BC Hydro
Power smart

December 20, 2022

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

Dear Mr. Morton:

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. 27

Today, we are filing Site C Quarterly Progress Report No. 27 that covers the period of July 1 to September 30, 2022.

During the reporting period, the Site C project's overall health for the quarter remained "amber." While there are still risks and challenges being managed, the project is well on-track to have all six generating units in-service by fall 2025. The report also confirms the project continues to be managed within the approved budget.

I recognize the report discusses construction activity to the end of September 2022, however, I wanted to provide the Commission a more current update as we near the end of 2022 and look ahead to the project's next important milestone: the filling of the reservoir.

Construction on the Site C project is now more than 70 per cent complete. This past year was the busiest construction season yet on Site C and work continues to advance in all areas – with some parts of the project already completed or nearing completion.

In late November 2022, the Site C project reached elevation 445 metres across the entire earthfill dam. The earthfill dam is now 87 per cent complete and puts us in a good position to complete the remaining work on the dam next year.

Nearly 90 per cent of the concrete has been placed in the powerhouse and the first generating unit is in the process of being installed. We expect all concrete for the powerhouse to be finished in 2023. Other notable project areas on the dam site including the penstocks, spillways and approach channel continue to advance and remain on track for completion in 2023.

We continue to make good progress on a number of off-dam site activities. In November 2022, work on the Hudson's Hope shoreline protection berm was completed. This is an important milestone as the 2.6-kilometre-long berm will reinforce and protect the Hudson's Hope shoreline once the reservoir is filled.

The project also continues to see significant progress on the Highway 29 realignment. Construction on Highway 29 is about 90 per cent complete and this past fall, the Farrell Creek, Lynx Creek, Cache Creek and Dry Creek bridges opened to vehicle traffic. All work on Highway 29 is on track to be complete in 2023.

While it's clear we have made significant progress this past year on the project, it's notable all these milestones were achieved with safety being a top priority. We also remain committed to meeting our environmental and regulatory obligations for Site C.

As I noted earlier, we are on track to complete the project in 2025, which includes a schedule for achieving first power in 2024. Providing work on the project continues to advance favourably as we recover from the impacts of the COVID-19 pandemic, there is a possibility reservoir filling could occur one year early in 2023.

In the event reservoir filling occurs in 2023, the project would potentially be able to deliver first power as early as 2023. The quarterly progress report being filed today provides more detail on the possible scenarios we're managing for filling the reservoir and achieving first power, along with the risks and uncertainties that still exist.

The 2023 construction season will be another big year for the Site C project. We also acknowledge there will continue to be risks and challenges associated with the project between now and completion. We will continue to manage these risks and challenges with strong oversight from the Site C Project Assurance Board and the input of other independent experts.

The next progress report – Annual Progress Report No. 7 combined with Quarterly Progress Report No. 28 (October 1 to December 31, 2022) – will be filed by March 31, 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. 27

F2023 Second Quarter

July 1, 2022 to September 30, 2022

PUBLIC

Table of Contents

List of Figures

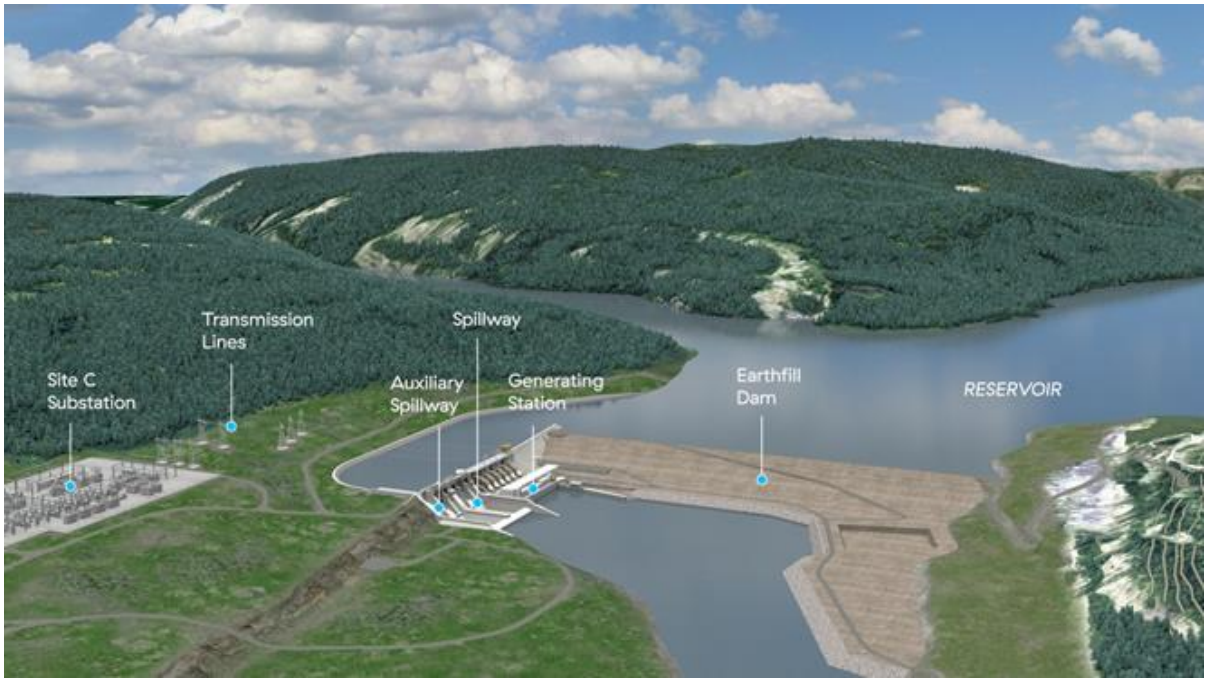
List of Tables

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. 27 covers the period July 1 to September 30, 2022 (the reporting period).

As of September 30, 2022, the Site C Project (the Project) is approximately 70% complete and BC Hydro remains on track to complete the Project within the approved budget of $16 billion and the Project in-service date of 2025.

The overall Project health status remains “amber” as cost, schedule, safety, environment, and scope risks remain. These risks are outlined in this report. BC Hydro continues to work collaboratively with the Project Assurance Board, special advisor Peter Milburn, EY 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.

The Project had a very busy summer construction season this year, as evidenced by the progress made both on and off the dam site, as well as the record number of workers on the Project (5,420 workers in September 2022). Significant construction progress was made in key areas such as the earthfill dam, approach channel, right bank foundation enhancements, the Highway 29 realignment and further advancements were made in the generating station and spillways components.

