The Project is approximately 78% complete and work continues to advance, however, there are still potential risks remaining. BC Hydro continues to review, assess, mitigate, manage and monitor potential risks to the Project.
Safety	●	The status of the Safety indicator remained "amber" as of June 30, 2023. During the reporting period, the Project was experiencing an early and busy spring construction season, with multiple contractors and work fronts operating across the dam site, and there was a strong focus on work in and around the powerhouse. During this period, the Project safety performance metrics for lost time injury frequency, all injury frequency, and serious incident frequency improved from the previous quarter. However, due in part to the sustained higher number of workers during this spring and summer construction season, the Project saw an increase in serious safety incidents during this reporting period compared to the same quarter in 2022, even when corrected for work hours. Also during this reporting period, there were three significant wildfires near Site C. On May 15, 2023, the Peace River Regional District and City of Fort St. John issued evacuation alerts for the Fort St. John area, including the Site C Project. In response, BC Hydro promptly activated Site C Incident Command, as well as a Regional Emergency Operations Centre for the northern region. The Project was prepared to safely evacuate all Site C workers from the Project site, should there have been an evacuation order.
Scope	●	Scope status remained "amber" as of June 30, 2023. Provisions are included in the Project plans for potential scope adjustments for site conditions and interfaces. As construction progresses, there remains a risk of design changes due to unknown field conditions.
Schedule	●	Schedule status remained "amber" as of June 30, 2023. The Project is currently on schedule to achieve the approved 2025 final unit in-service date and is approximately 78% complete. Based on the construction progress achieved to date and revised contractual schedules, there is a possibility that reservoir filling could start in fall 2023. This would also provide an opportunity to achieve first unit in service earlier than planned. There continues to be uncertainty related to achieving the contractual schedules, and there are identified risks that could adversely affect these schedules. The risks related to achieving an earlier reservoir fill are higher than the risks related to achieving the approved schedule. The time available to complete the remaining scopes of work is expected to be sufficient for the Project to meet the approved schedule.

Status as of:		June 30, 2023
Cost	🟡	Cost status remained "amber" as of June 30, 2023. Potential cost risks remain, as detailed in this report. As of June 30, 2023, the life-to-date actual costs are $11.7 billion, which results in an estimated $4.3 billion of remaining costs based on the forecast of $16 billion.
Quality	🟢	The quality rating for the Project continued to be "green" as of June 30, 2023, indicating that the work generally conforms to the requirements of the drawings and specifications. When a quality issue is identified during the course of construction, BC Hydro and its contractors worked to rectify the issue to ensure that the quality of the completed work achieves the quality specifications. The Technical Advisory Board and independent international dam experts continued to review and confirm that the Project designs are appropriate, safe and serviceable over the long operating life of Site C.
Regulatory, Permits and Tenures	🟢	The regulatory, permits and tenures indicator status remained "green" as of June 30, 2023. Overall, BC Hydro continued to be issued permits and authorizations in accordance with construction timelines. As of June 30, 2023, 616 of the estimated 647 provincial and federal permits and authorizations required for the Project have been received and are actively being managed.
Environment	🟡	The Project environment status remained "amber" as of June 30, 2023, due to the unresolved April 2022 potentially acid-generating rock Environmental Assessment Office order and a warning letter received on September 26, 2022. BC Hydro worked with the B.C. Environmental Assessment Office to address the order and letter. BC Hydro has conducted local government, Indigenous Nations and regulator consultation on proposed amendments to the Site C Construction Environmental Management Plan to clarify that the current approaches to managing potentially acid-generating rock provide adequate environmental protection. Additionally, BC Hydro is developing final treatment plans for potentially acid-generating sites that will not be addressed through dam construction or the creation of the reservoir.
Procurement	🟡	The procurement indicator status remained "amber" as of June 30, 2023, due to the remaining right bank foundation enhancements procurements that still need to be negotiated. The majority of the Project's commercial agreements are in place, with a few remaining commercial agreements for smaller scopes of work expected to be awarded by the end of fall 2023.

Status as of:		June 30, 2023
Indigenous Relations	🟡	The Indigenous Relations indicator status remained "amber" as of June 30, 2023. BC Hydro has a mandate from the Government of British Columbia to reach project or impact benefit agreements with the 10 Indigenous groups that are most impacted by Site C. Eight of 10 agreements are fully executed and in implementation. BC Hydro has a standing offer to negotiate with the remaining two First Nations that have not signed agreements related to the Site C Project. BC Hydro also maintains a working relationship with those Nations through ongoing consultations and engagement. BC Hydro has completed consultations with impacted First Nations regarding options and site-specific plans for managing identified burial and cultural sites impacted by reservoir filling, in particular in the Halfway River and Cache Creek / Bear Flats areas.
Stakeholder Engagement	🟢	The stakeholder engagement indicator status remained "green" as of June 30, 2023. BC Hydro continues to work with the communities, regional district and stakeholder groups on the implementation of various community agreements.

1.9 Significant Project Updates for the Quarter

Significant Project updates that occurred between April 1 to June 30, 2023, include the following:

April 2023

- Concrete work for the powerhouse intakes, which began in 2019, was completed. The intakes funnel water into the penstocks, which transport the water to the turbines in the powerhouse. Refer to section 3.1.4 for more information.
- The 96 large diameter concrete-filled vertical steel piles located in the spillways and downstream of the powerhouse, which are part of the right bank foundation enhancements, were completed. Refer to section 3.1.9 for more information.

May 2023

- In the powerhouse, three turbine runners and one generator rotor were installed.

- Installation of a headworks gantry crane, which assembles the intake gates, was completed.

June 2023

- Construction of the concrete pile caps, located in the powerhouse tailrace excavation, was completed.
- As part of the process of converting one of the diversion tunnels to prepare for reservoir filling, work began on the installation of the four large rings inside one of the tunnels. Refer to section 3.1.2 for more information.
- Site restoration and final works at the Maurice Creek fish habitat were completed. Refer to section 3.1.10 for more information.

Refer to Appendix A for Site construction photos from the reporting period and refer to Appendix B for a list of work completed since the Project commenced in 2015.

2 Safety and Security

During this reporting period, the Project experienced an early and busy spring construction season, with numerous contractors and work fronts operating across the dam site and with a strong focus on work in and around the powerhouse. Project safety performance metrics during the reporting period for lost time injury frequency, all injury frequency, and serious incident frequency improved from the previous quarter. However, due in part to a sustained higher number of workers during this spring and summer construction season, the Project saw an increase in serious safety incidents during this reporting period compared to the same quarter in 2022, even when corrected for work hours. There was a 17% increase in work hours for the April to June period in 2023 compared to 2022.

2.1 Provincial Wildfire Update

During this reporting period, there were three active wildfires of note near Site C: the Red Creek, Boundary Lake, and Stoddart Creek fires.

On May 15, 2023, due to wildfires north of the Site C Project, the Peace River Regional District and City of Fort St. John issued evacuation alerts for the Fort St. John area, including the Site C Project. In response, BC Hydro activated the Site C Incident Command and took responsibility for site-wide incident management. BC Hydro also activated the Regional Emergency Operations Centre for the northern region.

Specifically for the Project:

- All contractors were asked to perform an immediate sweep of their outdoor work areas to identify combustible materials and move these to safe areas;
- All work on the Project site was suspended and crews were either sent home or brought back to the worker accommodation facilities for easier coordination;
- Given the scale of a potential full site evacuation of up to 4,000 people into the Fort St John area, BC Hydro enlisted help from experts in large scale evacuations and structure protection to work on detailed plans to rapidly evacuate all Site C workers at site and in local communities to a location outside the already-stressed evacuation centres in the Fort St. John area;
- Working with one of the Site C contractors, BC Hydro brought in and staged numerous buses to relocate all Site C workers to a safe evacuation site in Alberta, preventing any additional burden on northern region evacuation centres; and
- BC Hydro's Site C Incident Command stayed in close contact with local governments, the B.C. Wildfire Service, and other emergency management authorities.

Ultimately, there was no evacuation order, and the evacuation alert was rescinded on May 17, 2023.

2.2 WorkSafeBC 'Return to Work' Coordinator Training

New provincial legislation, Bill 41 *Compensation Amendment Act* (no. 2) 2022, introduced several amendments, mostly on claims compensation and appeals. There is an increased emphasis on the legal duty for employers and workers to cooperate in early and safe return to work. Based on a direct request from Site C contractors, WorkSafeBC delivered a site-specific session of their newly developed return to work coordinator training for all Site C employers. Representatives from BC Hydro and most Site C contractors attended this session in June 2023.

2.3 BC Hydro's Site C K9 Drug Detection Unit

Recently, the Province announced that starting January 31, 2023, adult residents will not be subject to criminal charges for the personal possession of small amounts (2.5 grams) of certain illegal drugs including heroin, morphine, fentanyl, cocaine and other drugs. As Site C is not a public space and is a safety-sensitive project site, BC Hydro will continue to prohibit drugs at site (a Safety Absolute). Since this decriminalization of drugs became effective, BC Hydro has seen an increase in drugs recovered at the security gates.

Anticipating this risk, BC Hydro had asked its Site C security services contractor to identify and train a local drug dog handler. As a result, the Project now has a local team providing more frequent, flexible, and cost-effective drug detection capabilities. The K9 drug detection unit is proving to be a strong deterrent at site.

2.4 Summary of Safety Performance Metrics

From July 2015 through June 2023, more than 54 million work hours have been completed across the Project, with no fatalities and one permanent partial disabling injury in August 2017.[1]

During the reporting period, there were eight serious safety incidents consisting of seven near misses with the potential for a serious injury, as well as one incident that resulted in a moderate injury.

In addition, there were 200 non-serious incidents recorded during this period. Of these, 52 incidents were classified as near misses, with the potential for causing harm. Of the remaining 148 incidents, 138 involved injuries that required first aid, nine required medical attention, and there was one lost time injury.

A near miss is defined as an incident that could have resulted in an injury but did not because of effective hazard barriers or the person was out of harm's way/missed. BC Hydro considers near miss reporting as indicative of an effective and transparent safety culture and strongly encourages all contractors and employees to report near misses.

Table 2 reflects safety performance results for the Project, including all contractors and all sub-projects.

[1] In June 2018, an injured worker received a permanent partial disability award from WorkSafeBC due to a lost time injury incident in August 2017. BC Hydro reclassified this incident as a permanent disabling injury after receiving an update on the WorkSafeBC award in June 2018. The incident is identified as a serious injury in the BC Hydro Incident Management System.

Table 2 Summary of Site C Safety Metrics

	Reported April 1 to June 30, 2023[2]	Reported Since Inception (July 27, 2015 to June 30, 2023)[2]
Fatality[3]	0	0
Permanently Disabling Injury[4]	0	1
Serious Incidents[5]	8	181
Lost Time Injuries[6]	1	49
All-Injury Incidents[7] (Lost Time Injuries[6] and Medical Attention Requiring Treatment[8])	10	349

2.5 Safety Performance Frequency Metrics

To assess safety performance over time, the Project considers key safety metrics in the context of the total amount of hours worked (frequency), which corrects for the volume of work.

Table 3 summarizes these key safety metrics by quarter, for a rolling 12-month average.

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

3 Excludes any non-occupational incidents.

4 A permanently disabling injury is one in which someone suffers a probable permanent disability.

5 Serious incidents are any injury or near miss with a potential for a fatality or serious injury.

6 Lost time injuries are those where a worker (employee or contractor) misses their next shift (or any subsequent shift) due to a work-related injury/illness. If a worker only misses work on the day of the injury, it is not considered a lost time injury.

7 All-injury incidents include all work-related medical attention requiring treatment, lost time injuries, and fatalities.

8 Medical attention requiring treatment is where a medical practitioner has rendered services beyond the level defined as “diagnostic or first aid” and the worker (employee or contractor) was not absent from work after the day of the injury. Services beyond diagnostic/first aid include (but are not limited to) receiving stitches, a prescription, or any treatment plan such as physiotherapy or chiropractic.

Table 3 Summary of Safety Performance Frequency Metrics (2022 vs 2023)

	January – December 2022 (Rolling 12-Month Average)				January – December 2023 (Rolling 12-Month Average)			
	Q1 Jan-Mar	Q2 Apr-Jun	Q3 Jul-Sep	Q4 Oct-Dec	Q1 Jan-Mar	Q2 Apr-Jun	Q3 Jul-Sep	Q4 Oct-Dec
Serious Incident Frequency	0.70	0.82	1.07	1.17	1.24	1.13	n/a	n/a
Lost Time Injury Frequency	0.11	0.09	0.11	0.11	0.17	0.16	n/a	n/a
All Injury Frequency	1.27	1.17	1.18	1.22	1.16	1.11	n/a	n/a

The serious incident frequency (adjusted for work hours) for this reporting period was 1.13, compared to 0.82 for the same period in 2022. It is important to note the Project did experience an improvement in serious incident frequency compared to the reporting period of January to March 2023 (from 1.24 to 1.13). The serious incidents this quarter may be attributed to the higher volume of work involving higher-risk hazards, such as working at heights, working in proximity to heavy equipment, and operating heavy equipment. BC Hydro routinely shares safety performance results with Project contractors to help identify where corrective actions are required.

All serious safety incidents were investigated by the appropriate employers, and BC Hydro and contractor senior management participated in a review of these serious incident investigations. Mitigations and other corrective actions have been implemented to minimize the recurrence of similar incidents.

For this reporting period, the all-injury frequency decreased compared to the same period in 2022. This drop is primarily due to the rolling 12-month average methodology (higher incident months no longer included) than a material change in the number of reported injuries, which have remained consistent. Managing lost time injuries and return-to-work programs remain a priority for contractors.

Refer to Appendix C, Figure C-1 for the safety performance metrics of employee and contractor serious incident/near miss frequency, lost time injury frequency and all-injury frequency, in graphic format.

2.6 Regulatory Inspections and Orders

WorkSafeBC, under the authority of the *Worker's Compensation Act*, is the primary regulator with jurisdiction over safety for the Project. WorkSafeBC oversees worker safety (employee and contractor) for the Project, both on and off the dam site. The Ministry of Energy, Mines and Low Carbon Innovation is the regulatory authority for worker safety on any work fronts subject to the *Mines Act*, including West Pine Quarry, Portage Mountain Quarry, Wuthrich Quarry, and Area E.

As shown in Table 4, from April to June 2023, WorkSafeBC issued 14 regulatory inspection reports and seven regulatory orders to the Project. Of the 14 WorkSafeBC inspection reports, ten were 'clean sheets' with no orders. There were no regulatory inspections from the Ministry of Energy, Mines and Low Carbon Innovation during this reporting period.

Table 4 Safety Regulatory Inspection and Orders

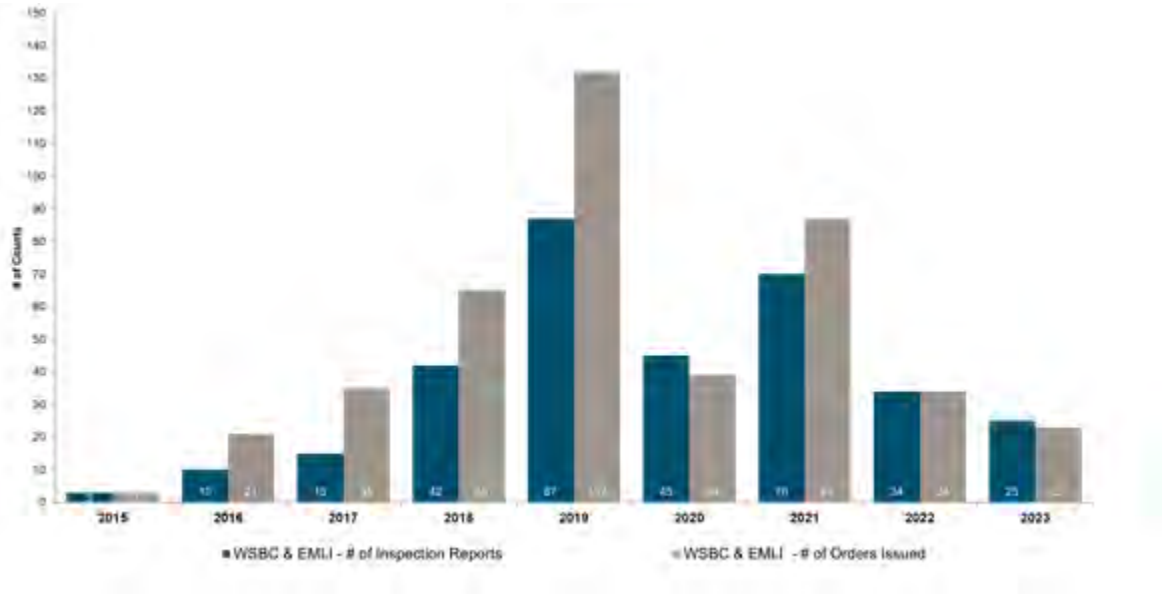
	Reported April 1 to June 30, 2023[9]	Reported Since Inception (July 27, 2015 to June 30, 2023)[9]
Regulatory Inspections	14	331
Regulatory Orders	7	439

Figure 1 shows the number of regulatory inspections and orders issued for the Project since 2015.

Refer to Appendix C, Table C-1 Safety Regulatory Inspections and Orders for a summarized listing of the regulatory inspection reports.

[9] Numbers are subject to change due to timing of when data is retrieved and when the injury is categorized.

Figure 1 WorkSafeBC and Ministry of Energy, Mines and Low Carbon Innovation Regulatory Inspections and Orders, July 2015 to June 2023



3 Construction, Engineering, Quality Management, and Assets In Service

3.1 Construction

Construction of the Project continued to advance during the reporting period. There continues to be uncertainty related to achieving the contractual schedules, and there are identified risks that could adversely affect these schedules. The time available to complete the remaining scopes of work is expected to be sufficient for the Project to meet the Project's approved schedule.

3.1.1 Main Civil Works

During the reporting period, construction activities took place on the right bank and earthfill dam as described below.

Approach Channel

As of June 30, 2023, there are approximately 100,000 cubic metres of material remaining to be removed from the approach channel. This material is planned to be removed in 2023.

Right Bank Drainage Tunnel

The main civil works contractor continues to progress the work in the right bank drainage tunnel. During the reporting period, activities in the right bank drainage tunnel include: drilling and grouting and the installation of drains; installing a concrete wall; and installing a tunnel lining system in the branch leading to the powerhouse.

Earthfill Dam

During the reporting period, the placement of materials for the core of the earthfill dam resumed, after being suspended due to the seasonal cold temperatures in the north.

The cumulative progress of material placed for the earthfill dam to June 30, 2023, was approximately 98% of the total planned material placements, with 265,000 cubic metres remaining to be placed out of the total approximately 15.5 million cubic metres of materials. Subsequent to the reporting period, BC Hydro announced at the end of July that it had reached a major milestone on the Site C Project with the completion of the earthfill dam to the elevation required to enable reservoir filling. The next steps involve capping it and building roads across for crews to travel on once the Project comes into operation.

Conveyor Belt System

The conveyor system that transports glacial till material used in the construction of the core of the earthfill dam resumed operations in April 2023.

Subsequent to the reporting period, and after the completion of the earthfill dam, the decommissioning of the conveyor belt system began.

Area E

As of June 30, 2023, nearly 997,000 cubic metres (out of a total of one million cubic metres) of material had been hauled from Area E to site for use in constructing the earthfill dam shell and for lining the approach channel. Hauling, pit clean-up and demobilization are now complete.

Planning for the physical reclamation of the Area E pit is in progress and is expected to begin in summer 2024.

3.1.2 Tunnel Conversion and Reservoir Filling

The process of tunnel conversion began on June 15, 2023.

After closing the tunnel intake gate and installing the stop logs on diversion tunnel 2, crews dewatered the tunnel, salvaged any fish that had been in the tunnel when it was closed, and completed initial safety and engineering assessments.

During tunnel conversion, four large orifice rings will be installed inside the tunnel, which will restrict the flow of water once the tunnel is reopened. The installation of these rings will support the filling of the reservoir.

Tunnel conversion work is currently tracking on schedule and expected to be complete in September. Subsequent to the reporting period, as of August 31, 2023, the grouting work on all four orifice rings was successfully completed. The contractor is completing some minor concrete work and demobilizing equipment.

Before BC Hydro is able to proceed with reservoir filling, all regulatory requirements must be met and each of the following key construction activities must be sufficiently complete:

Dam Site

- The earthfill dam, approach channel and spillways (including some gates);
- Right bank foundation enhancements;
- Modifications to the right bank cofferdam; and
- Tunnel conversion.

Off Dam Site

- Clearing of the Site C reservoir;
- Realignment of Highway 29; and
- The Hudson's Hope shoreline protection berm.

3.1.3 Site Operations and Infrastructure

The site operations and infrastructure section of this report includes updates for the reporting period on the construction and operations of the worker accommodation and debris management structures.

Worker Accommodation

The Norovirus outbreak that was declared on March 24, 2023, was declared over on April 14, 2023. Camp operations then returned to normal service levels and the shuttle service between the worker accommodation facility and the City of Fort St. John resumed.

BC Hydro and the camp operator continue to take precautions to minimize new outbreaks including a continuation of mandatory hand washing before entering the dining room.

With construction activities on site increasing in the second quarter of 2023, the worker accommodation facility has seen an increase in occupancy, with the highest

number of guests being 2,270 in June, resulting in 96% of the available 2,358 rooms being occupied.

Debris Management

There are three debris management structures on the Moberly and Peace Rivers to capture and prevent debris from entering the diversion tunnels and provide coverage for all headpond elevations.

During the reporting period, all three debris management structures operated normally.

Fish Habitat Creation on the Peace River

The construction of several fish habitat areas, located adjacent to small islands in the Peace River downstream of the dam site, is ongoing and the projects are in various stages of completion.

Aggregate excavated from the river as part of these projects is being used in dam construction.

All fish habitat work, including site reclamation, is expected to be complete by fall 2023. The planting of deciduous and coniferous species will be completed in 2024.

Howe Pit

The contractor remobilized in June 2023 to complete drainage works and reclamation activities at Howe Pit.

The Ministry of Transportation and Infrastructure continued to haul and stockpile slab and granular pavement recovered from the Highway 29 decommissioning project for use in surfacing the final dam site roads.

3.1.4 Generating Station and Spillways

During the reporting period, construction progressed on the generating station and spillways civil works, cranes and hydromechanical equipment as described in the following sections.

Generating Station and Spillways Civil Works

The generating station and spillways civil works contract includes the delivery of civil works associated with the powerhouse, intakes, penstocks and spillways.

By concrete volume, the generating station and spillways civil works were approximately 96% complete as of June 30, 2023.

Powerhouse

Following an extensive coring and excavation program, all the nonconforming concrete around the unit 4 spiral casing that was placed in December 2022 has been removed and replaced with conforming concrete. The contractor still expects to be able to achieve the approved in-service dates for all units.

The powerhouse concrete is 95% complete.

Intakes Headworks

As of June 30, 2023, concrete placements for all intakes were near completion.

Penstocks

The flexible couplings (penstock sections that allow the penstocks to expand and contract) are being redesigned to fully meet BC Hydro's specification requirements. The installation of the alternative flexible couplings is forecast to begin in August 2023.

Penstock coating is forecast to be complete by September 30, 2023.

Spillways

The contractor has completed more than 96% of the spillways concrete. Work on the concrete structures to enclose the mechanical systems for the gates continues to progress. The spillways concrete is forecast to be complete by August 31, 2023.

Cranes

The tailrace gantry crane was placed into service in May 2023. All large cranes have now been commissioned.

Hydromechanical Equipment

The gate guides for intakes 1, 2, 3, 5 and 6 are complete, and the physical gates are installed in intakes 1, 2, 3 and 6 and are at various stages of completeness.

Work continued on spillway operating gates 1, 2 and 3, and the assembly of the gate elements is 100% complete. Currently the painting, cladding, electrical and mechanical system installation has commenced.

The installation of the gate guides continued on low level operating gates 1, 2 and 3, and are 63%, 78% and 78% complete, respectively. Work on low level operating gates 4, 5 and 6 continues and are 53%, 39% and 39% complete, respectively.

3.1.5 Right Bank Foundation Enhancements

As of June 30, 2023, ongoing reviews by the Technical Advisory Board and the two independent, world-leading dam experts continued to confirm that the design of the foundation enhancements, located on the Project's right bank, meet the highest safety standards and international best practices.

From April 1 to June 30, 2023 construction continued on the right bank foundation enhancements which address the geotechnical issues that were identified in the bedrock foundation on the Project's right bank. Construction of the right bank

foundation enhancements commenced in 2021 and the work completed to June 30, 2023, includes:

- The installation of 48 large diameter concrete-filled vertical steel piles located within the spillways;
- The installation of 48 large diameter concrete-filled vertical steel piles located downstream of the powerhouse;
- Construction of the powerhouse pile caps; and
- The completion of approximately 60% of the approach channel waterproofing, including bedrock surface excavations, cleaning, installation of waterproofing lining materials, reinforced concrete placements, grouting and granular fill placements.

Completion of the enhancements to the erosion protection downstream of the large diameter piles and enhancements to the approach channel are on track to be completed in summer and fall 2023, respectively.

3.1.6 Balance of Plant

The balance of plant contracts are split between three contractors and include the following scopes of work: (1) mechanical; (2) electrical (includes architectural, heating, ventilation, and air conditioning, and fire detection and protection work); and (3) permanent upstream fishway and other out structures.

The mechanical and electrical work progressed inside the powerhouse in the areas available to the contractors, which includes partial sections of the upstream generator floor, the downstream generator floor, the operations building, the mechanical floor and the draft tube and dewatering levels in the powerhouse.

The mechanical contractor continues to make good progress constructing the powerhouse drainage and dewatering system, and completed the system in

July 2023. Commissioning is scheduled to start in mid-August 2023 to support tailrace filling activities.

The electrical contractor continued installation of the electrical station service in the powerhouse, intakes, and spillways, including the installation of approximately one-third of the 580 kilometres of cables. In addition, the contractor has installed over half of the isolated phase bus sections that will connect the unit 1 and 2 generators to the BC Hydro's electrical system.

Architectural work in the operations building is progressing and the heating, ventilation and air conditioning work continues. The installation of the fire protection has also started.

The permanent upstream fishway and other out structures contractor has continued concrete placements at the fishway and is projecting to complete the balance of the concrete placements in 2023. The permanent upstream fishway is on schedule to be in service for spring 2024.

3.1.7 Turbines and Generators

The scope of work for turbines and generators includes the complete design, supply, installation, testing and commissioning of six turbines, generators, governors and exciters.

During the reporting period, the contractor has continued working on units 1, 2 and 3. The majority of the components for unit 1 have been installed and the unit is scheduled to be ready for the start of commissioning by summer 2023.

The turbine spiral case flexible couplings remain a risk, as the hydrostatic pressure test of the unit 1 coupling in June did not meet BC Hydro's specification requirements. As a result, the turbine and generator contractor dismantled the coupling, performed a root cause analysis and started implementing a series of modifications to the coupling and improvements to the seal assembly process. A

second hydrostatic pressure test was performed in July. As the test pressure was raised, leakages were observed from the downstream sealing element of the coupling. Based upon visual observations during the second test, combined with the learnings from the first test, additional clarity was gained on the stiffness of the coupling housing and the sensitivity of the sealing elements to local geometric variations in the sealing chamber. BC Hydro and the contractor are working to finalize the details of a design modification to the unit 1 coupling housing that will address these issues. These modifications are expected to be fully implemented by fall 2023.

The installation of the unit 2 turbine and generator is progressing and is expected to be ready for the start of commissioning in fall of 2023.

The turbines and generators for units 4, 5 and 6 were delayed due to a now-resolved quality issue related to nonconforming concrete placements, but are still expected to meet the approved schedule.

3.1.8 Transmission

The assembly of the transmission towers continued for the three one-kilometre-long, 500 kilovolt transmission lines connecting the Site C substation to the Site C powerhouse. The installation of the final three towers and final conductor stringing is scheduled to be completed in 2023.

3.1.9 Highway 29 and Hudson’s Hope Shoreline Protection Berm

The highways sub-project includes the construction of 32 kilometres of highway and five new bridges along Highway 29; construction of a shoreline protection berm within the District of Hudson’s Hope to protect against bank erosion due to reservoir wind waves and water table rise; the development and operation of the Portage Mountain Quarry, which supplied riprap and filter materials for highway and berm

construction; and the construction of recreational facilities at Halfway River, Lynx Creek, and Hudson's Hope.

For the Highway 29 realignment, work remains on track to support reservoir filling. The following reflects progress to June 30, 2023:

Cache Creek

Construction of the Cache Creek segment includes 8.6 kilometres of highway and a 617-metre-long bridge.

The Cache Creek segment opened to traffic on December 1, 2022. Work resumed in spring 2023, including paving, deficiency repairs on the bridge, some drainage work and the removal of two temporary bridges.

Decommissioning work for the Cache Creek segment began in February 2023, including the removal of the previous Cache Creek bridge, which was completed in March 2023.

Halfway River

The Halfway River segment includes the realignment of 3.7 kilometres of highway and the construction of a new one-kilometre-long bridge crossing the Halfway River, approximately 500 metres from the previous bridge.

The Halfway River segment opened to traffic on March 30, 2023. Temporary cover plates have been installed on the existing expansion joints on the bridge to make them safe for bicycles; the permanent expansion joints are anticipated to be installed in fall 2023.

Decommissioning work for the Halfway River segment is ongoing.

Farrell Creek

The Farrell Creek segment includes the realignment of 1.9 kilometres of highway, including the construction of a new 411-metre-long bridge.

Construction is complete and decommissioning activities are ongoing.

Decommissioning work at Farrell Creek began in January 2023, and continued through the reporting period.

Lynx Creek

The Lynx Creek segment includes the realignment of 9.1 kilometres of highway and the construction of a 169-metre-long bridge.