In early August 2022, the two large Site C powerhouse bridge cranes were taken out of service due to issues with the crane wheels. To mitigate the impacts of this unexpected event, BC Hydro sourced a smaller construction crane and placed it in-service by mid-September 2022, allowing for almost full resumption of the powerhouse construction. As of mid-October 2022, both cranes had been placed back into service. This event is not expected to impact achieving the approved in-service date in 2025.

Site C continued to be a fully vaccinated work site up to September 25, 2022. After careful consideration, BC Hydro suspended the COVID-19 vaccination policy effective September 26, 2022. The Project continues to collect the vaccination status for anyone accessing the site, as the health authority had previously requested this information from large industrial projects. During this reporting period, COVID-19 at

site was stable and case counts remained low and manageable. BC Hydro continues to work closely with Northern Health to monitor the latest developments.

BC Hydro and Site C contractors have agreed to contractual schedules that provide for the completion of their scopes of work in time to enable the possibility of reservoir filling in fall 2023 and first power in December 2023. BC Hydro and the Project Assurance Board (and the commercial sub-committee of the Project Assurance Board) are actively overseeing construction progress and these risks. Achieving these contractual schedules remains uncertain and known risks, if materialized, would adversely affect these schedules, and filling the reservoir in fall 2023. However, the time to complete the remaining scopes of work is sufficient for the Project to meet the approved first power date of December 2024 and Project completion in December 2025.

The following sections discuss some of the current risks facing the Project as well as highlights from the quarter.

1.2 Attracting and Retaining Sufficient Skilled Craft Labour

As noted throughout B.C. and North America, there has been a labour resource shortage post COVID-19. BC Hydro continues to monitor the risk that Project contractors cannot attract and retain sufficient skilled craft workers including leaders in the hourly craft workforce such as forepersons, lead hands and senior journeypersons and key management personnel. As of September 30, 2022, contractors were reporting that, although certain skilled labour positions were more difficult to attract, they had been able to access the workers they needed to complete their scopes of work for this summer construction season.

Contractor labour resource shortages could result in potential impacts to safety, schedule, cost and productivity. BC Hydro and Site C contractors are actively responding to the situation by working with unions to develop plans to attract and

retain labour. In cases where labour obtained is less experienced, contractors are retaining more experienced supervisory staff.

1.3 Monitoring Recent Inflationary Pressures Affecting the Project

The recent inflationary pressures potentially impact the Project's remaining costs in areas including contract related costs for potentially higher labour and fuel costs in excess of the amounts to be borne by the contractors, material yet to be procured, contract amendments and change orders subject to current market pricing, and higher interest during construction due to the significant increase in interest rates. In addition, beyond inflationary cost impacts, supply chain challenges could potentially cause schedule delays.

1.4 Management of Potentially Acid-Generating Rock Exposures

On April 21, 2022, the Project received a final inspection report and order from the Environmental Assessment Office related to various potentially acid-generating rock exposures across the Project. BC Hydro and the Environmental Assessment Office are working together on amendments to the Site C Construction Environmental Management Plan, which are expected to clarify that the current approaches to managing potentially acid-generating rock provide adequate environmental protection.

During the reporting period, BC Hydro provided the Environmental Assessment Office with an independent third-party expert opinion supporting BC Hydro's approach to managing potentially acid-generating rock and confirming that the modifications to the Construction Environmental Management Plan do not reduce environmental protections. Concurrently, 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.

1.5 COVID-19 Pandemic at Site

COVID-19 remained manageable at site through the reporting period, with 128 cases reported on the Project. BC Hydro continues to work with Northern Health to monitor the latest developments of the COVID-19 pandemic to help prevent the spread of the virus on the Project.

BC Hydro has suspended the COVID-19 vaccination policy effective September 26, 2022. The Project continues to collect vaccination status for anyone accessing site, as the health authority had previously requested this information from large industrial projects. Rapid testing continues to be used as requested by workers, and to test symptomatic workers reporting to the clinic.

1.6 First Nations Burial Site Management and Community Support

Consultation is ongoing with impacted First Nations regarding options and 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 consultation and field investigations undertaken by BC Hydro and First 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 is working closely with affected Nations to develop the most appropriate management options and any community support needs. BC Hydro requires permits from the Archaeology Branch under the *Heritage Conservation Act* prior to undertaking any activities that may impact the registered burial sites.

1.7 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.

Throughout the reporting period, 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 September 30, 2022, 593 of the estimated 646 (92%) provincial and federal permits 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 operating season (April 1 to October 31, 2022), the temporary fish passage facility passed more than 3,700 fish from 13 different species, compared to more than 2,400 fish during the same period in 2021. This is an improvement over the previous season potentially due to refining the operations of the facility. Further refinements will be made to the permanent facility.

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.

During the reporting period, BC Hydro completed the installation of 13 additional artificial eagle platforms. This brings the total number of artificial platforms to 42 and completes this habitat requirement.

Environmental compliance on the Project remains high. During the reporting period, 15,003 environmental compliance inspections were completed by BC Hydro staff, with a compliant and partial compliant result of 99% across all contractors and works areas.

Consultation is ongoing 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.

BC Hydro continues to advance economic opportunities for First Nations through capacity building and procurement opportunities. Approximately $687 million in Site C procurement opportunities have been awarded to companies designated by First Nations since the beginning of the Project. Working on the Site C Project has helped businesses designated by First Nations to build and grow their reputations, expand the scale of their operations, and develop new expertise to compete in the regional economy.

In September 2022, 403 Indigenous people were working on the Site C Project, compared to 390 in September 2021. The Project peak was reached in October 2019, with 428 Indigenous people working on the Site C Project.

1.8 Construction Progressed Over a Busy Summer Construction Season

Construction on the Project advanced through the busy summer months, with progress made on all aspects of the Project.

In the main civil works area, the placement of materials for the earthfill dam progressed, with approximately 3.1 million cubic metres of dam fill material placed for the core, filter and shell. The dam placement milestones for the 2022 season were achieved. The cumulative progress of material placed for the earthfill dam to September 30, 2022, is approximately 70% of the planned total material placements.

In the generating station and spillways civil works area, construction progressed with the ongoing placement of concrete in the powerhouse, intakes and spillways. By concrete volume, the generating station and spillways civil sub-project is approximately 82% complete.

The Project continues to implement foundation enhancements to address geotechnical issues in the bedrock foundation on the Project's right bank. Ongoing reviews by the Technical Advisory Board and independent dam experts continue to confirm that the design of the foundation enhancements meets the highest safety standards and international best practices. The foundation enhancements include the installation of 96 large diameter concrete-filled vertical steel piles to further extend the foundation deeper into the bedrock, and enhancements to the design of the approach channel above the powerhouse and spillways. During the reporting period, work continued on the enhanced lining of the approach channel. Work also continued in the powerhouse tailrace area, with the installation of the 48 large diameter vertical steel piles required in that area. The completion of the installation of the 48 piles in the spillway area was described in previous reports.