The Lynx Creek highway alignment opened to traffic on November 17, 2022. Construction at Lynx Creek resumed in March 2023, including completion of a stability buttress and the mitigation of a sand seam on the west approach of the bridge. Work is expected to be completed in August 2023.

Construction of the Lynx Creek boat launch resumed in March 2023 and is anticipated to be complete by summer 2023.

Decommissioning work for the Lynx Creek segment began in January 2023 and continued through the reporting period. Removal of the previous Lynx Creek bridge began in March 2023 and was completed in May 2023.

Portage Mountain Quarry

Portage Mountain Quarry supplied riprap and berm filter materials for various segments of the Highway 29 realignment and construction of the shoreline protection berm in the District of Hudson’s Hope.

All production of riprap for Highway 29 and the Hudson’s Hope berm was completed and the focus is now on the implementation of quarry reclamation. A procurement for the reclamation of Portage Mountain was initiated in February 2023 and is expected

to be awarded by late July 2023. The work is expected to begin in late summer 2023.

Hudson's Hope Shoreline Protection Berm

The Hudson's Hope shoreline protection scope of work includes a 2.6-kilometre-long shoreline protection berm along the Peace River that will protect the slopes adjacent to the town of Hudson's Hope from shoreline erosion due to impacts from the Site C reservoir.

The berm was completed in November 2022. With the shoreline protection berm now completed, the next step is to build the D.A. Thomas Recreation area. Construction on the recreation area is beginning this summer, which includes a day use area, floating jetty, and improved access road. It's expected to be completed in spring 2024.

Halfway River East Boat Launch

After a seasonal shutdown over winter, work on the Halfway River East boat launch resumed in spring 2023 and is expected to be complete by fall 2023.

3.1.10 Reservoir

The following reflects progress to June 30, 2023:

Middle Reservoir, Halfway River Drainage and Western Reservoir

Clearing activities are substantially complete. The remaining activities to be completed include road deactivation activities, and clearing of one animal buffer area, which is scheduled for late summer 2023.

Other Reservoir Work

The scope of other reservoir work includes infrastructure relocations as well as environmental offset works, which are required as part of reservoir filling.

BC Hydro's existing transmission line crossing of the Halfway River drainage needed to be relocated prior to reservoir filling. This work was substantially complete by November 2022 and crews returned to site in June 2023 to address any construction deficiencies.

In October 2022, a contract was awarded to a First Nations-designated business for the final fish habitat site situated at Wilder Creek. Construction is expected to start in late summer 2023.

The construction of a fish habitat site at Maurice Creek began in June 2022 and crews returned in June 2023 to complete any outstanding deficiencies. This work is now substantially complete.

3.2 Engineering

The Site C engineering team is responsible for defining the Project's design requirements, preparing the Project designs and contract specifications, and ensuring the safety and quality of the assets. The team consists of in-house design specialists from BC Hydro and a range of external consultants from engineering firms who are responsible for the various design components.

3.2.1 Main Civil Works

Support for the main civil works contract continued during the reporting period supporting excavations, foundation mapping, approach channel lining and grouting, and instrumentation reading and interpretation. Instrumentation monitoring in the reporting period has indicated positive results with respect to dam stability and has confirmed that the dam foundation is responding to dam fill placements as predicted.

Detailed geological mapping of the excavations in the approach channel continued and is nearing completion. This geological information will continue to be used to update the design parameters for the site geology and foundations.

3.2.2 Right Bank Foundation Enhancements

During the reporting period, value engineering activities continued in support of improvements to the design of the approach channel. Work included advancing the design of external waterstops on the construction joints at the power intakes and spillway headworks and drainage adjacent to the auxiliary spillway and lower spillway right walls.

BC Hydro continued to engage the independent international dam experts, Technical Advisory Board and other subject matter experts to provide oversight of activities associated with the design of the foundation enhancements and construction of the Project. Refer to section 3.2.7 for a summary of the Technical Advisory Board meetings.

3.2.3 Large Cranes, Hydromechanical, and Turbines and Generators

During the reporting period, the focus continued to be on supporting equipment installation activities at site, manufacturing activities offsite, vendor submittal reviews and integration design.

3.2.4 Generating Station and Spillways, Balance of Plant, and Equipment Supply

During the reporting period, work focused on the production of record drawings for the powerhouse and intakes, along with supporting construction with the review of submittals for the powerhouse, intakes, penstocks, and spillways. The first package of record drawings was issued during the reporting period.

All nonconforming concrete around the spiral case in unit 4 has been successfully removed and replaced with conforming concrete.

The balance of plant scope of work continued with the preparation and issuance of the issued-for-construction drawings for the balance of plant mechanical; electrical (includes architectural, heating, ventilation, and air conditioning, and fire detection

and protection work); and permanent upstream fishway and other outstructures contract packages as needed to support integration design for the contractor's design components. The balance of plant team also continued to support construction activities for these contracts, including the review of the technical submittals and contractor design drawings, and performing additional factory acceptance testing and factory visits for the diesel generator contract.

Engineering design and fabrication continued to be advanced on the protection and control systems, and integrated testing is also progressing on the fabricated equipment. In addition, with issued-for-construction drawings now being provided by contractors for contractor-designed, supplied, and installed equipment, a major focus for the engineering team is integration design.

Overall, the detailed engineering on the generating station and spillways is complete, except for the design of the right bank foundation enhancements, where the detailed engineering is approximately 95% complete.

3.2.5 Transmission

During the reporting period, engineering support continued to be provided to complete substation and transmission line record drawings and provide construction support to the powerhouse transmission lines that will connect the Site C substation to the Site C powerhouse.

3.2.6 Highway 29

Engineering support continued to be provided for the construction activities for the various highway segments, the upgrade to D.A. Thomas Road, and the Halfway River boat launch. A final engineering walkthrough was completed on the Lynx Creek highway segment. Engineering also provided support for the review of record drawings and close-out documents on the Farrell Creek East, Farrell Creek and Dry Creek segments.

3.2.7 Technical Advisory Board and Independent International Dam Experts

A series of video conferences with the Technical Advisory Board occurred during the reporting period. The independent international dam experts issued a report (No. 7) in May 2023. Refer to Appendix E for the international dam experts report No. 7.

3.3 Quality Management

BC Hydro continues to implement the Site C Quality Management Plan in order to achieve the quality objectives of the Project. During the reporting period, the Project team continued its activities to support the Project quality plan, including:

- Ongoing meetings with the quality management teams of key manufacturers and the site contractors to address quality issues as they arise;
- Performing quality audits of the site contractors;
- Participating in factory acceptance tests at manufacturer's facilities; and
- Continuing with monthly quality performance indicator assessments for each sub-project.

When a quality issue is identified during the course of construction, BC Hydro and its contractors continue to work to rectify the issue to ensure that the quality of the completed work achieves the quality specifications.

3.3.1 Quality Nonconformance Management

The identifying and reporting of nonconformances continues to be an important part of quality management on Site C.

Table 5 summarizes quality nonconformity instances during the reporting period.

Table 5 Quality Management Nonconformity Report (NCRs) Metrics Reporting Period – April 2023 to June 2023

Contract	NCRs Reported April 1 to June 30, 2023	NCRs Closed April 1 to June 30, 2023	NCRs Reported as of June 30, 2023	NCRs Closed as of June 30, 2023	NCRs Open as of June 30, 2023
Main Civil Works	20	23	2,057	2,036	21
Turbines and Generators (total = manufacturing + installation)	122 (=10+112)	86 (=19+67)	1,120 (=637+483)	951 (=608+343)	169 (=29+140)
Generating Station and Spillways Civil Works	117	98	1,634	1,529	105

For the main civil works subproject, the quality of the main dam construction continues to be good and there are no significant quality issues. BC Hydro continued to meet with the main civil works contractor on a weekly basis to discuss broader topics related to quality.

The quality of the constructed works in the generating station and spillways and intake structures continued to be good. Manufacturing of the replacement penstock flexible coupling is advancing and BC Hydro's quality inspector is performing surveillance and participating in witness and hold points in accordance with the manufacturing inspection and testing plan.

Following an extensive coring and excavation program, all the nonconforming concrete around the unit 4 spiral casing that was placed in December 2022 has been removed and replaced with conforming concrete. The procedural and engineering controls that were put in place at the concrete batch plant remain in place to ensure that this type of incident does not occur again.

During the post-embedment inspection of the transmission tower anchor bolts on intakes 1, 3 and 5, concerns were raised about the low-temperature impact strength of the anchor bolt material. Additional testing was performed on a sample bolt and it confirmed that the material did not meet the specification requirements. BC Hydro

and the contractor agreed to remove and replace the anchor bolts. The replacement work is complete on intake 1 and tracking to plan on intakes 3 and 5. BC Hydro and the generating station and spillways contractor continue to meet weekly to discuss and resolve open nonconformity reports as well as discuss broader topics related to the contractor's quality performance.

During the reporting period, there were no significant quality issues with the approach channel construction or the tailrace pile cap concreting.

For the turbines and generators contract, the quality of the assembly and installation work at site continues to be good and BC Hydro continues to focus its quality assurance efforts on the generator stator core stacking and stator winding installation. The turbine spiral case flexible couplings remain a risk, as the hydrostatic pressure test of the unit 1 coupling in June did not meet requirements. As a result, the turbine and generator contractor dismantled the coupling, performed a root cause analysis and started implementing a series of modifications to the coupling and improvements to the seal assembly process. A second hydrostatic pressure test was performed in July. As the test pressure was raised, leakages were observed from the downstream sealing element of the coupling. Based upon visual observations during the second test, combined with the learnings from the first test, additional clarity was gained on the stiffness of the coupling housing and the sensitivity of the sealing elements to local geometric variations in the sealing chamber. BC Hydro and the contractor are working to finalise the details of a design modification to the unit 1 coupling housing that will address these issues. These modifications are expected to be fully implemented by fall 2023. BC Hydro continues to meet with the turbines and generators contractor on a weekly basis to discuss upcoming inspections, quality issues and the overall quality assurance program.

For the electrical and mechanical balance of plant, there were no significant quality issues during the reporting period.

3.4 Assets In Service

Before all major pieces of equipment and assets are placed into service on the Project, inspecting, testing, and commissioning activities are completed to ensure that all components are fit for service and safe to transition to operations.

The pre-commissioning testing includes offline testing of individual pieces of equipment. Once the offline testing is completed, BC Hydro prepares and signs a Commissioning Notice to Energize, which states that the asset is safe to connect to the BC Hydro transmission grid and the online testing can commence. At the conclusion of the online testing, the signing of a Commissioning Notice to Operate formalizes the handover of the asset from the Project team to BC Hydro Operations. The commissioning process undertaken for the earthfill dam and associated assets will form part of the comprehensive dam safety and reservoir filling plan.

Once assets are placed in service, BC Hydro Operations is responsible for the long-term operations and maintenance of the equipment and assets.

As of June 30, 2023, the following permanent assets have been placed into service on the Project:

- Site C substation;
- 500 kV gas-insulated switchgear expansion at the Peace Canyon substation; and
- Two new 500 kV transmission lines that connect the Site C substation to the Peace Canyon substation.

4 Project Schedule

4.1 Project In-Service Dates

BC Hydro is currently on track to achieve the approved final unit in-service date in 2025.

BC Hydro and its contractors have agreed to contractual schedules that could result in reservoir filling in fall 2023 and first power earlier than planned without compromising safety, quality and commitments to the environment and First Nations. However, meeting this time frame remains subject to risks.

Table 6 shows the status of key Project milestones in relation to the approved final unit in-service date in 2025.

Table 6 In-Service Dates

Description	In-Service Dates based on Approved Budget and Schedule (June 2021)[10]	Status
5L5 500 kV Transmission Line	October 2020	Complete
Site C Substation	October 2020	Complete
5L6 500 kV Transmission Line	July 2023	Complete
Unit 1 (first power)	December 2024	On Track
Unit 2	February 2025	On Track
Unit 3	May 2025	On Track
Unit 4	July 2025	On Track
Unit 5	September 2025	On Track
Unit 6	November 2025	On Track

[10] In-service dates based on Treasury Board's approval of the revised budget and schedule in June 2021.

5 Project Governance, Costs and Financing, and Risk

5.1 Project Governance

During the reporting period, activities supporting Project governance included:

- The BC Hydro Board of Directors continued to meet on a monthly basis to provide governance, financial approvals of committed contracts over $75 million (and their related changes)[11], and received updates on Project progress and key remaining risks;
- The Project Assurance Board continued to meet monthly to provide independent due diligence and oversight of the Site C Project to enable the Project to be fit for purpose and to be completed safely, on time and on budget;
- The commercial sub-committee of the Project Assurance Board continued to meet monthly to provide oversight on claims management, commercial strategy and contractual negotiations;
- The Technical Advisory Board continued to provide technical expertise and guidance to the Project Assurance Board and support to the Project team;
- Ernst & Young Canada continued to provide independent oversight for the Project, specifically with risk management, which included reviewing Project risks and the analysis for the schedule and costs for the Project, and the evaluation of commercial management;
- BC Hydro and Ernst & Young Canada worked closely and collaboratively to complete the cost risk analysis and schedule risk analysis with a May 1, 2023 data date;
- Special advisor Peter Milburn continues to work with the Project to ensure that his recommendations, which have all been implemented, continue to be

[11] Financial approval limits of committed contracts for the BC Hydro Board of Directors increased to $75 million (from $50 million) effective June 8, 2023.

sustained. Mr. Milburn participated in the cost risk analysis and schedule risk analysis with a May 1, 2023 data date; and

- In April 2023, Mr. Milburn and Ernst & Young Canada representatives held a site visit to observe construction progress and meet Project team members.

5.2 Project Budget Summary

As of June 30, 2023, the life-to-date actual costs are $11.7 billion, which results in an estimated $4.3 billion of remaining costs based on the forecast of $16 billion. The Project remains on track to be completed within the approved $16 billion budget. BC Hydro, with oversight from the Project Assurance Board, continues to actively manage the Project budget and potential Project risks for the remaining work.

5.3 Project Expenditure Summary

Table 7 includes a breakdown of the $16 billion Project budget, approved in June 2021, by key work area, life-to-date actual expenditures to June 30, 2023, and the remaining budget.

Table 7 Project Budget by Key Work Area ($ million)

Description	Project Budget[12]	Actuals, Life-to-Date (as of June 30, 2023)	Remaining Budget (as of June 30, 2023)
Dam, Power Facilities and Associated Structures and Transmission[13]	8,258	6,749	1,509
Off Dam Site Works, Direct Construction Supervision and Site Services[14]	2,895	2,187	708
Total Direct Construction Cost	11,153	8,936	2,217
Indirect Costs[15]	2,082	1,421	661
Total Construction and Indirect Costs	13,235	10,357	2,878
Interest During Construction and Contingency	2,765	1,312	1,453
Total	16,000	11,669	4,331

Table 8 provides a summary of the approved total Project budget, the current forecasts, and related variances. The table also presents the cumulative plan and actual costs to June 30, 2023, and the related variances. The plan amount reflects the Project budget of $16 billion approved in June 2021 and the related preliminary forecasted annual spend at that time.

12 The total Project budget was approved in June 2021 by Treasury Board.

13 Key items included are river diversion infrastructure, earthfill dam and related works, spillways, powerhouse, generation equipment and transmission and substation work.

14 Key items included are highway re-alignment and reservoir related work, direct construction supervision, and site services such as worker accommodation.

15 Key items included are mitigation and compensation programs, development and regulatory costs, project management, engineering and other support services such as Project controls, contracts management, environmental, and Indigenous relations.

Table 8 Total Project Budget Compared to Forecast to Completion and Life-to-Date Plan Compared to Actuals to June 30, 2023 ($ million)

	Total Project			Life-to-Date (LTD) to June 30, 2023		
Description	Budget	Forecast to Completion	Variance	Plan	Actual	Variance
Total Construction & Indirect Costs	13,235	13,235	0	11,443	10,357	1,086
Interest During Construction and contingency	2,765	2,765	0	1,649	1,312	337
Total	16,000	16,000	0	13,092	11,669	1,423

Details of the variances between life to date actual and plan are in Appendix H.

Table 9 provides a Fiscal 2024 summary, for the plan, actual cost and related variance based on the 2023/24 to 2025/26 Service Plan.

Table 9 2023/24 to 2025/26 Service Plan Fiscal 2024 Plan Compared to Actuals ($ million)

Description	2023/24 to 2025/26 Service Plan, Fiscal 2024	Actuals, Fiscal 2024	Variance
Total Project	746	653	93

Details of the variances between actual and plan are in Appendix H.

5.4 Site C Project Financing

Most of BC Hydro's capital projects, including the Site C Project, are debt financed. The Site C Project costs are included as part of BC Hydro's overall borrowing and included in the Government of B.C.'s budget and fiscal plan. The debt and related interest costs are managed corporately by BC Hydro.

5.5 Material Project Risks and Opportunities

Material project risks and opportunities are identified and reviewed by BC Hydro management and the Project Assurance Board on an ongoing basis. Project risks are uncertain events that, if they occur, could result in a negative impact or loss to a

project. Similarly, opportunities are uncertain events that, if they occur, could result in a positive impact, or benefit, to a project.

As the Project progresses through implementation phase, the Project risks and opportunities will continue to evolve.

The criteria for selecting which risks and opportunities to include in internal and external reporting include both objective and subjective measures; these criteria have been utilized to select the risks and opportunities included in this report.[16]

Refer to Table 10 and Table 11 for a list of the material Project risks and opportunities as of June 30, 2023.

Table 10 Material Project Risks

Risk Description	Impact and Response Plan Summary
Safety incident resulting in a fatality or disabling injury	**Impact:** Serious worker injury or fatality; Project delays and associated costs. **Response**: Continue to monitor safety performance through BC Hydro's field-based Safe Work Observations program and ongoing safety management and analytics; support continuous improvements to the Safe Work Observations program to reinforce safety behaviours in the field; continue to share safety learnings; work with Project contractors on more collaborative safety incident investigations and track/follow-up on corrective actions; work with WorkSafeBC and contractors on safety equipment and process audits and programs focused on high hazard work activities at site; conduct joint safety planning workshops for upcoming work scopes; and continue to include safety in BC Hydro and contractor onboarding orientations to promote and encourage a strong safety culture across the Project.

[16] The risks and opportunities included in Table 10 and Table 11 are grouped thematically. The lists do not include risks and opportunities that are subject to confidentiality obligations or solicitor-client privilege, or that disclose commercially sensitive information relating to matters that are currently outstanding, including procurements and negotiations that are in progress at the time of this report, the disclosure of which would be harmful to BC Hydro's commercial interests.

Risk Description	Impact and Response Plan Summary
Wildfire on or off site	**Impact:** Injuries and fatalities, impacts to construction site, work stoppages and delay to the Project schedule. **Response:** Work closely with B.C. Wildfire Service, ensure the contractor fire brigade on site is prepared and available, ensure timely support from the Fort St. John Fire Department off site, and conduct fire safety assessments and implement recommendations.
Adits or right bank drainage tunnel may need additional structural support post reservoir filling	**Impact:** Requirement for additional structural support, resulting in additional costs. **Response**: Design additional support as required and implement measures to address as-found conditions.
Penstock flexible couplings do not perform as expected	**Impact:** Schedule delays and/or additional costs. **Response**: Ongoing modification and on-site testing of the couplers. Implement alternative design and supply as needed.
Tunnel conversion delayed due to constructability, condition, safety or operational issues	**Impact:** Schedule delay, Project cost increases; damage to structure requiring repairs. **Response**: Diversion outlet stoplogs maintenance and surveillance program; joint BC Hydro and contractor constructability and planning reviews; monitor diversion tunnels performance and inspections; identify hazards, ensure mitigation work executed and work with BC Hydro Operations team to ensure upstream facilities ready to support the conversion works.
Right bank foundation enhancements at approach channel require additional work	**Impact**: Impacts to contractors' existing scopes of work and schedule due to the right bank foundation enhancements, resulting in cost and schedule impacts. **Response:** Rely on the schedule change terms of existing contracts to proceed with any required change orders for the right bank foundation enhancements work scope, which will minimize the risks to existing contractors' scopes of work.
Additional effort required to comply with mandatory reliability standards	**Impact:** Mandatory reliability standards require the implementation of cyber security and physical security measures in the Site C powerhouse. Additional reliability standards may result in additional work and costs. **Response**: A Site C mandatory reliability standards Steering Committee meets regularly to review requirements. A project manager has been assigned to implement measures as required.
Powerhouse, spillways and intakes don't conform to specifications	**Impact:** Schedule delays. **Response**: Follow rigorous quality program including inspection and test plans, hold and review points, and site quality surveillance.

Risk Description	Impact and Response Plan Summary
First unit commissioning delay	**Impact**: Delay to unit 1 in-service and could result in additional costs. **Response:** A commissioning plan has been developed. The plan is being implemented with commissioning activities starting as early as possible.
Major rainfall event floods approach channel and tailrace work areas during tunnel conversion	**Impact:** Potential damage to completed or in-progress construction work due to flooding during tunnel conversion. **Response**: Monitor flows during weather events; complete flood sensitive work prior to spring/summer rain season.
Shortage of rip rap supply impacts construction	**Impact**: Additional rip rap required due to higher-than-expected wastage during handling and additional in-place rip rap density requirement. **Response**: Secure additional production and transportation, explore solutions to minimize waste.
Project contractors unable to attract and retain key management personnel	**Impact**: Exposure to schedule delays and additional costs, which could also be associated with meeting safety, environment, engineering, or quality requirements. **Response**: Monitor Project contractors' resource levels, turnover, and key role vacancies; continue to collaborate with Project contractors on the availability of key personnel.
Project contractors cannot attract and retain sufficient skilled craft workers	**Impact:** Contractors may not be able to adequately source, supply, attract, and retain sufficient Project labour including leaders in the hourly craft workforce such as forepersons, lead hands and senior journeypersons 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. **Response**: Contractors provide labour sourcing and supply plans, provide advance notice of foreign workers, and participate in local job fairs. BC Hydro encourages and facilitates capacity-building initiatives and monitors employee turnover rates and labour conditions on other projects.
Risk of contractor claims	**Impact**: Increased construction management and contract management effort required to respond to and investigate claims; settlement of claims may result in increased costs. **Response**: Ensure sufficient commercial management resources in place, proactively resolve claims as received, and ensure commercial management procedures are in place and are being followed.
Project pays higher contractors' craft labour market increases	**Impact:** Increased labour market pressures could result in industry benchmarks exceeding the contracted baseline, resulting in Project cost increases. **Response**: Follow the contractual provisions related to labour escalation rates.

Risk Description	Impact and Response Plan Summary
Indigenous Nations burial site management and community support take longer than planned	**Impact:** Schedule delays and/or cost impacts to recover schedule and obtain necessary regulatory approvals. **Response:** Work closely with affected Indigenous Nations to develop and implement appropriate burial site management options. Ensure sufficient amounts of time are available in the Project schedule.
District of Hudson's Hope may seek further funding for water supply system	**Impact:** Additional costs. **Response:** Continue to meet obligations under the Water Agreement and work constructively with the District of Hudson's Hope. BC Hydro installed a water conveyance system into the shoreline protection berm to enable access by the District of Hudson's Hope.
Higher interest during construction on Project than planned due to increases in weighted average cost of debt rates	**Impact**: Although BC Hydro hedges debt based on BC Hydro's approved hedging strategy, risk remains for fluctuations in short-term interest rates which are not hedged and due to the regulatory accounting for realized gains / losses on hedges during the current Revenue Requirement Application period. These could result in higher interest during construction for the Project than budgeted. **Response**: BC Hydro is implementing its approved hedging strategy and closely manages the annual expenditures and the schedule for first power in-service, which is when the majority of the interest during construction will cease on the Project.
Increasing regulatory requirements relating to management of potentially acid-generating rock	**Impact**: Potential cost implications and schedule impacts. **Response**: Clarify any new regulatory requirements and/or non-compliances and ensure all potentially acid-generating rock locations have a suitable environmental prescription that mitigates the risk of acidic water.
Work force strike, work stoppages & lockouts impacts site work	**Impact:** Workforce disruptions causing schedule delays and increased costs, including disruption to transportation. **Response**: BC Hydro to enforce contracts and mitigate transportation disruptions.

1 **Table 11 Material Project Opportunities**

Opportunity Description	Impact and Response Plan Summary
Lower interest during construction due to timing of Project expenditures	**Impact**: Lower Project interest costs than the amount budgeted. **Response:** Monitor Project expenditure timing and manage expenditures effectively.

6 Key Procurement and Contract Developments

6.1 Key Procurements

The vast majority of the major Site C contracts have been awarded. The remaining procurements on the Project are summarized in Table 12.

Table 12 Remaining Major Project Procurements and Delivery Models

Component	Contract	Procurement Model	Anticipated Timing
Reclamation Program	Multiple seeding supply contracts and reclamation contracts to be awarded over three to four years	Design-Bid-Build	Four planting packages and two reclamation packages have been identified for the 2024 planting season. Procurement of these packages will start in June 2023.

6.2 Major Construction Contracts Exceeding $50 Million

Since inception of the Project, 14 major construction contracts have been awarded that exceed $50 million in value, as shown in Table 13. The contract values reflect the current value including executed approved changes to the end of the reporting period.

All construction contracts have been procured and awarded in accordance with BC Hydro procurement policies.

Table 13 Major Project Construction Contracts Awarded

Contract	Contract Value at June 30, 2023[17] ($ million)	Contract Execution Date
Site Preparation: North Bank	60	July 2015
Worker Accommodation	693	September 2015
Main Civil Works[18]	3,282	December 2015
Turbines and Generators	536	March 2016
Transmission and Clearing	92	October 2016
Quarry and Clearing	154	February 2017
Generating Station and Spillways Civil Works[19]	2,857	March 2018
Hydromechanical Equipment	73	April 2018
Transmission Line Construction	139	May 2018
Clearing and Aggregates	73	December 2018
Highway 29	381	October 2019
Balance of Plant Mechanical	72	July 2021
Balance of Plant Electrical (includes balance of plant architectural; heating, ventilation, and air conditioning; and fire detection and protection work)	239	September 2021
Balance of Plant Permanent Upstream Fishway and Other Out Structures	93	January 2022

6.3 Contracts Exceeding $10 Million

For open contracts procured and awarded in excess of $10 million, refer to Appendix F.

[17] Contract value reflects the current value including executed change orders to the end of the reporting period. Contract values are rounded to the nearest million.

[18] Includes some of the scope of work for the right bank foundation enhancements.

[19] Includes some of the scope of work for the right bank foundation enhancements.

6.4 Contract Management

6.4.1 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 $1.53 billion to reflect approved changes to June 30, 2023.

The generating station and spillways contract is also a unit price contract and, as such, variations in quantities and design are expected over the term of the contract. Since contract award in March 2018, the generating station and spillways contract value has increased by $1.25 billion to reflect approved changes to June 30, 2023.

7 Indigenous Engagement

Pursuant to the Environmental Assessment Certificate and Federal Decision Statement, BC Hydro is required to engage with 13 Indigenous Nations with respect to the construction stage of the Project. This consultation includes the 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.

BC Hydro continues to advance economic opportunities for Indigenous Nations through capacity building and procurement opportunities. Approximately $734 million in Site C procurement opportunities have been awarded to companies designated by Indigenous Nations since the beginning of the Project, pursuant to BC Hydro's Indigenous Procurement Policy. Working on the Site C Project has helped businesses designated by Indigenous Nations to build and grow their reputations, expand the scale of their operations, and develop new expertise to compete in the regional economy.

During the reporting period BC Hydro has continued to work with Indigenous Nations on a variety of initiatives. For example, a meeting of the Environment Forum was held on May 24, 2023 with representatives from several Indigenous Nations. Topics of discussion included preparations for reservoir filling, the Conservation Officer position funded by Site C in collaboration with Treaty 8 Nations, and updates on the reclamation program. BC Hydro also met with Indigenous Nations to discuss fish consumption and Methylmercury monitoring.

During the reporting period, the BC Hydro Indigenous Relations team hosted 12 tours of the dam site and future reservoir area with Indigenous community members. These tours are a meaningful opportunity for Indigenous Nations to see the Project first hand and to prepare for the pending changes when the reservoir is flooded.

BC Hydro also met with Indigenous Nations to review options for the site location of the future cultural centre. The cultural centre project is an important accommodation for the cultural impacts of Site C. The facility will showcase local Indigenous culture and history in the region, and to store and display many of the artifacts uncovered during the construction of Site C.

In June 2023, 539 Indigenous people were working on the Site C Project, which is a new Project high and represents approximately 10% of the total workforce.

8 Litigation[20]

The details of open proceedings as of June 30, 2023, are summarized in Table 14.

[20] As indicated in the prior quarterly progress reports, the Litigation summary level of detail has been simplified and the indicator in Table 1 has been removed.

Table 14 Litigation Status Summary

Description		Date
B.C. Supreme Court: Treaty Infringement Claims		
West Moberly First Nations	Civil claim filed.	January 15, 2018
	Settlement of claims related to Site C.	June 24, 2022
B.C. Supreme Court: Civil Claims		
Building and Construction Trades Council	Civil claim filed. No steps have been taken in litigation that require a response from BC Hydro.	March 2, 2015
Michael Acko, etal (Residents of Old Fort community)	Civil claim filed.	January 18, 2021
	Response to claim filed.	September 8, 2021
Allianz Global Risks US Insurance Company, etal	Civil claims filed. Claims were filed by BC Hydro to preserve BC Hydro's rights to claim under Site C property insurance for losses related to left bank tension crack events and the rockfall event near a diversion tunnel inlet portal.	February 5, 2021 July 13, 2021
Vezer Industrial Professionals Canada Ltd.	Civil claim served. No steps have been taken in litigation that require a response from BC Hydro.	March 29, 2022
Armitage	Civil claim filed. Response to claim filed.	October 24, 2022 January 5, 2023
B.C. Supreme Court: Civil Claims – *Expropriation Act*		
Property owners	Of sixteen notices of claims filed to keep open each plaintiffs' rights to claim further compensation under the *Expropriation Act,* two have been resolved during this period and fourteen remain active. No requirement for BC Hydro to file responses as of this reporting period.	July 2019 to February 2022

9 Permits and Government Agency Approvals

9.1 Background

BC Hydro continues to be issued permits and authorizations in accordance with its construction timelines. As of June 30, 2023, 616 of the estimated 647 provincial and federal permits and authorizations required throughout the life of the Project had been obtained and are actively being managed.