Off-dam site, activity continued on the Highway 29 realignment, including the completion and safe opening of the Dry Creek bridge. Construction continued on the Hudson's Hope berm.

Consistent with the increase in construction activities at the dam site and off-dam site, the total Project workforce reached a new Project high in September 2022 with 5,420 workers.

1.9 Powerhouse Bridge Cranes Temporarily Taken out of Service

Site C's two powerhouse bridge cranes are located in the powerhouse and are used to move and install large components embedded in each of the six generating units. During the July 2022 inspection by the crane original equipment manufacturer, significant wear was observed on the wheel flanges of both cranes. As a safety precaution, the cranes were temporarily taken out of service in early August 2022 and maintenance work began on the cranes. BC Hydro implemented contingency plans to minimize the impacts of this maintenance work on Project construction, including the installation of a temporary construction crane. Specific impacts to work in the powerhouse are being determined; however, this event is not expected to impact achieving the approved in-service date in 2025.

As of mid-October 2022, both cranes had been placed back into service.

1.10 Hudson's Hope Water Treatment Plant Issues

On July 20, 2022, the water treatment plant for the District of Hudson's Hope failed. A "do not consume" order was issued as a result and the District of Hudson's Hope began to provide bottled drinking water to its residents.

Early in the Project, BC Hydro committed to mitigating the effects of the dam and reservoir on the community's infrastructure by providing funding to the District of Hudson's Hope to replace their existing community water supply plant, which took water from the Peace River, with a similar reservoir-based water treatment plant (refer to section 12.1.1). In 2019, based on the performance of two test wells, the District of Hudson's Hope requested that funding be provided for a water treatment plant that sources the water from a well, rather than a plant that sources the water from the reservoir. BC Hydro agreed to the change and the parties entered into the 2019 Water Agreement under which the District of Hudson's Hope is responsible for all decisions, tendering, design, and construction of the well-based water system.

In August 2022, and without waiving its rights under the Water Agreement, BC Hydro offered to reimburse the District of Hudson's Hope, on a without prejudice basis, up to a maximum of $500,000 for costs to provide temporary water and to restore the well system to operation.

In September 2022, BC Hydro informed the District of Hudson's Hope that it was prepared to provide further funding, on a without prejudice basis, to a maximum of $2 million, to reconfigure the plant in accordance with the District of Hudson's Hope engineer's recommendation to ensure continued supply of safe and reliable community water for at least three years.

After the reporting period, on October 14, 2022, the District of Hudson's Hope rescinded the "do not consume" order after two separate water sample tests analyzed by Northern Health confirmed the District of Hudson's Hope water supply was safe.

The District of Hudson's Hope engineering experts have indicated the best option to ensure reliable water supply may be to develop a surface water system instead of their previous recommendation to reconfigure the well system. As part of the Hudson's Hope shoreline protection work, BC Hydro has funded and installed a new raw water intake should the District of Hudson's Hope decide to source water from the reservoir in the future.

1.11 Old Fort Community Concerns

In July 2022, a group of Old Fort residents used their vehicles to block access to the Gate B entrance at Site C to voice their concerns regarding issues such as dust, air quality, noise and traffic.

In late July 2022, an in-person meeting took place between Old Fort residents and BC Hydro to follow-up on these concerns. In response to this meeting, BC Hydro offered to temporarily relocate residents until the end of October 2022, reimburse residents for cleaning the exterior of their homes, and continue to provide updates on dust suppression and road improvement activities as they relate to the community of Old Fort (refer to section 12.2.1 for more information).

Further, BC Hydro's Chief Executive Officer met with a regional district elected official on September 23, 2022 and subsequent to the reporting period, met with two representatives of the community on October 26, 2022.

As of the end of this reporting period: brushing of vegetation in front of the gate was complete; sweeping of Old Fort Road in front of Gate B has occurred; substantial dust suppression has been applied repeatedly; works directly in front of Old Fort have advanced and moved further up-stream; 28 households have utilized the temporary respite; and 15 homeowners have utilized the exterior house cleaning offered.

As of October 31, 2022, the Project has not recorded any exceedances of the 24-hour rolling provincial air quality objectives over the previous 90 days and is often well below these objectives.

1.12 Tunnel Conversion and Reservoir Filling

One of the remaining milestones to complete the Site C Project is reservoir filling. Reservoir filling is currently scheduled to occur in 2024; however, due to the efforts of BC Hydro and Site C contractors exploring strategies to complete work on the Project that had been delayed by the COVID-19 pandemic, a scenario has emerged that has the potential for reservoir filling to take place as early as fall 2023.

Prior to filling the reservoir, more than 20 regulatory approvals must be met. In addition to these authorizations, reservoir filling must consider BC Hydro's operation of the Peace River system, environmental and weather constraints, and construction progress.

One of the key construction constraints related to reservoir filling is the conversion (or closure) of the diversion tunnels that are currently in service to divert the Peace River around the Project site to allow for the earthfill dam to be built. Due to environmental, operational, weather-related constraints as well as construction progress the works to convert the diversion tunnels must occur between July and September; as the window for reservoir filling to be safely started and completed falls in late summer or fall.

Due to the uncertainty of a number of these constraints, and in order to ensure the Project final in-service date of 2025, BC Hydro has developed three timing scenarios for tunnel conversion and reservoir filling:

1. Scenario One: tunnel conversion begins in mid-2023 and completes in fall 2023, followed immediately by reservoir filling.

2. Scenario Two: tunnel conversion begins in mid-2023 but does not complete in time for reservoir filling to begin in the fall of 2023. Reservoir filling would occur in fall 2024.

3. Scenario Three (approved schedule): tunnel conversion begins in 2024 and completes in fall 2024, followed immediately by reservoir filling.

Scenarios Two and Three result in the Project schedule of first power in December 2024 to meet the Project in-service date of December 2025, while Scenario One results in Project schedule for first power in December 2023 with a Project in-service date of December 2024.

1.13 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 a 2025 in-service date, 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 September 30, 2022, is provided in Table 1. There were no changes to the performance indicators from the previous quarter.