Multiple conditions are attached to each permit or authorization, which cover subjects such as air quality, water quality, fish and aquatics, wildlife, heritage, health and safety, construction environmental management and Indigenous Nations consultation. As of June 30, 2023, all required conditions and submissions have been met in accordance with the schedule and requirements of the conditions.

9.2 Federal Authorizations

Site C requires federal authorizations under the *Fisheries Act* (issued by Fisheries and Oceans Canada) and the *Canadian Navigable Waters Act* (formerly *Navigation Protection Act*) (issued by Transport Canada). All major federal authorizations for construction and operation of the Site C dam and reservoir were received in July 2016.

Additional *Canadian Navigable Waters Act* approvals and notifications for discrete works in the reservoir (e.g., shoreline works, debris booms and Highway 29 bridges) are being issued at the regional level. As of June 30, 2023, a total of 138 federal approvals have been received and are actively being managed. Eight future approvals are planned.

9.3 Provincial Permits

Site C requires provincial permits primarily under the *Land Act, Water Sustainability Act, Forest Act, Wildlife Act, Heritage Conservation Act,* and *Mines Act*. These permits include investigative permits, licences to occupy land, water licence approvals, leaves to commence construction and leaves to construct, and licences to cut vegetation, among others.

As of June 30, 2023, 476 of the estimated 498 provincial permits and approvals that are required throughout the life of the Project had been obtained and are actively being managed. These include permits for the dam site area, worker accommodation, Highway 29 realignment and decommissioning of the existing

highway, transmission line and eastern, middle, and western reservoir, fish habitat enhancement sites, and reservoir filling. Future provincial permits are being planned for the operation of the generating station and the permanent upstream fishway.

9.4 Environmental Assessment Certificate

Compliance with the Project conditions in the Environmental Assessment Certificate is regularly monitored, and evidence is collected by various federal and provincial regulatory agencies, the Independent Environmental Monitor, BC Hydro and contractors.

As with any large construction project, refinements to the design are expected. As of June 30, 2023, BC Hydro has requested, and received from the Environmental Assessment Office, 10 amendments to the Project's Environmental Assessment Certificate to reflect changes in Project design. The amendments have not resulted in any material impacts to the cost of the Project.

BC Hydro received one additional Environmental Assessment Certificate Amendment on July 28, 2023, after the reporting period. Amendment No. 11 allows certain temporary structures to remain in place during reservoir filling. Each structure will be assessed by a Qualified Environmental Professional and will be left in place only if doing so will result in less or equal risk of harm to fish and fish habitat than removing the structure.

BC Hydro is currently complying with all requirements of the Environmental Assessment Certificate amendments.

All amendments and amendment requests are posted on the Environmental Assessment Office website.

10 Environment

10.1 Mitigation, Monitoring and Management Plans

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

10.2 Project Environmental Compliance

Environmental compliance on the Project remains high. During the reporting period, 15,449 environmental compliance inspections were completed by BC Hydro staff, with a compliant and partial compliant result of 99% across all contractors and work areas.

During the reporting period, BC Hydro responded to two separate information requests (remote inspections) by the Environmental Assessment Office, which also conducted two site inspections in April and June. During the reporting period, the Environmental Assessment Office issued three final inspection reports: two in April (one from a January inspection, the other from the April inspection) and one in June (from the June inspection). The Environmental Assessment Office also issued a warning letter in April in relation to observed noncompliances from the April inspection. The warning pertains to the Project ensuring that contractors in all work areas secure, dispose of, remove, or otherwise manage all wildlife attractants to prevent the attraction of wildlife. The matter was rectified.

At the start of the reporting period, the Environmental Assessment Office began implementing two new inspection report policy changes. The first is that drafts of their inspection reports will no longer be issued for an ‘opportunity to respond’ period. Instead, beginning April 1, the Environmental Assessment Office will issue a final inspection report after completing their analysis without an ‘opportunity to

respond.' The second change is that the Environmental Assessment Office may issue a separate warning letter related to any noncompliance(s) identified in the inspection. Previously these noncompliances were identified within the inspection report with no separate warning letter.

The Impact Assessment Agency of Canada did not conduct any inspections during the reporting period.

The Site C Project team meets with provincial and federal regulators monthly to ensure ongoing focus and attention to the areas of most importance and concern for the regulators, and to proactively address any environmental or regulatory issues that may arise.

Additionally, the Project has engaged both an Independent Environmental Monitor and an Independent Engineer that report directly to provincial regulators. The Independent Environmental Monitor provides weekly reports that have also demonstrated substantial compliance across the Project while continuing to identify areas of focus for sediment and erosion control, water management and spill prevention. The Independent Engineer works directly with site personnel to proactively identify design issues that may impact the environment and develop mitigation plans to avoid or minimize impacts.

2018 Stormwater Release Event and Environment Canada Investigation

Between September 8 to 9, 2018, approximately 55 mm of rain fell at the Site C dam site and across the North Peace. During the event, large volumes of rainwater flowed over potentially acid-generating rock that had been exposed during excavation works taking place on the right bank.

The Site C main civil works contractor uses various holding ponds, as well as a water treatment plant, to manage water prior to discharge. As the rain event continued, the holding ponds reached capacity. Over a period of approximately

24 hours, the controlled release of approximately four million litres of water into the Peace River was taken to protect the water management infrastructure and ensure the structural integrity of the holding ponds.

The volume of water discharged from the holding ponds was relatively small compared to the overall flow of the Peace River. No impacts to fish or aquatic life in the Peace River were detected.

BC Hydro reported the event to provincial and federal agencies on September 9, 2018, including the Comptroller of Water Rights, B.C. Environmental Assessment Office and Canadian Environmental Assessment Agency. BC Hydro subsequently updated the Water Comptroller, B.C. Environmental Assessment Office, Canadian Environmental Assessment Agency, Department of Fisheries and Oceans and Emergency Management B.C.

Following the event, Environment and Climate Change Canada undertook an investigation of BC Hydro and the main civil works contractor with respect to potential noncompliance with the federal *Fisheries Act*.

In late October 2022, BC Hydro was notified of the results of the investigation. The main civil works contractor was charged with the deposit of a deleterious substance into the Peace River. BC Hydro and the contractor were both charged with a failure to report the deposit of a deleterious substance in a timely manner.

Subsequent to the reporting period, BC Hydro and the main civil works contractor appeared in B.C. Provincial Court on July 31, 2023. At this appearance, the main civil works contractor entered a guilty plea to the charge of depositing a deleterious substance under the *Fisheries Act*. The court accepted the plea and entered a conviction on that charge. Under the terms of the court's order, the main civil works contractor will pay a fine of $1.1 million to the Government of Canada's Environmental Damages Fund. In its order, the Court recommended that the fine be

used for the purpose of conservation and protection of fish or fish habitat or the restoration of fish habitat in the Peace River region of British Columbia. All charges related to the failure to report in a timely manner were stayed, including the charges against BC Hydro. All charges related to the 2018 release event have now been resolved.

10.3 Potentially Acid-Generating Rock Management

The Project's Construction Environmental Management Plan has a well established potentially acid-generating rock management plan that employs a variety of recognized techniques to identify, test, monitor and treat, if necessary, any potentially acid-generating rock during construction. Any potentially acid-generating rock sites located within the reservoir will be rendered inert once the reservoir is filled. Any potentially acid-generating rock sites remaining outside the reservoir post construction will be addressed through location specific prescriptions provided by qualified environmental professionals.

The April 2022 Environmental Assessment Office order related to potentially acid-generating rock exposures has necessitated revisions to the Construction Environmental Management Plan. In September 2022 the Environmental Assessment Office requested BC Hydro to provide additional supporting evidence from its Qualified Environmental Professional for potentially acid-generating rock in support of these Construction Environmental Management Plan revisions. This submission was provided to the Environmental Assessment Office in October 2022. On January 11, 2023, the Environmental Assessment Office provided clarity on what revisions should be considered material, to which BC Hydro submitted a revised Qualified Environmental Professional assessment and Construction Environmental Management Plan. On March 24, 2023, the Environmental Assessment Office reviewed this submission and advised that BC Hydro should consult on all the revisions to the Construction Environmental Management Plan. This consultation

was initiated on April 11, 2023, and within the 30-day consultation period, comments were received from Environment Canada, to which a response was issued in June. Comments were also received from Natural Resources Canada after the 30-day consultation period, to which a response was issued subsequent to the reporting period (July). BC Hydro expects to summarize the responses and any additional feedback received from Environment Canada and Natural Resources Canada and submit this to the Environmental Assessment Office in August, after which the Environmental Assessment Office may accept the revisions or provide their own comments, which would need to be addressed.

In parallel with these revisions, this order has accelerated the need to consider potential mitigation options for potentially acid-generating rock exposures on the dam site that will not be covered by the reservoir. For this, the Project is seeking engineered design options and cost estimates for a subset of the potentially acid-generating rock exposures across the Project that will not be covered by the reservoir or that have been identified in past Environmental Assessment Office inspection reports. Results of these efforts will be summarized in future progress reports.

The Environmental Assessment Office has indicated it will not pursue enforcement against the April 2022 order while the Construction Environmental Management Plan revisions are underway.

10.4 Heritage

In the reporting period, the heritage program provided guidance on the identified Indigenous sites of importance, planned and commenced pre-construction archaeological impact assessment field work, and provided ongoing heritage support for Project construction. The scope of the heritage program is significantly smaller than in previous years since there are few new work areas requiring archaeological assessment.

During the reporting period, two new *Heritage Conservation Act* permits or amendments were received and one *Heritage Conservation Act* permit amendment was submitted. Three *Heritage Conservation Act* archaeological reports were submitted to the B.C. Archaeology Branch and First Nations. No archaeological or palaeontological heritage chance find were identified and reported by contractors.

10.5 Temporary Fish Passage Facility

During the reporting period, the temporary fish passage facility operators passed more than 3,800 fish upstream, which is more than the entire 2021 or 2022 operating seasons. The number of fish passed during several days in June 2023 was three to four times higher than the ‘peak day‘ that was observed in prior operating years. BC Hydro and the operator gained valuable experience processing, transporting and releasing these higher daily catches. The temporary fish passage facility is expected to continue operation for the 2023 season through October 31, 2023.

10.6 Wetland Compensation Plan

Between July and September 2022, BC Hydro rebuilt aging water control infrastructure at three historically constructed wetlands. By doing so, 175 hectares of wetlands were preserved that would otherwise have been lost and BC Hydro is able to credit these 175 hectares against the overall Site C wetland compensation requirements. About 100 hectares of additional wetland area is expected to be saved from loss at four additional historically constructed wetlands over the next two years. The total area required for compensation is being determined in part by ongoing wetland monitoring. During the reporting period, no additional wetland construction took place.

10.7 Greenhouse Gas Monitoring

In October 2022, BC Hydro began collecting data to support a pre-reservoir fill greenhouse gas (**GHG**) emission study. Three locations upstream of the dam site were selected for terrestrial flux-chamber measurements, and soil organic carbon and vegetation sampling. During the reporting period, a range of new GHG emission monitoring facilities were deployed including an eddy covariance station and surface water flux chambers plus a range of new sampling programs (sediment, nutrients, etc.) relevant to GHG monitoring started. This pre-reservoir fill information will be used to augment reservoir GHG monitoring data to support net GHG emissions calculations for the reservoir.

10.8 Agricultural Mitigation and Compensation Plan

The BC Hydro Peace Agricultural Compensation Fund Annual General Meeting was held on June 15, 2023. There was no new grant funding this reporting period. As of June 30, 2023, the fund has distributed more than $2.7 million to 82 projects.

11 Employment and Training Initiatives and Building Capacity Initiatives

11.1 Labour

Since the beginning of the Project, unions that have participated in the construction of Site C are listed in Table 15.

Table 15 Participating Unions

Union
Construction Maintenance and Allied Workers (**CMAW**)
Christian Labour Association of Canada (**CLAC**), Local 68
Canada West Construction Union (**CWU**)
Construction and Specialized Workers Union (**CSWU**), Local 1611
International Union of Operating Engineers (**IUOE**), Local 115
Millwrights Union, Local 2736
Ironworkers, Local 97
International Brotherhood of Electrical Workers (**IBEW**)
MoveUP, Local 378
Pile Drivers Union, Local 2404
Boilermakers, Lodge 359
United Association of Journeymen & Apprentices of the Plumbing & Pipefitting Industry of the U.S. & Canada, Local 170
Teamsters, Local 213

In addition, 10 unions affiliated with the B.C. Building Trades are signatory to the special project needs agreement for the installation of the turbines and generators.

The Site C balance of plant contractors are signatory to a special project needs agreement between the Construction Labour Relations Association and the Bargaining Council of B.C. Building Trades Unions.

11.2 Employment

Contractors submit monthly workforce data electronically to BC Hydro. Table 16 presents the monthly number of construction contractors, non-construction contractors, engineers, and Project team workers for this period.

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.

Table 16 Site C Jobs Snapshot Reporting Period – April 2023 to June 2023

Month	Number of B.C. Primary Residents[21]	Total Number of Workers[22]
April 2023	3,812	5,705
May 2023	3,944	5,985
June 2023	3,947	6,069

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

In June 2023, there were 6,069 total workers on the Site C Project. Residents of British Columbia made up 65% of the workforce (3,947), while 19% of the workforce (977 workers) lived in the Peace River Regional District. The onsite contractor workforce number also includes 12% women (595 workers) and 10% Indigenous (539 workers). There were 310 apprentices working on the Project, which is 16% of the apprenticeable trades within the construction and non-construction workforce. These workers were working for various contractors as apprentice carpenters, electricians, millwrights, ironworkers, mechanics, boilermakers and plumbers. Refer to Appendix D for the current Site C jobs snapshot from April 2023 to June 2023 (Table D-1), the Site C apprentices snap shop from April 2023 to June 2023 (Table D-2), the current Site C job classification groupings (Table D-3), and the Indigenous inclusion snapshot from April 2023 to June 2023 (Table D-4).

Figure 2 shows the monthly Site C workforce over the period from June 1, 2022 to June 30, 2023.

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

[22] Total workers include:

- Construction and non-construction contractors performing work on Site C dam site, transmission corridor, reservoir clearing area, public roadwork, worker accommodation and services;
- Engineers and Project team that is comprised of both onsite and offsite workers; and
- The Project team, which includes BC Hydro construction management and other offsite personnel. An estimate is provided where possible if primary residence is not given.

Figure 2 Site C Workforce June 2022 to June 2023[23]

11.3 Training and Capacity-Building Initiatives

BC Hydro has included apprentice targets in the generating station and spillways civil works contract, the transmission lines and the substation contracts, the balance of plant contracts and the Highway 29 work procured by BC Hydro, as appropriate.

Northern Lights College Foundation continues to distribute the BC Hydro Trades and Skilled Training Bursary Awards, established in 2013. As of June 30, 2023, a total of 290 students had received bursaries, including 135 Indigenous students who have

[23] The Indigenous workers and women workers numbers are a subset of the construction and non-construction contractors workforce number.

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.

BC Hydro and the generating station and spillways contractor participated in a program run by Employment Connections North Corp (WorkBC Employment Services Centre in Fort St. John) by providing a site tour for students participating in the Learn, Innovate, Transform program under the Ministry of Advanced Education and Skills Training. This program provided skills and training for youth aged 16 to 29 who face barriers to enter or re-enter the labour market.

Contractor Indigenous Employment and Training Information Session

Site C contractors have noted that certain trades will continue to be in high demand during peak Project construction periods. As such, on-site contractors continue to explore opportunities for apprentice and other training to take place on-site. BC Hydro worked with Northern Lights College and Site C contractors to develop several on-site pilot programs which have been successfully delivered at site and virtually over the past couple of years.

Joint BC Hydro and Contractor Site Training

BC Hydro continued to implement the Builders Code. The Builders Code is a standard code of conduct for workers on construction sites in B.C. that defines an acceptable worksite as one that is safe and productive, where all workers work without the stress or distraction caused by discrimination, bullying, hazing, or harassment. In June 2023, BC Hydro and major Site C contractors rolled out a mobile application called “Cool or Tool” to the on-site contractor workforce. This is a scenario-based app aimed at creating better, safer and more inclusive worksites.

12 Community Engagement and Communication

12.1 Local Government and Community Engagement Activities

BC Hydro continues to advance commitments within four community agreements: the District of Chetwynd (2013), the District of Taylor (2014), the City of Fort St. John (2016), and the District of Hudson's Hope (2017). A community agreement between BC Hydro and the Peace River Regional District has yet to be finalized.

The Regional Community Liaison Committee, which is comprised of local elected officials and local First Nations communities, most recently met for its regularly scheduled quarterly meeting on June 7, 2023. Eight local governments and four local First Nations communities (McLeod Lake Indian Band, Doig River First Nation, Saulteau First Nations, and Blueberry River First Nations) as well as the two MLAs for Peace River North and Peace River South, are invited to participate as committee members. Representatives from the Project's major contractors may also attend the meetings as invited guests.

12.1.1 District of Hudson's Hope Well Water System

Under the Partnering Relationship Agreement signed with the District of Hudson's Hope in 2017, BC Hydro committed to mitigating the effects of the dam and reservoir on the community's infrastructure by replacing the District of Hudson's Hope water intake and pump house water supply system.

As plans for the water intake replacement and pump house were being discussed, the District of Hudson's Hope decided to change from a surface water source to a well water system.

BC Hydro entered into a Water Agreement with the District of Hudson's Hope in September 2019 and provided the District of Hudson's Hope with close to $5 million to fund engineering and water experts, studies, design, construction and

administration of the works. The District of Hudson's Hope was also responsible for all operations, performance, and warranty costs.

The District of Hudson's Hope new water treatment plant became operational on March 5, 2021.

After the well water facility became operational, BC Hydro was advised by the District of Hudson's Hope that it was not functioning as expected and the District of Hudson's Hope incurred additional operating costs for the supply of potable water to its residents.

The District of Hudson's Hope water treatment plant failed on July 20, 2022 and again on December 28, 2022.

In fall 2022, the District initiated a three-phase plan to switch its raw water source from the well water system to the Peace River. BC Hydro and the District of Hudson's Hope have finalized an agreement that will provide additional funding for Phase 1 and Phase 2 of this plan. The District has installed a surface water intake and treatment facility and is providing community water via this source under a boil water advisory.

Subsequent to the reporting period, the boil water advisor was rescinded in July 2023.

12.1.2 Generate Opportunities Fund

In 2016, BC Hydro launched the GO Fund to support Peace Region non-profit organizations. The GO Fund is being distributed to organizations that provide services to vulnerable populations including children, families and seniors.

The GO Fund is administered by Northern Development Initiative Trust on behalf of BC Hydro. During this reporting period, BC Hydro distributed approximately $37,500 to four non-profit organizations in the Peace Region and as of

June 30, 2023, 87 projects had received nearly $766,151 since the fund was launched in 2016.

12.1.3 Community Relations and Construction Communications

BC Hydro continued to implement its construction communications program throughout the reporting period. The program includes updating and maintaining the Project website (www.sitecproject.com) with current information, photos and videos of construction activities, as well as providing information to local and regional stakeholders as required.

Construction Bulletins

Bi-weekly construction bulletins are posted on the Project website and sent by email to a web-subscriber list. There were seven construction bulletins issued this reporting period.

Public Enquiries

In total, BC Hydro received 198 public enquiries between April 1 to June 30, 2023. Table 17 shows the breakdown of some of the most common enquiry types.

In total, BC Hydro has received more than 14,228 enquiries since August 2015.

Business Liaison and Outreach

No procurement notifications were sent out during the reporting period.

Table 17 Public Enquiries Breakdown by Topic

Enquiry Type[24]	April 1 to June 30, 2023
Employment Opportunities	57
Business Opportunities	15
General Information	34
Construction Impacts[25]	21
Other[26]	25

12.2 Labour and Training Plan

In accordance with an Environmental Assessment Certificate condition, 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 annual reporting requirements to support educational institutions in planning their training programs to support potential workers in obtaining Project jobs in the future. This report has been issued to the appropriate training institutions in the northeast region annually since 2016. The most recent report was issued in July 2023.

12.3 Human Health

12.3.1 Health Care Services Plan and Emergency Service Plan

The on-site health 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 health clinic, there has been a total of 47,452 patient interactions. During the reporting period, there were 1,709 patient interactions, of which 276 were occupational and 1,433 non-occupational. Several preventive health themes were provided to workers

[24] This table is a sample of enquiry types and does not include all enquiry types received. Some enquiries received cover more than one topic.

[25] The nature of the construction impact enquiries are primarily related to air quality and dust, traffic and road conditions, and safety.

[26] “Other” accounts for enquiries related to a variety of other topics, such as wildlife and beavers, river closure, and tour requests.

during the reporting period, including information on hand hygiene and symptom management of gastroenteritis, carbon monoxide poisoning and tuberculosis. The norovirus outbreak that was affirmed in March was declared over on April 14, 2023.

12.4 Property Acquisitions

Property acquisitions required for the Project remain on track. During the reporting period, BC Hydro acquired the remaining land and rights that were required prior to reservoir filling. In addition, acquisitions were completed for some of the land required within the first year of reservoir operations. Land and rights will be required from a further nine landholdings within the first year of reservoir operations.

In cases where BC Hydro acquired or expropriated land or rights for the Project under the *Expropriation Act*, notices of claim have been filed by the owners to keep open their rights to claim further compensation under the *Expropriation Act* as noted in section 8 of this report.

12.5 Plans During Next Six Months

Table 18 shows the key milestones for activities planned during the next six months, July 2023 to December 2023.

Table 18 Key Milestones for Activities Planned During the Next Six Months (July 2023 to December 2023)

Milestone	Performance Measurement Baseline (June 2021)	Plan Date (Control Date[27])	Forecast[28]	Status[29] (Measured by Month)
All				
Burial Sites Relocation Construction Finish	March 2022	March 2022	July 2023	Late
Balance of Plant				
Powerhouse Drainage & Dewatering for Tailrace Fill Units 1-3 Complete	January 2023	January 2023	July 2023	Late
All Work in Powerhouse Bay 1 is Complete (Mechanical)	March 2023	March 2023	August 2023	Late
All Work in Powerhouse Bay 2 is Complete (Electrical)	n/a	June 2023	September 2023	Late
Powerhouse AC Station Service for Tailrace Filling	n/a	February 2023	October 2023	Late
All Work in Powerhouse Bay 2 is Complete (Mech)	June 2023	June 2023	October 2023	Late
Permanent Fish Facility Complete (generating station and spillways contractor)	n/a	November 2023	November 2023	On Track
Generating Station and Spillways				
Intake Operating Gate and High Pressure Unit Assembly and Installation Complete - Intake Unit 2	July 2022	June 2023	July 2023	Late
Intake Operating Gate and High Pressure Unit Assembly and Installation Complete - Intake Unit 1	January 2022	June 2023	August 2023	Late
Intake Operating Gate and High Pressure Unit Assembly and Installation Complete - Intake Unit 3	April 2022	June 2023	August 2023	Late
Gate and Wire Rope Hoist Assembly and Installation Complete – Spillway Operating Gate 3 (generating station and spillways contractor)	June 2023	August 2023	September 2023	At Risk

[27] Control date reflects plan, adjusted for approved changes to milestone dates.
[28] As of June 30, 2023.
[29] As of June 30, 2023.

Milestone	Performance Measurement Baseline (June 2021)	Plan Date (Control Date[27])	Forecast[28]	Status[29] (Measured by Month)
Spillway Operating Gates 1-3 Wire Rope Hoists Installed (generating station and spillways contractor)	June 2023	August 2023	September 2023	At Risk
Intake Operating Gate and High Pressure Unit Assembly and Installation Complete Intake Unit 4	April 2023	July 2023	September 2023	Late
Unit 6 - Spiral Case Embedded and Generator 2nd Stage Concrete Complete; Pit Free	January 2023	September 2023	September 2023	On Track
Low Level Outlet Gates 4 to 6 – High Pressure Unit Installation Complete	April 2023	August 2023	October 2023	At Risk
Main Civil Works				
Earthfill Dam up to Elevation 468.4 metres Complete	July 2023	July 2023	July 2023	On track
Removal of the Right Bank Cofferdam	August 2023	September 2023	September 2023	On track
Tunnel Conversion Work Complete	August 2024	August 2024	September 2023	On Track
Right Bank Foundation Enhancement				
Approach Channel Ready for Reservoir Filling	n/a	August 2023	August 2023	On Track
Reservoir				
Reservoir Prepared for Inundation	April 2024	April 2024	August 2023	On Track
Turbines and Generators[30]				
Unit 1 – Ready to Turn	May 2023	June 2023	July 2023	Late
Unit 2 – Ready to Turn	August 2023	October 2023	September 2023	On Track
Highways				
Complete Highway 29	July 2023	July 2023	July 2023	On track
Transmission				
5L15 In-Service Date	July 2023	July 2023	October 2023	Late
5L17 In-Service Date	September 2023	September 2023	November 2023	At Risk
5L16 In-Service Date	October 2023	October 2023	November 2023	At Risk

As noted in Table 18, some of the required key milestones are at risk, or late. BC Hydro is working with Site C contractors to recover delays and complete all

[30] The identified status reflects a comparison of the current forecast for each milestone relative to the contractual date for that milestone. The contractual milestone dates include substantial schedule float relative to the approved in-service date.

required scopes of work. BC Hydro is currently on track to achieve the approved final unit in-service date of 2025.

13 Impacts on Other BC Hydro Operations

During the reporting period, the operation of system storage at Williston Reservoir (including G.M. Shrum and Peace Canyon generating stations) was planned to meet flow releases necessary for Site C construction, and this operation continues. Water releases from the Peace Canyon generating station were maintained at or below the levels necessary for Project construction. BC Hydro maintained adequate vacant storage in Williston Reservoir to protect Site C construction works from flows that could otherwise exceed the capacity of the diversion works.

The Site C Project team continues to work closely with BC Hydro Operations on the integrated planning required in advance of filling the Site C reservoir.

BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

Appendix A

Site Photographs

Figure A-1 **A partially completed section of the approach channel lining, with riprap cover and granular fill | April 2023**

Figure A-2 **The guides for the intake trash racks are installed behind the white hoardings. Trash racks stop large debris from entering the intakes | April 2023**

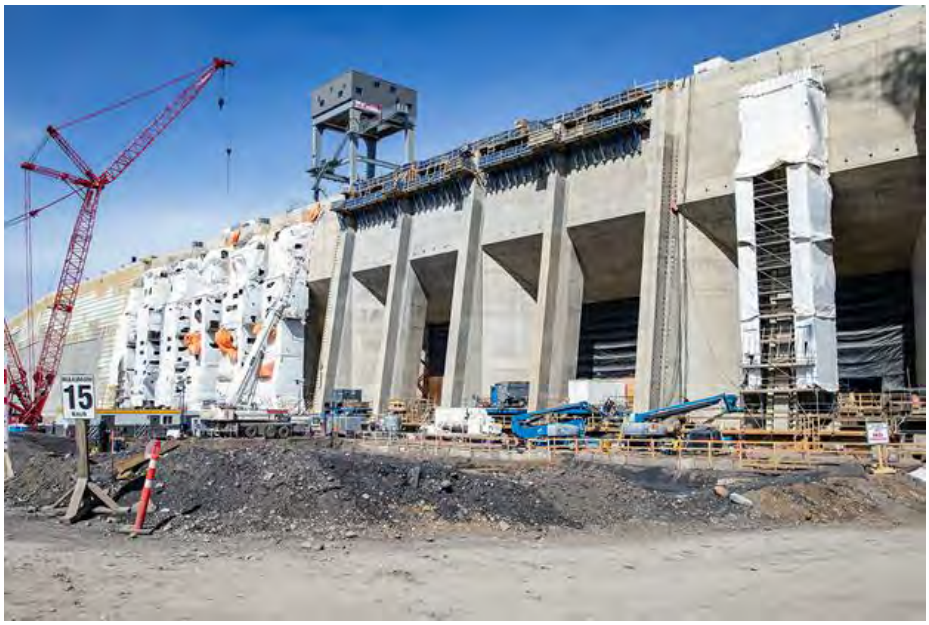


Figure A-3 Work continues in the powerhouse | April 2023

Figure A-4 **The 500-kilovolt transmission towers are installed in the substation and ready to be connected to the generating station | May 2023**

Figure A-5 **Fish travelling up the Peace River will travel through the permanent upstream fish passage facility shown in this picture. Migrating fish will be sorted, tagged, and released past the dam site into the reservoir | May 2023**

Figure A-6 **Two mechanical spillways, operated with gates, will manage flows from the reservoir. The auxiliary spillway is on the left | May 2023**

Figure A-7 **Maurice Creek spawning shoal | May 2023**

Figure A-8 **Stoplogs are the hydraulic engineering control used to stop the flow of water at the outlet of Diversion Tunnel 2 | June 2023**

Figure A-9 **Diversion Tunnel 2 is closed and drained. Technicians then enter the tunnel to rescue any stranded fish and inspect the tunnel | June 2023**