Table 1 Project Status Dashboard

● On Target ● Moderate Issues ● At Risk

Status as of:		September 30, 2022
Overall Project Health	●	As of September 30, 2022, the overall Project health status remained "amber." The Project is approximately 70% 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	●	Safety remained "amber" as of September 30, 2022. During the reporting period, BC Hydro continued a very active 2022 construction season, with multiple active work fronts and contractors across the site. As a result, the number of safety and security incidents is higher. When corrected for work hours, the serious incident frequency (serious injuries and near misses) is higher, as expected. Lost time injury frequency remains consistent, reflecting strong return to work programs. And, all injury frequency is down reflecting a drop in non-serious injuries for the past rolling 12-months. COVID-19 cases at site remained stable and are being closely monitored. BC Hydro suspended its mandatory COVID-19 vaccination policy in late September 2022, which has eased some resourcing challenges.
Scope	●	Scope status remained "amber" as of September 30, 2022. 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 September 30, 2022. The Project is currently on schedule to achieve the approved 2025 in-service date and is approximately 70% complete; however, a significant amount of work and potential schedule risks remain. BC Hydro and Site C contractors have agreed to revised schedules, which recover certain schedule delays due to COVID-19 and provides three potential schedule scenarios for tunnel conversion and reservoir fill including the potential for an earlier in-service date. All potential schedule scenarios include risks and uncertainty and the scenario that could potentially result in an earlier in-service date includes a higher level of uncertainty and risk.
Cost	●	Cost status remained "amber" as of September 30, 2022. Potential cost risks remain, as detailed in this report. As of September 30, 2022, the life-to-date actual costs are $9.9 billion, which results in an estimated $6.1 billion of remaining costs.
Quality	●	The quality rating for the Project remained "green" as of September 30, 2022, indicating that the work generally conforms to the requirements of the drawings and specifications. When quality issues are identified, BC Hydro works with the responsible contractor to rectify them in a timely manner. 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.

Status as of:		September 30, 2022
Regulatory, Permits and Tenures	●	The regulatory, permits and tenures indicator status remained "green" as of September 30, 2022. Overall, BC Hydro continues to be issued permits and authorizations in accordance with construction timelines. As of September 30, 2022, 593 of the estimated 646 provincial and federal permits required for the Project have been received and are actively being managed.
Environment	●	The Project environment status remained "amber" as of September 30, 2022, 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 and the Environmental Assessment Office are working together on amendments to the Site C Construction Environmental Management Plan, which are expected to clarify that the current approaches to managing potentially acid-generating rock provide adequate environmental protection. During the quarter, BC Hydro provided the Environmental Assessment Office with an independent third-party expert opinion supporting BC Hydro's approach to managing potentially acid-generating rock and confirming that the modifications to the Construction Environmental Management Plan do not reduce environmental protections. Concurrently, 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. An inspection by the Impact Assessment Agency of Canada was completed between June 13 to 16, 2022 but its draft inspection report was not issued during the reporting period.
Procurement	●	The procurement indicator status remained "amber" as of September 30, 2022, due to the remaining right bank foundation enhancements procurements that still need to be negotiated. In addition, there remains risk with procurement of replacement penstock couplers. The majority of the commercial agreements will be established by the end of 2022 with a few commercial agreements for the smaller scopes of work to be established by spring 2023.
Indigenous Relations	●	BC Hydro has a mandate from the Government of British Columbia to reach project or impact benefits agreements with the 10 First Nations 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 operational consultation and engagement. Consultation is ongoing 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.

Status as of:		September 30, 2022
Stakeholder Engagement	●	The stakeholder engagement indicator status remained "green" as of September 30, 2022. BC Hydro continues to work with the communities, regional district and stakeholder groups on the implementation of various community agreements. Significant engagement occurred with residents and elected officials from the community of Old Fort and the District of Hudson's Hope. BC Hydro also held one community open house with residents of Old Fort during this period.

1.14 Significant Project Updates for the Quarter

Significant Project updates that occurred between July 1 and September 30, 2022, include the following:

- On July 21, 2022, the largest group of boaters to date used BC Hydro's portage program, which began on the Peace River in 2020. Nine people, six kayaks and one canoe were transported with assistance of BC Hydro staff.
- On July 22, 2022, the Project completed the final concrete deck placement for the Lynx Creek bridge, which is part of the 32 kilometres of highway realignment between Fort St. John and Hudson's Hope. Refer to section 3.1.8 for more information.
- On August 18, 2022, the Project completed the final concrete deck placement on the Farrell Creek bridge, which is part of the highway realignment between Fort St. John and Hudson's Hope. Refer to section 3.1.8 for more information.
- On August 24, 2022, a significant milestone was achieved when the Project safely reached elevation 433.2 metres on the earthfill dam core, on schedule. The impermeable core portion of the dam is now at the same height as the upstream cofferdam (and getting higher), and as a result, the earthfill dam is now better able to manage extreme rain events on the Peace River. By the end of the reporting period, the earthfill dam core had reached elevation 441 metres (out of a total of 469.4 metres). Refer to section 3.1.1 for more information.

- In September 2022, there was a Project high of 5,420 total workers on the Site C Project. Of the total workers, 3,594 (66%) were from British Columbia, and there were 1,051 workers on site from the Peace River Regional District (22% of the construction and non-construction contractors' workforce). The on-site contractor workforce number also includes 589 women (13%), 403 Indigenous workers, and 161 workers who are working for various contractors as apprentice carpenters, electricians, millwrights, ironworkers, mechanics, boilermakers, and plumbers. Refer to section 11.3 for further information.
- On September 2, 2022, the installation and welding of the final penstock segment and for all generating units was complete. Refer to section 3.1.1 for more information.
- Main civil works construction continued, including in the approach channel, right bank and earthfill dam. Refer to section 3.1.1 for more information.
- In September 2022, the Dry Creek bridge on the Highway 29 realignment project was completed and opened to traffic. Work continued across all remaining segments. Refer to section 3.1.8 for more information.
- Construction continued on the three transmission lines connecting the Site C substation to the Site C powerhouse, including the installation of five of the eight transmission towers. Refer to section 3.1.7 for more information.
- After careful consideration, BC Hydro suspended the COVID-19 vaccination policy effective September 26, 2022. Refer to section 2.1.1 for more information.
- As of September 30, 2022, the generating station and spillways civil works sub-project is approximately 82% complete by concrete volume. Refer to section 3.1.3 for more information.

- As of September 30, 2022, the Generate Opportunities (**GO**) Fund, administered by Northern Development Initiative Trust on behalf of BC Hydro, had distributed $638,720 to 73 projects since the fund was launched. Refer to section 12.1.2 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 the reporting period, BC Hydro continued to experience a very active 2022 construction season, with multiple contractors and work fronts active both on-dam site and off-dam site.

Commensurate with the increase in construction activity and construction workers, the number of safety and security incidents on the Project was higher, even when corrected for work hours into frequencies. Other Project safety performance metrics, such as lost time injury frequency and all injury frequency, remained consistent or improved.

2.1.1 Management of COVID-19

During the reporting period, COVID-19 case counts at site remained stable and manageable, with 128 cases reported during the quarter. BC Hydro suspended its mandatory COVID-19 vaccination policy effective September 26, 2022, which had a positive impact on the ability of Project contractors to attract resources. The Project continues to collect, with permission, the vaccination status of anyone accessing the site, since this information was previously requested by the Northern Health Authority for large industrial projects. The planning for COVID-19 booster shots and seasonal flu vaccinations was also initiated.