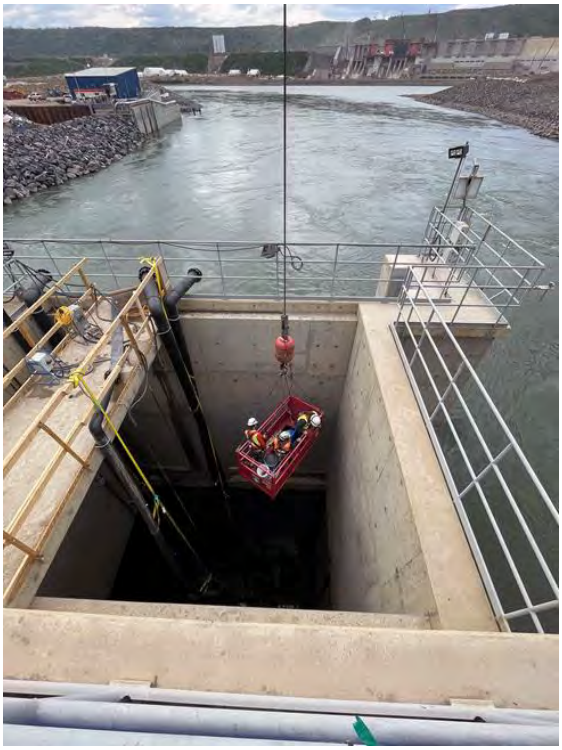


Figure A-10 Crews finish the upstream shell of the dam | June 2023

BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

Appendix B

Work Completed Since Project Commencement in 2015

Construction began on July 27, 2015, and is ongoing. Since the commencement of construction, the following work has been completed:

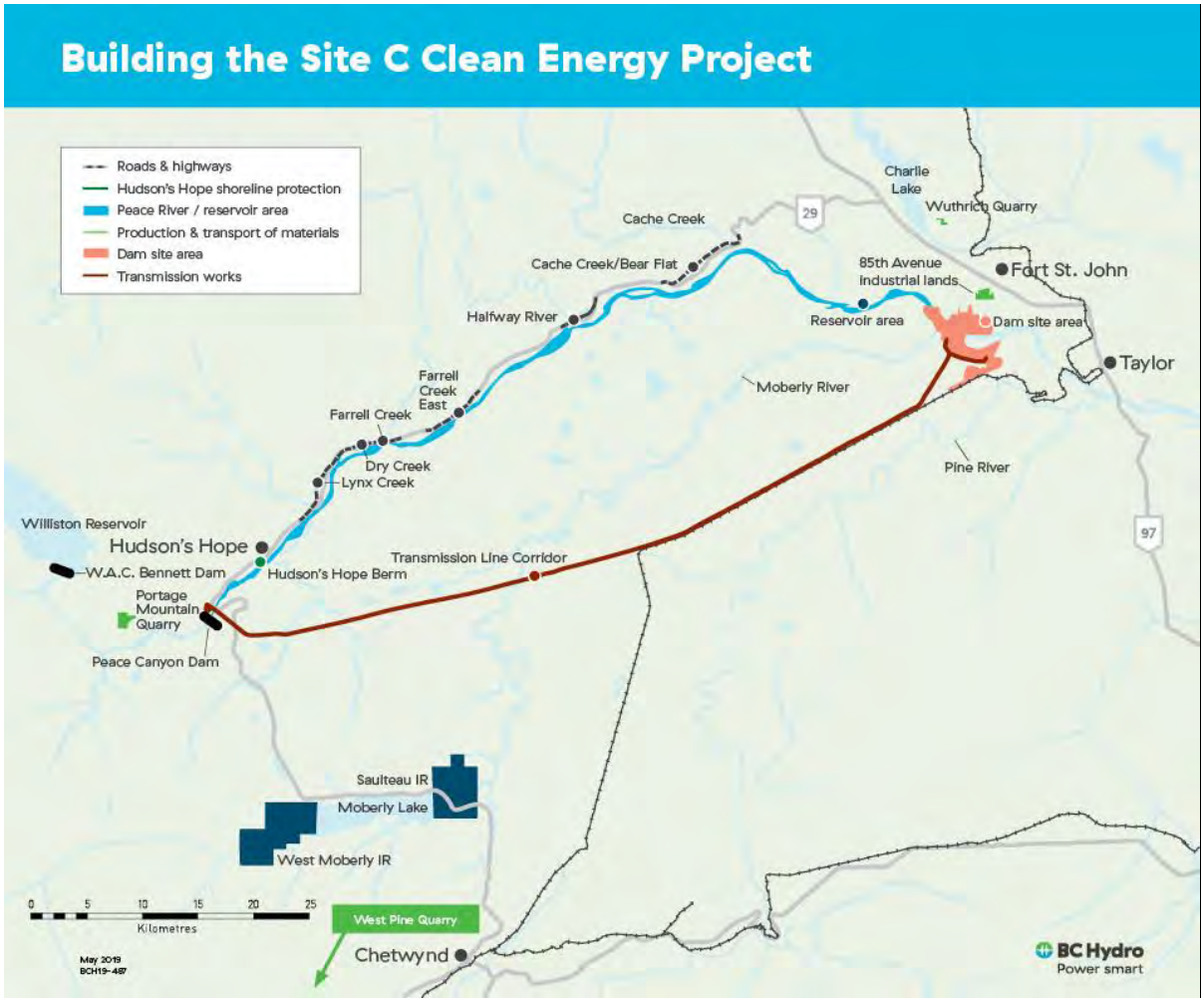
- Site preparation, including onsite access roads;
- Clearing of the left and right banks at the dam site and clearing of the lower reservoir area;
- Construction of the worker accommodation lodge and Peace River construction bridge;
- Powerhouse excavation, and the placement of 650,000 cubic metres of roller-compacted concrete in the powerhouse buttress;
- Spillways excavation, and the placement of 600,000 cubic metres of roller-compacted concrete in the spillways buttress;
- Construction of dam site access public roads;
- Construction of the Site C viewpoint;
- Construction of 50 affordable housing units in Fort St. John;
- Fish habitat enhancements downstream of the dam site;
- Excavation of the diversion tunnel inlet (upstream) and outlet (downstream) portals, allowing for the commencement of diversion tunnel excavations;
- Excavation of the right bank drainage tunnel, which will be used to monitor and drain the water from within the foundation under the powerhouse, spillways and dam buttresses and will eventually be connected to services within the powerhouse;
- Completion of two river diversion tunnels, which are used to reroute a short section of the Peace River to allow for the construction of the main earthfill dam;

- Completion of the upstream and downstream cofferdams;
- Construction and commissioning of the temporary fish passage facility;
- Diversion of the Peace River around the Site C construction site;
- Completion of the Peace Canyon 500 kV gas-insulated switchgear expansion to enable connection of Site C to the BC Hydro electrical system;
- Completion of the Site C substation and the first of two new 500 kV transmission lines;
- Completion of the finishing concrete work inside the 454-metre-long left bank drainage tunnel;
- Earthfill dam excavation, and the placement of 450,000 cubic metres of roller-compacted concrete in the dam and core buttress, marking the completion of the Project's overall roller-compacted concrete placement program. In total, nearly 1.7 million cubic metres of roller-compacted concrete was placed since 2017;
- Completion of the steel super-structure for the powerhouse;
- Completion of the second of two new 500 kV transmission lines that connect Site C to the Peace Canyon generating station;
- Completion of the bridges at Dry Creek, Lynx Creek, Farrell Creek, Halfway River, and Cache Creek as part of the Highway 29 realignment;
- Completion of the shoreline protection berm at Hudson's Hope;
- Completion of the Maurice Creek spawning shoals;
- Completion of the headworks gantry crane;
- Completion of concrete work for the intakes;

- Completion of the 96 steel piles in the spillway and downstream of the powerhouse, as part of the right bank foundation enhancements; and
- Completion of the concrete pile caps in the tailrace excavation.

Figure B-1 shows the location of the key Site C components that are being constructed.

Figure B-1 Site C Project Components



BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

Appendix C

Safety

Safety Incidents

The following safety incidents occurred from April 1 to June 30, 2023:

Serious Safety Incidents

1. Two workers were on a swing stage doing an inspection, when the stage motor and then emergency stop switch failed. A supervisor used remote control to get swing stage to safety.
2. A mechanic positioned underneath an excavator was not properly locked out. Operator was sitting on the catwalk while machine was running.
3. A smooth drum packer went close to the edge of two elevations of material, slid over the edge and became stuck.
4. A haul truck driver got close to the shoulder, and the haul truck to tipped over on the driver side.
5. A 600-tonne crawler crane being repositioned from the lower tailrace got stuck on the access ramp; once stuck, the crane was leaning towards the powerhouse and construction offices. Workers in those areas were evacuated.
6. A 15-pound shim plate fell 10-feet to the turbine pit floor next to another worker.
7. A worker’s arm was sucked into a vac-truck hose and the worker suffered minor injuries.
8. A mobile crane was positioned over the overflow channel wall to pick up a load, when the crane began to boom down. The boom contracted a handrail, breaking several pieces. Operator had experienced a blackout.

All Injury Incidents

There were also ten injury incidents that occurred during this reporting period including one lost time injury and nine medical attention injuries.

Lost Time Injuries:

1. An excavator operator was walking the machine when it unexpectedly jerked and the operator experienced a sudden movement. The operator suffered a neck injury.

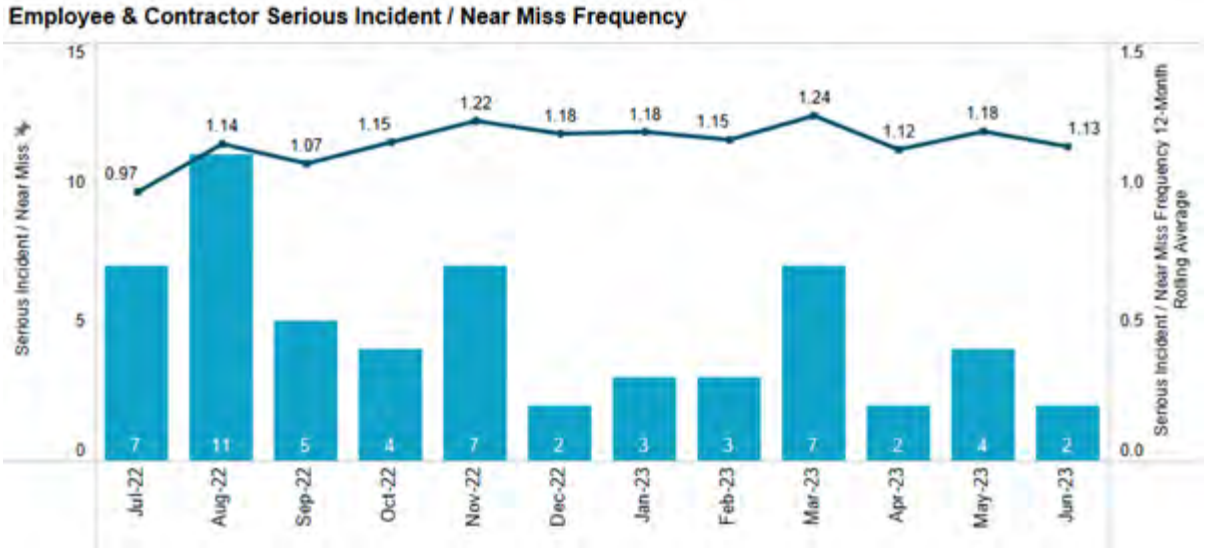
Medical Attention Requiring Treatment Injuries:

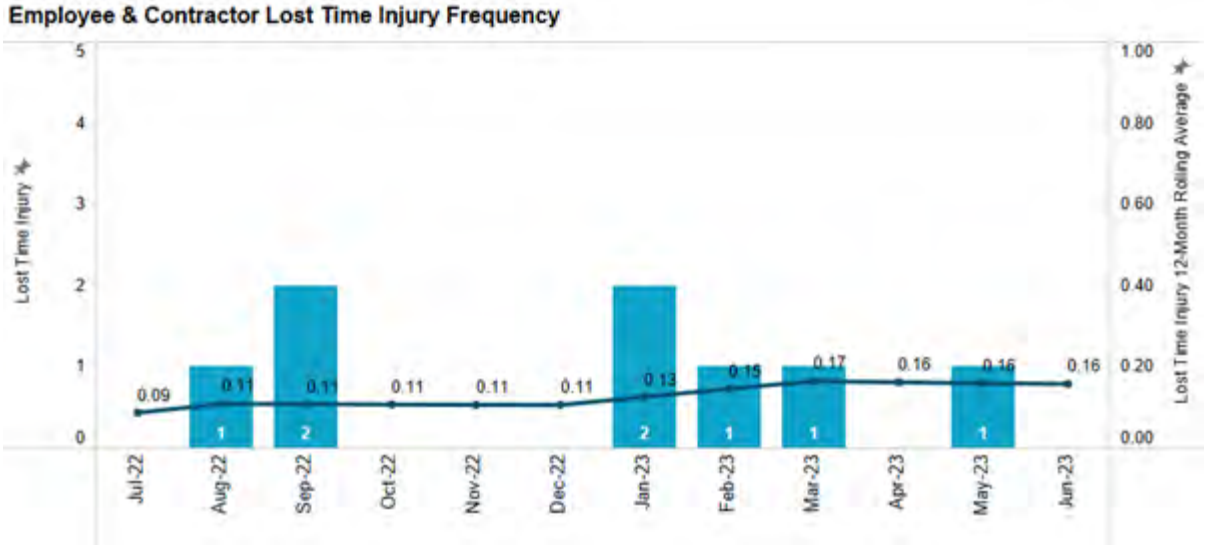
2. A worker fractured their hand while using a hammer.
3. A worker fractured their nose while standing up and their nose contacted a stationary scaffold tube.
4. While a worker was correcting a rigging orientation, they stepped backwards and injured their groin area which required minor surgery.
5. A worker's forehead contacted a piece of rebar after they stood up too fast. The worker suffered a one-inch laceration that required stitches.
6. A worker's eyebrow contacted a piece of scaffold after the worker tripped over a piece of lumber. The worker suffered a one-inch laceration that required stitches.
7. A worker cut their hand while cutting a vacuum hose with a utility knife. The worker suffered a one-inch laceration that required stitches.
8. An operator and worker were adjusting and lifting the forks on a loader with a piece of lumber and one of the forks landed on the worker's foot. The worker suffered a fracture.
9. While a worker was adjusting a shore tower, the foot of the tower slipped and crushed their finger. The worker required five stitches.
10. While a worker was performing welding and grinding activities at the intakes trash racks, a piece of slag entered the worker's eye through the gap between the welding helmet and their safety glasses.

Safety Performance Frequency Metrics

The following graphs provide information on employee and contractor serious incidents/near miss frequency, lost time injury frequency and all-injury frequency from July 2022 to June 2023.

Figure C-1 Employee and Contractor Serious Incident/Near Miss Frequency, Lost Time Injury Frequency and All-injury Frequency





Employee & Contractor All-Injury Frequency

Regulatory Inspections and Orders

Table C-1 lists the safety regulatory inspections and orders received from WorkSafeBC and the Ministry of Energy, Mines and Low Carbon Innovation from April 1 to June 30, 2023.