The Project team and onsite medical clinic continued to monitor both COVID-19 and other seasonal communicable diseases closely.

2.1.2 Battleship Mountain Wildfire and Hudson's Hope Evacuation Order

During the reporting period, the Battleship Mountain wildfire was active in the Peace Region, burning approximately eight kilometres from the community of Hudson's Hope.

While it was not a direct threat to the Site C dam site, the Project was impacted by heavy smoke and falling ash for several days. BC Hydro asked all contractors to activate their high-risk air quality safety plans, which call for the heightened use of personal protective equipment, including respirators, and for workers to put down tools and return to camp at certain air quality levels.

On September 8, 2022, the District of Hudson's Hope and the Peace River Regional District issued an evacuation order for the area around the community, which impacted activities in nearby Project areas.

Work on the Hudson's Hope shoreline protection berm and the Lynx Creek bridge project along Highway 20 were also impacted by the Hudson's Hope evacuation order. All work was stopped, and equipment was moved to safe locations.

The evacuation order was lifted in mid-September 2022 and work was able to resume safely.

2.1.3 Emergency Response Drills

During the week of August 29, 2022, the Project conducted two emergency evacuation drills. The first was a full cofferdam evacuation, involving BC Hydro and all contractors working in the right bank cofferdam area. All workers evacuated quickly and were accounted for at their respective muster points.

Three key opportunities for improvement were identified: (1) further verify two-way radio communications; (2) add additional traffic management scope to evacuation planning to ensure workers in-transit are also evacuated safely, and (3) plan for evacuation scenarios in extreme weather conditions (e.g., deep freeze, heat dome).

The second drill was an evacuation of the BC Hydro left bank construction offices. Again, all workers evacuated quickly. A key learning was the need for staff and visitors to comply with sign in / sign out procedures in the construction offices.

2.1.4 WorkSafeBC Orders to BC Hydro

In early July 2022, BC Hydro, as owner and/or prime contractor, received two WorkSafeBC Inspection Reports, with three orders on first aid procedures and the coordination of welding activities in the powerhouse, and dust management at site. BC Hydro implemented corrective actions and submitted compliance responses by September 2022. WorkSafeBC has not yet confirmed compliance of all of the orders.

2.1.5 Safety Verifications

In this reporting period, the Site C safety team completed a total of 229 formal, contractor safety verifications for the Project – an average of 76 per month. The resolution rate of nonconformances was 94%. Of the 229 safety verifications, 17% were clean sheet verifications (no nonconformances were found). Further, 83% of all verifications conducted during the reporting period identified at least one good safety practice.

Verification areas of focus included people and equipment working in and around water, excavation procedures, haul truck and road safety, working at heights, and exposure control plans.

2.1.6 Security Update

Security was heightened around the Site C access gates after a small group of residents from Old Fort blocked Gate B in mid-July 2022 to voice their concerns regarding issues such as dust, air quality, noise and traffic. In late July 2022, an in-person meeting took place between Old Fort residents and BC Hydro to discuss their concerns. Further, BC Hydro's Chief Executive Officer met with a regional district elected official on September 23, 2022 and subsequent to the reporting period, met with two representatives of the community on October 26, 2022.

In response to the concerns raised by the Old Fort residents, BC Hydro has implemented operational mitigations including enhanced dust monitoring and road cleaning, and offered residents some accommodations such as cleaning the exterior of their homes and temporary relocation to hotel facilities in Fort St. John. BC Hydro continues to engage with the residents of Old Fort.

2.1.7 Summary of Safety Performance Metrics

From July 2015 through September 2022, more than 46 million work hours were completed across all Project work fronts, including on-dam site and off-dam site. As of September 30, 2022, there has been no fatalities and one permanent partial disabling injury (in 2017) on the Project.

During the reporting period, there were 23 serious safety incidents consisting of 17 near misses with the potential for a serious injury, three serious incidents with a moderate injury requiring medical treatment, and three serious incidents with lost time injuries.

In total for the reporting period, there were 200 non-serious incidents, including 154 minor and moderate injuries that required first aid or medical attention treatment (e.g., stitches or prescriptions) and 46 near misses. 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 Site C contractors and employees to report near misses.

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

Table 2 Summary of Site C Safety Metrics

	Reported July 1 to September 30, 2022[1]	Reported Since Inception (July 27, 2015 to September 30, 2022)[1]
Fatality[2]	0	0
Permanently Disabling Injury[3]	0	1[4]
Serious Incidents[5]	23	147
Lost Time Injuries[6]	3	43
All-Injury Incidents[7] (Lost Time Injuries[6] and Medical Attention Requiring Treatment[8])	20	311

1 Numbers are subject to change due to timing of when data is retrieved and when injury is categorized.
2 Excludes any non-occupational incidents.
3 A permanently disabling injury is one in which someone suffers a probable permanent disability.
4 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.
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 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 are work-related medical attention requiring treatment (medium and minor), 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 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.

2.1.8 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 helps correct for the volume of work. Table 3 summarizes these key safety frequencies by quarter, for a rolling 12-month average.

Table 3 Summary of Safety Performance Frequency Metrics (2021 vs 2022)

	January – December 2021 (Rolling 12-Month Average)				January – December 2022 (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[9] Oct-Dec
Serious Incident Frequency	0.51	0.49	0.59	0.67	0.70	0.81	1.07	n/a
Lost Time Injury Frequency	0.12	0.09	0.13	0.11	0.11	0.09	0.11	n/a
All Injury Frequency	1.14	1.19	1.41	1.24	1.29	1.19	1.18	n/a

The serious incident frequency (on a 12-month rolling average basis) for the July to September 2022 reporting period was 1.07, compared to 0.59 for the same period in 2021. The number of injuries during these two periods remained the same at six, however, the number of reported serious near misses significantly increased during the current period. Reports of near misses have provided opportunities for contractors to implement corrective actions before someone is injured.

The very busy 2022 summer construction season across the many Site C work fronts, as well as a significant increase in craft workers joining the Project, including more than the usual number of workers new to the industry, may have contributed to the increase in serious incidents, with the increase in near misses not worker injuries serious incidents. In July and August 2022, Site C contractors averaged about 400 new worker orientations in total, which is one of the highest rates seen on the

[9] Key safety frequencies for Q4 for calendar year 2022 will be provided in subsequent progress reports.

Project. As noted in Quarterly Progress Report No. 26 for the reporting period April through June 2022, the current scope of construction work activities involves higher hazard activities such as congested work areas, working at heights, working with the exposure of hazardous materials, and heavy haul truck traffic.