Table C-1 Safety Regulatory Inspections and Orders

#	Date of Inspections	Regulatory Agency	Site C Subproject	Inspection Report #	Inspection Report Type	Inspection Report Status	Number of Orders Issued	Subject of Orders	Regulation Order / Reference
1	April 14, 2023	WorkSafeBC	GSS	202317876027A	First Aid Compliance	Closed	3	First aid procedures Level of care	Order(s): OSH3.21(1)(a); OSH3.21(1)(c); OSH3.21(3)(c) Reference(s): OHS2.8(1)
2	April 19, 2023	WorkSafeBC	All	202317876029A	Owner - General Duties	Closed	0	-	Reference(s): WCA25; OHS4.1; OHS4.13(3)(b); OHS4.13(3)(e)
3	April 26, 2023	WorkSafeBC	GSS	202317876030A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b)
4	May 8, 2023	WorkSafeBC	GSS	202317876033A	Incident Investigation	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b); OHS5.59(1); OHS3.7; OHS16.3(1); OHS16.3(2)
5	May 11, 2023	WorkSafeBC	GSS	202317876036A	Incident Investigation - serious near miss	Closed	1	Inadequate supporting surface	Order: OHS14.69(1) Reference(s): WCA69(1)(c); WCA72(2)(b); OHS14.69(2)
6	May 18, 2023	WorkSafeBC	GSS	202317876037A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b)
7	May 18, 2023	WorkSafeBC	GSS	202317876038A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b)
8	May 19, 2023	WorkSafeBC	Worker Accomodation	202317791039A	Exposure to wildfire smoke	Closed	0	-	WCA21(1)(a), OHS4.79(1)(a), OHS4.72(1)(a), OHS4.78(1), OHS4.3(2), OHS5.53(2), OHS5.51, OHS8.40(1), OHS3.16(2)
9	June 7, 2023	WorkSafeBC	GSS	202317876043A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): OHS4.32
10	June 15, 2023	WorkSafeBC	GSS	202317876049A	Wildfire	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b); OHS5.59(1); OSH5.59(2)
11	June 20, 2023	WorkSafeBC	GSS	202317876047A	Incident Investigation - injury of a worker	In Progress	1	Safe use machinery and equipment	Order: OHS4.3(1)(b)(i) Reference(s): WCA69(1); WCA71(2)(c); WCA72(2)(b); OHS8.22(2); OHS16.30(1);.
12	June 20, 2023	WorkSafeBC	GSS	202317876048A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA68(1); WCA69(1)(b); WCA72(2)(b)
13	June 27, 2023	WorkSafeBC	GSS	202317876050A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b)
14	June 28, 2023	WorkSafeBC	GSS	202317876052A	Incident Investigation	In Progress	2	Overhead crane is not certified as safe use for personnel lift Stop use order	Order(s): OHS14.15(2), WCA89(1) Reference(s): WCA89(4), WCA88(1), WCA88(2)

Total **7**

BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

Appendix D

Workforce Overview

Table D-1 Current Site C Jobs Snapshot (April 2023 to June 2023)[31]

	Number of B.C. Workers and Total Workers	Construction and Non-Construction Contractors[32] (Including Some Subcontractors). Excludes Work Performed Outside of B.C. (e.g., Manufacturing)	Engineers and Project Team[33]	Total
April 2023	B.C. Workers	3,037	775	3,812
	Total Workers	4,861	844	5,705
May 2023	B.C. Workers	3,138	806	3,944
	Total Workers	5,119	866	5,985
June 2023	B.C. Workers	3,130	817	3,947
	Total Workers	5,182	887	6,069

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

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

BC Hydro has contracted companies for major contracts, such as main civil works, who have substantial global expertise. During the month of June 2023, there were no workers in specialized positions working for a Site C construction or non-construction contractor, who were subject to the Labour Market Impact Assessment process under the Federal Temporary Foreign Worker Program. Additionally, there were 56 management and professionals working for Site C construction and non-construction contractors through the Federal International Mobility Program.

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

32 Construction and non-construction contractors total workforce employment number includes work performed on the Site C dam site, transmission corridor, reservoir clearing areas, public roadwork, worker accommodation and services.

33 Engineers and Project team are comprised of both onsite and offsite workers. The Project team includes BC Hydro construction management and other offsite personnel. An estimate is provided where possible if primary residence is not given.

Table D-2 Site C Apprentices Snapshot (April 2023 to June 2023)

Month	Number of Apprentices
April 2023	290
May 2023	323
June 2023	310

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

Table D-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						

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

Table D-4 Indigenous Inclusion Snapshot (April 2023 to June 2023)

Month	Number of Indigenous Workers
April 2023	464
May 2023	496
June 2023	539

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

The information shown has been provided by BC Hydro's onsite[34] construction and non-construction contractors and their subcontractors that have a contractual requirement to report on Indigenous inclusion in their workforce.

[34] Onsite includes work performed on the Site C dam site, transmission corridor, reservoir clearing areas, public roadwork, worker accommodation and services.

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 Table D-4.

As with any construction project, the number of workers, and the proportion from any location will vary month-to-month and 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 June 2023, there were 595 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.

BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

Appendix E

International Dam Experts Report

Site C Technical Review Panel
John W. France, P.E., D.GE, D.WRE and Kaare Hoeg, ScD, NAE
REPORT NO. 7
May 22, 2023

EXECUTIVE SUMMARY

This report presents an update to the Technical Review Panel's (Panel's) findings subsequent to Panel Reports Nos. 1 through 6, issued on January 22, 2021, February 15, 2021, April 6, 2021, August 12, 2021, February 28, 2022, and September 23, 2022.

The Panel's opinions expressed in the previous reports remain unchanged. The work associated with the right bank design enhancements, the approach channel, and the earthfill dam has generally been progressing as anticipated at the time of preparation of Panel Report No. 6.

The right bank design enhancement work is nearing completion. The current estimated schedule indicates the potential that all project elements can be completed sufficiently for diversion tunnel conversion to commence in late summer 2023, followed by commencement of reservoir filling. Should delays occur, it is still highly likely that reservoir filling can occur no later than 2024.

All piles for the right bank enhancements have been completed and the remaining tailrace pile caps should be completed in May 2023. The pile installations in both the spillway and tailrace were completed without significant issues. Data collected during drilling of the piles has not indicated any subsurface conditions that are not consistent with design assumptions.

Construction of the approach channel has progressed well since Panel Report No. 6. The current estimated schedule for approach channel construction indicates completion of the work by the end of August 2023. However, several elements of the construction are on the critical path, and it is conceivable that completion may be delayed beyond that date. The Engineering Design Team (EDT) is diligently working with the contractors to make all reasonable efforts to complete the approach channel by the end of August. The information reported to the Panel to date indicates high quality construction of the approach channel.

Work has progressed on improvements to the right bank drainage tunnel (RBDT) and the RBDT access to the powerhouse (RBDTA). Curtain grouting for the RBDTA has been successfully completed and a method for rehabilitating the RBDT drainage hole collars has been successfully developed. Further evaluations and implementation of tunnel lining and reinforcement are in progress. The projected schedule for the RBDT/RBDTA work is expected to allow for tailrace filling in early August 2023 and commencement of reservoir filling in the fall of 2023.

There have been no significant changes to the earthfill embankment design since early 2021. Foundation curtain and consolidation grouting is now complete and the earthfill dam embankment placement is expected to be complete by the end of August 2023. Reported foundation grouting records and earthfill dam quality control/quality assurance testing results indicate high-quality construction, meeting the design expectations. The instrumentation at the earthfill dam is being carefully monitored, and thus far does not indicate any data of concern. This effort will need to continue during further embankment construction and subsequent

Site C Technical Review Panel
John W. France, P.E., D.GE, D.WRE and Kaare Hoeg, ScD, NAE
REPORT NO. 7
May 22, 2023

reservoir filling to verify that pore water pressures in the foundation remain within limits to ensure dam stability and that there are no unexpected movements.

INTRODUCTION

At the request of BC Hydro, the Technical Review Panel (Panel) has prepared this report as an update to the Panel's previous Reports Nos. 1 through 6, dated January 22, 2021, February 15, 2021, April 6, 2021, August 12, 2021, February 28, 2022, and September 23, 2022.

Since September 23, 2022, the Panel has participated in virtual briefings to the Technical Advisory Board (TAB) by the Engineering Design Team (EDT) on October 3, November 11, and December 14, 2022 and January 31, February 28, March 28, and May 2, 2023, during which the EDT updated the TAB on activities related to the right bank enhancements, the approach channel, and the earthfill dam. The Panel participated live in most of these briefings, but in some cases of schedule conflicts Panel members reviewed recordings of the briefings.

Based on the information provided to date, the Panel provides below updated findings concerning the proposed right bank enhancements, including the approach channel, and the earthfill dam.

From the TAB briefings the Panel is aware of issues related to the penstock spiral casing coupling and some non-conforming concrete placed in Unit 4 of the powerhouse. The project team is diligently working to resolve these issues. The Panel does not provide comments on these two issues, because they are beyond the scope of the Panel's assignment.

FINDINGS

Right Bank Enhancements

The Panel has been regularly updated on the various activities related to the right bank enhancements through the TAB briefings. In the Panel's opinion, the implementation of the right bank enhancements has been proceeding well. The principal activities completed or commenced since September 23, 2022 have been tailrace pile and pile cap construction, excavations for the approach channel, grout plinth and grout gallery construction, foundation grouting, right bank drainage tunnel (RBDT) investigations and improvements, and approach channel liner construction. Work remaining to be done includes completion of 1) the tailrace pile caps, 2) the tailrace erosion slabs, 3) the approach channel liner construction, grout plinth and grout gallery construction and grouting in the approach channel, and 5) the foundation drainage system, including improvements to the RBDTA. A detailed schedule has been established for the remaining activities. The schedule indicates the potential that all project elements can be completed sufficiently for diversion tunnel conversion to commence in late summer 2023,

Site C Technical Review Panel
John W. France, P.E., D.GE, D.WRE and Kaare Hoeg, ScD, NAE
REPORT NO. 7
May 22, 2023

followed by commencement of reservoir filling. Should delays occur, it is still highly likely that reservoir filling can occur no later than 2024.

As anticipated in the Panel's last report, it has now become clear that the approach channel construction has become the critical path for project completion, rather than the earthfill embankment. The project team is heavily focused on the approach channel construction and ways to limit schedule delays in its construction.

Pile System – Subsequent to our Report No. 6, installation of piles in the tailrace has been completed. The pile installations in both the spillway and tailrace were completed without significant issues.

The remaining work for the pile system consists of placement of the last tailrace pile caps, which is scheduled for completion this month (May 2023).

Data collected during drilling of the piles has not indicated any subsurface conditions that are not consistent with design assumptions.

Overall, the pile system construction has been very successful.

Approach Channel – Construction of the approach channel has progressed well since Panel Report No. 6. At the time of this report work is underway simultaneously on several aspects of the approach channel, including grout plinth and grout gallery construction, foundation grouting, center berm construction, and liner installation. Foundation conditions in the approach channel are being carefully and appropriately documented, and identified shears in the bedrock are being appropriately addressed.

The current estimated schedule for approach channel construction indicates completion of the work by the end of August 2023. However, several elements of the construction are on the critical path, and it is conceivable that completion may be delayed beyond that date. The EDT is diligently working with the contractors to make all reasonable efforts to complete the approach channel by the end of August.

The information reported to the Panel to date indicates high quality construction of the approach channel.

Right Bank Drainage Features – Work has progressed on improvements to the right bank drainage tunnel (RBDT) and the right bank drainage tunnel access to the powerhouse (RBDTA).

Curtain grouting for the RBDTA has been successfully completed with generally very small grout takes. A method for rehabilitating the RBDT drainage hole collars has been successfully developed and will be implemented for all drainage holes. Further evaluations and implementation of tunnel lining and reinforcement are in progress.

Site C Technical Review Panel
John W. France, P.E., D.GE, D.WRE and Kaare Hoeg, ScD, NAE
REPORT NO. 7
May 22, 2023

The projected schedule for the RBDT/RBDTA work is expected to allow for tailrace filling in early August 2023 and commencement of reservoir filling in the fall of 2023, provided that other project work is completed to allow filling on that schedule.

Earthfill Dam

There have been no significant changes in the earthfill dam design or stability analyses since Panel Report No. 2 issued on February 15, 2021. The Panel's findings regarding design and analysis remain basically unchanged from those stated in Report No. 2.

Foundation curtain and consolidation grouting for the earthfill dam is complete. Reports of grouting results presented at the TAB briefings indicate an effective and high-quality grouting program.

Placement of earthfill has resumed, and it is estimated that the earthfill embankment will be completed to Elevation 460 by the end of May 2023, followed by earthfill placement from Elevation 460 to 468 and crest road construction being accomplished by the end of August 2023. Records of QC/QA test results for the embankment fill indicate that the fill is being placed and compacted in accordance with the project specifications.

The instrumentation at the earthfill dam and the dam foundation is being carefully monitored, and thus far does not indicate any data of concern. This effort will need to continue during further embankment placement and reservoir filling to verify that pore water pressures in the foundation remain within limits to ensure dam stability and that there are no unexpected movements. Numerical modelling and analyses are being prepared to predict movements and pore pressures during construction and impoundment and to make comparisons with the observed performance.

The earthfill dam construction is no longer the critical path item for the project construction schedule, which is a change from the projection in February 2022.

STATEMENT OF LIMITATIONS

The Panel functioned as advisors of the methodologies used by the EDT for analysis and design of the right bank enhancements, the approach channel, and the earthfill dam, based on information provided by the EDT. Given the large amount of work being completed by the EDT and the associated voluminous documentation, it was not possible for the Panel to perform a detailed review of all of the material in the available time. In particular, the Panel has not performed detailed checks of calculations and designs completed by the EDT. Such detailed checks are provided by the quality control/quality assurance programs for the Project. The Panel provides its opinions concerning the methods and approaches being used based on information provided by the Project Team. However, the ultimate decisions and responsibilities for the designs remains with BC Hydro.

Site C Technical Review Panel
John W. France, P.E., D.GE, D.WRE and Kaare Hoeg, ScD, NAE
REPORT NO. 7
May 22, 2023

Our advisory services were performed within the limits prescribed by BC Hydro in a manner consistent with the level of care and skill normally exercised in the current standard of professional engineering practice. No other representation to BC Hydro, expressed or implied, and no warranty or guarantee is included or intended.

Respectfully submitted,

John W. France Kaare Hoeg

BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

Appendix F

Summary of Individual Contracts Exceeding $10 Million

PUBLIC

CONFIDENTIAL ATTACHMENT

BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

Appendix G

Project Progression

PUBLIC

CONFIDENTIAL ATTACHMENT

BC Hydro
Power smart

Site C Clean Energy Project

Quarterly Progress Report No. 30

Appendix H

Detailed Project Expenditure

PUBLIC

CONFIDENTIAL ATTACHMENT

1