For the reporting period, the lost time injury frequency and all-injury frequency decreased compared to the same quarter in 2021. This drop is more a result of the rolling 12-month algorithm (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 have remained a priority for contractors. Refer to Appendix C, Figure C-1 for employee and contractor serious incident/near miss frequency, lost time injury frequency and all-injury frequency for safety performance frequency metrics in graphic format.

2.1.9 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 the dam site 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 July to September 2022, WorkSafeBC issued nine regulatory inspection reports and ten regulatory orders to the Project. Of the nine WorkSafeBC inspection reports, three were 'clean sheets' with no orders which were mostly centred on WorkSafeBC construction high-risk education initiatives. There were no regulatory inspections from the Ministry of Energy, Mines and Low Carbon Innovation during this reporting period.

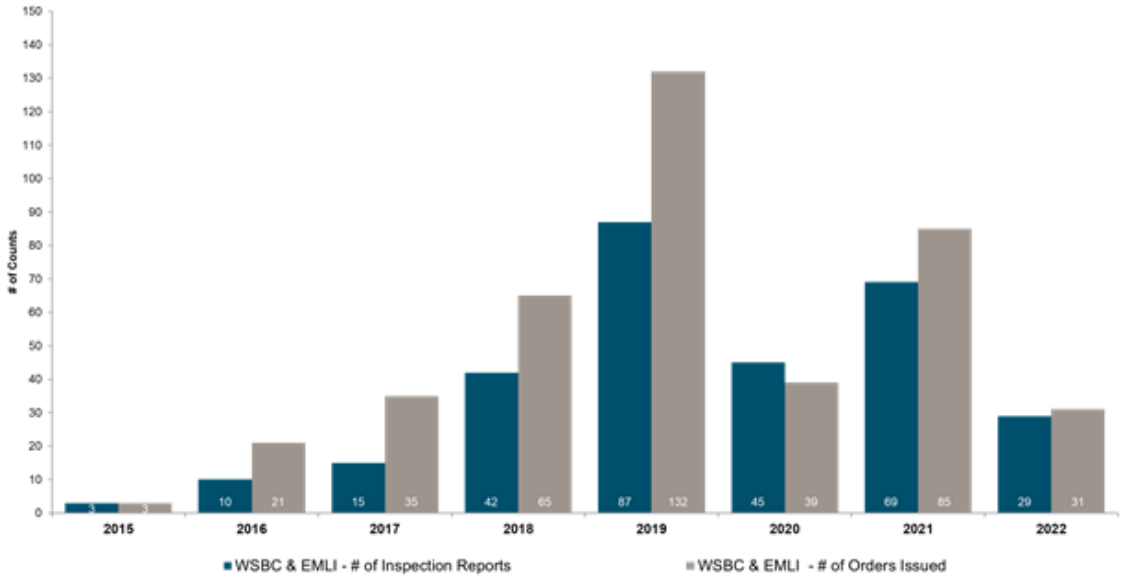
Table 4 Safety Regulatory Inspection and Orders

	Reported July 1 to September 30, 2022[10]	Reported Since Inception (July 27, 2015 to September 30, 2022)[10]
Regulatory Inspections	9	300
Regulatory Orders	10	411

Figure 1 shows the number of regulatory inspections and orders issued for the Project since 2015. The reduction in the regulatory activity in 2020 and 2021 can be partially attributed to WorkSafeBC officers not attending site as frequently due to internal WorkSafeBC COVID-19 restrictions. Regulatory activity in 2022 is tracking at a lower rate than 2021. This may be due to the completion of some Site C work activities related to WorkSafeBC's High Risk Strategies.

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

Figure 1 Regulatory Inspections and Orders, July 2015 to September 2022



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

3 Construction, Engineering and Quality Management

3.1 Construction

Construction of the Project continued to advance during the reporting period. BC Hydro and Site C contractors continue to schedule work and explore strategies to complete work delayed by the COVID-19 pandemic as efficiently as possible.

3.1.1 Main Civil Works

During the reporting period, construction activities took place on the right bank, earthfill dam and conveyor belt system, and are described below.

Right Bank Drainage Tunnel

Work on the right bank drainage tunnel progressed to a point where the tunnel floor has been completed. The remaining scopes of work include the drilling of additional draining holes, the installation of additional rock support at select locations, the installation of additional instrumentation and the installation of final ventilation and lighting systems once the reservoir has been filled. Following these activities, the tunnel's permanent portal and door structures will be installed. During the reporting period, a total of 41 drain holes were drilled from the roller-compacted concrete buttress into the tunnel.

Earthfill Dam

Dam fill placements for the 2022 season started in late March 2022, and in late August 2022, a significant milestone was achieved when the Project safely reached elevation 433.2 metres on the earthfill dam core, on schedule. The impermeable core portion of the dam is now at the same height as the upstream cofferdam (and getting higher), and as a result, the earthfill dam is now better able to manage extreme rain events on the Peace River. As of the end of September 2022, the dam core elevation was at elevation 441 metres (out of a total of 469.4 metres). Grouting

of the left abutment above 440 metres has resumed and will continue into the fall and winter.

Approximately 3.1 million cubic metres of dam fill material (core, filter, and shell) have been placed so far in 2022, achieving the dam placement milestones for the season. The cumulative progress of material placed for the earthfill dam to September 30, 2022, is approximately 70% of the total planned material placements.

Conveyor Belt System

The conveyor system that transports till material being used in the construction of the dam core has been operating well throughout the quarter. Till material transported by the conveyor has been sufficient to maintain material placements on the dam core, as well as providing a stockpile of till material, to allow for maintenance outages of the conveyor.

3.1.2 Site Operations

Site operations includes construction and operations of the worker accommodation facility and debris management.

Worker Accommodation

The total capacity of the worker accommodation, including camp operations staff, is 2,350.

The majority of the enhanced COVID-19 measures have been suspended in the camp, masks remain optional in the facility, and the enhanced cleaning continues on a reduced frequency. The lounge and dining room are fully operational and have returned to pre-pandemic occupancy limits. The recreation program resumed, including programs and activities for entertainment, fitness and nutrition.

BC Hydro continues to work closely with the Northern Health Authority to monitor and report all statistics related to COVID-19 for the worker accommodation lodge.

Debris Management

There are four debris retention structures on the Moberly and Peace Rivers that provide coverage for all head pond elevations to capture and prevent debris from entering the diversion tunnels. Debris management is seasonal with activities from approximately April to November each year and no activities over the winter season (approximately December to March).

During the reporting period, the debris management contractor conducted debris removal operations and minor repairs and maintenance on both the Peace and Moberly River debris booms.

3.1.3 Generating Station and Spillways

During the reporting period, construction progress took place on the generating station and spillways civil works, cranes, and hydromechanical equipment as described below.

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 sub-project is approximately 82% complete as of September 30, 2022.

Powerhouse

The powerhouse is approximately 86% complete as of September 30, 2022. Production on the second stage concrete (concrete that embeds the turbines and forms the floors) has been impacted by the crane outages. BC Hydro is working with the contractor to recover the schedule, and the Project continues to be on schedule to achieve the approved in-service date.

The east and west powerhouse gantry cranes were taken out of service in early August 2022 due to issues with the crane wheels. The existing wheels were adjusted to enable limited crane service. Additionally, a temporary construction crane was put into service in September 2022, allowing construction to continue.

As of mid-October 2022, both cranes had been placed back into service.

Intakes Headworks

Intakes first stage concrete is more than 93% complete. Intakes first stage concrete is essentially complete for units 1, 2, 3, and 6. Intake 4 is approximately 71% complete and intake 5 is approximately 95% complete.

Penstocks

All of the penstock steel for all penstocks has been installed.

The penstock flexible couplings are a segment in each of the penstocks that allow the penstocks to move slightly. The originally proposed penstock flexible coupling for the unit 1 penstock failed the pressure test in 2021, and was subsequently redesigned. BC Hydro is working with the contractor to implement the redesigned flexible coupling.

Spillways

The contractor has completed approximately 76% of the spillways concrete. The spillways headworks concrete reached its maximum elevation in August 2022.

The installation of the spillway operating gates has started.

Cranes

The assembly of the headworks gantry crane will commence in early November 2022.

The upgrade to the powerhouse gantry cranes was completed during this reporting period. A temporary construction crane was installed in the powerhouse in September 2022 due to the issue with the wheels of the existing powerhouse cranes.

The tailrace gantry crane erection will begin in February 2023.

Hydromechanical Equipment

Gates and components are being shipped to site in advance of need. All essential equipment arrived at site by October 2022.

3.1.4 Right Bank Foundation Enhancements

During the reporting period, construction work continued on the enhanced lining of the approach channel. Activities included shallow excavations to reach the bottom elevation of the approach channel's rock surface, and cleaning and grouting of the bedrock. Following cleaning and grouting, the bedrock was covered with a combination of either unreinforced concrete, glacial till or granular material. In addition, work continued on the construction of the reinforced concrete grouting plinth and central channel berm structures.

Work also continued with the installation of the 48 large diameter concrete-filled vertical steel piles in the powerhouse tailrace area. Work included the completion of the second of four phases of the excavations required to provide access into the bottom of the excavation for the piling equipment. In addition, a total of eight piles were installed, which includes pile drilling, installation of steel piles and concrete backfilling.

The powerhouse piles are being installed from west to east. Sixteen piles (out of a total of 48) had been installed by the end of the reporting period; the pile installations are scheduled for completion in spring 2023.

3.1.5 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 contracts); and (3) permanent upstream fishway and other out structures.

The mechanical and electrical work has had limited progress inside the powerhouse in the areas made available to the contractors, which has been limited to 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 continued the drainage and dewatering system installation.

The electrical contractor commenced installation of the electrical station service in the powerhouse and the first sections of isolated phase bus that will connect the Site C generators to BC Hydro's electrical system. Architectural work in the operations building is progressing and the heating, ventilation and air conditioning work has begun.

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 during winter 2022/2023. The permanent upstream fishway is on schedule to be in service for the spring of 2024.

3.1.6 Turbines and Generators

BC Hydro and the contractor have agreed on a recovery schedule that has all six units in service on schedule. The manufacturing and installation for the turbines and generators are on track to the recovery schedule; however, there have been

some delays due to the cranes being taken out of service, which has used up some of the float in the schedule.

Three of six turbine runners have arrived at site and the fourth turbine runner is being stored off site. The remaining two runners are being stored in Prince Rupert and will likely be delivered during winter 2022/2023 when road conditions allow.

3.1.7 Transmission

Construction of the foundations for the three transmission lines connecting the Site C substation to the Site C powerhouse were completed by the contractor.

BC Hydro has installed five of the eight transmission towers on the foundations.

3.1.8 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 boat launches 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 September 30, 2022:

Cache Creek

Construction of the Cache Creek segment includes 8.6 kilometres of highway and a 596-metre-long bridge. Construction continued on the Cache Creek segment during the reporting period, including completion of the cast-in-place concrete bridge deck and progression of the cast-in-place concrete parapets to 90%. Construction of the highway grade also continued including construction of the east and west tie-ins.

Asphalt paving of the top lift on the western portion of the segment was completed. Overall, construction on this segment was 80% complete at the end of the reporting period.

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 north of the previous bridge.

Construction continued on the Halfway River segment with all work being completed except for reclamation and demobilization. Overall progress was 98% complete at the end of the reporting period.

Due to a technical issue with the bridge expansion joints, the new Halfway River bridge will not open to traffic until new expansion joints have been procured and installed by the contractor in early 2023. Traffic will continue to use the existing highway.

Farrell Creek East

The Farrell Creek East segment includes the realignment of 8.4 kilometres of highway. Geotechnical studies in 2019 concluded that 5.7 kilometres of this segment could be removed from the scope of work and monitored following the creation of the Site C reservoir, reducing the length of the Farrell Creek East realignment work to 2.7 kilometres.

Construction of Farrell Creek East segment was completed in August 2022.

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.

At the end of the reporting period, the contractor completed the cast-in-place concrete bridge deck and the cast-in-place concrete parapets. The east and west bridge approaches were prepared for asphalt paving in October 2022. Overall, construction on this segment was 90% complete at the end of the reporting period.

Dry Creek

The Dry Creek segment includes the realignment of 1.4 kilometres of highway, including the construction of a new 192-metre-long bridge.

Construction of the Dry Creek segment was completed in September 2022.

Lynx Creek

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

During the reporting period the Lynx Creek contractor completed the construction of the bridge and continued to construct the grading and drainage works on the new highway alignment. Construction of the Lynx Creek boat launch was started, with site preparation of the parking lot and boat ramp completed. At the end of the reporting period, the Lynx Creek work was 76% complete.

Lynx Creek was delayed by approximately one week due to the Battleship Mountain wildfire and resulting evacuation order issued for the area around the District of Hudson’s Hope from September 10 to 17, 2022.

Portage Mountain Quarry

Portage Mountain Quarry supplied riprap and berm filter materials for various segments of the Highway 29 realignment and the 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 focus is now on the design and implementation of quarry reclamation, which is anticipated to occur in 2023.

Hudson's Hope Shoreline Protection Berm

The Hudson's Hope shoreline protection scope of work includes a 2.6-kilometre 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.

As of the end of the reporting period, the contractor had completed 99% of all riprap and aggregate placements on the berm. The installation of culverts and the berm running surface continued and was 66% and 56% complete, respectively.

As part of the shoreline protection work, BC Hydro has funded and installed a new raw water intake should the District of Hudson's Hope decide to source water from the reservoir in the future. The installation of the raw water intake was completed in July 2022. Refer to sections 1.9 and 12.1.1 for related information on the District of Hudson's Hope well water system.

Construction of the berm was also impacted by the Battleship Mountain wildfire and resulting evacuation order for the area around the District of Hudson's Hope from September 10 to 17, 2022. The construction of the berm is now expected to be complete by mid-November 2022.

Highway 29 Decommissioning

Decommissioning work was started by the contractor at Farrell Creek East and Dry Creek.

Halfway River East Boat Launch

Construction of the Halfway River East boat launch was started, with archaeological stripping, site preparation and excavation and backfill for the access road completed.

3.1.9 Reservoir

The following reflects progress to September 30, 2022:

Lower Reservoir, Moberly River Drainage and Eastern Reservoir including Cache Creek Drainage

A sweep of the reservoir area has identified outstanding wastewood piles in the Eastern Reservoir and Moberly Drainage that will be included in this winter's burning program.

Middle Reservoir, Halfway River Drainage and Western Reservoir

As planned, clearing activities ceased in early April 2022 and restarted in late August 2022. Works include removing trees that were remaining from last season in the Western Reservoir. Some additional areas were identified during a sweep of the reservoir area and have been added into existing contracts and will be cleared this coming season.

During the reporting period, a contract was awarded for the Watson Slough area. This is the final clearing package and is a direct award to a First Nations-designated business. Work began in October 2022 and is expected to be complete by March 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 needs to be relocated prior to reservoir filling. The construction of the foundations are complete

and the pole installation and overhead stringing began in September 2022. Work is expected to be complete by December 2022.

The construction of one fish habitat site was ongoing during the reporting period. Work at Maurice Creek began in June 2022 and continued until September 2022. Work will resume in spring 2023 when low water flows suitable for construction are expected on the Peace River.

3.1.10 Tunnel Conversion and Reservoir Filling

Reservoir filling is one of the remaining milestones for the Project. Reservoir filling is currently scheduled to occur in 2024; however, due to the efforts of BC Hydro and Site C contractors exploring strategies to complete work on the Project that had been delayed by the COVID-19 pandemic, a scenario has emerged that has the potential for reservoir filling to take place as early as fall 2023.

Prior to filling the reservoir, more than 20 regulatory approvals must be met. In addition to these authorizations, reservoir filling must consider BC Hydro's operation of the Peace River system, environmental and weather constraints, and construction progress.

One of the key construction requirements for reservoir filling is the conversion (or closure) of the diversion tunnels that are currently in service to divert the Peace River around the Project site to allow for the earthfill dam to be built. Conversion of the diversion tunnels requires installation of constrictions (or orifice rings) inside one of the tunnels to restrict the flow of water during the filling of the reservoir. The conversion works must occur between July and September due to environmental, operational, weather-related constraints as well as construction progress. Reservoir filling also has similar constraints that restrict the window for filling to be safely started and completed to the late summer and fall.

Due to the uncertainty of a number of these constraints, and in order to ensure the Project final in-service date of 2025, BC Hydro has developed three timing scenarios for tunnel conversion and reservoir filling:

1. Scenario One: tunnel conversion begins in mid-2023 and completes in the fall of 2023, followed immediately by reservoir filling.
2. Scenario Two: tunnel conversion begins in mid-2023 but does not complete in time for reservoir filling to begin in the fall of 2023. Reservoir filling would occur in fall 2024.
3. Scenario Three (approved schedule): tunnel conversion begins in 2024 and completes in the fall of 2024, followed immediately by reservoir filling.

Scenarios Two and Three result in the Project schedule of first power in December 2024 to meet the Project in-service date of December 2025, while Scenario One results in Project schedule for first power in December 2023 with a Project in-service date of December 2024.

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.

Through the reporting period, substantial effort was given to engineering supervision and field review at the construction site.

3.2.1 Main Civil Works

Support for the main civil works contract continued during the reporting period supporting excavations, foundation mapping, dam fill placements, grouting, and instrumentation reading 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 placement as predicted.

Detailed geological mapping of the excavations in the approach channel continues. 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 the channel's central channel berm.

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 and Appendix E for the report issued by the the independent international dam experts during this reporting period.

3.2.3 Large Cranes, Hydromechanical, and Turbines and Generators

Engineering support to construction, manufacturing and vendor submittal reviews and integration, continued throughout the reporting period for the large cranes, hydromechanical equipment and turbines and generators contracts.

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, along with supporting construction with the review of submittals for the powerhouse, intakes, penstocks, and spillways.

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, permanent upstream fishway (and other out structures), fire detection and protection; and heating, ventilation, and air conditioning contract packages. The balance of plant team continued to support construction activities under these contracts, including the review of the technical submittals and contractor design drawings. The team also continued to support the review of the technical submittals and design drawings, factory acceptance testing, and virtual factory visits for the seven outstanding equipment supply contracts, including the generator terminal equipment, generator circuit breakers, generator step up transformers, AC station service, DC station service, 500 kV motor operated disconnects, and diesel generators contracts. Finally, the team participated in several factory inspection/quality audits for the assembly of the first set of generator step-up transformers.

Engineering design and fabrication continued to be advanced on the protection and control systems and integrated testing is also progressing on fabricated equipment.

Overall, the detailed engineering on the generating station and spillways is complete. This excludes the foundation enhancements design, for which the detailed engineering is approximately 90% 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 to the various highway segments and the Hudson's Hope berm, as required to progress the construction activities.

3.2.7 Technical Advisory Board and Independent Dam Experts

A series of video conferences occurred from July through September 2022 with the Technical Advisory Board.

The independent international dam experts issued a report (#6) in September 2022. Refer to Appendix E for the independent international dam experts' report (#6).

3.3 Quality Management

During the reporting period, the Project team continued its activities to support the Project quality management plan, including:

- Ongoing meetings with the quality management teams of key manufacturers;
- Ongoing meetings with the quality management teams of the Site Contractors to address quality issues as they arise;
- Performing quality audits of the Site Contractors; and
- Continuing with monthly quality performance indicator assessments for the engineering, manufacturing and construction activities across each sub-project.

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 – July 2022 to September 2022

Contract	NCRs Reported July 1 to September 30, 2022	NCRs Closed July 1 to September 30, 2022	NCRs Reported as of September 30, 2022	NCRs Closed as of September 30, 2022	NCRs Open as of September 30, 2022
Main Civil Works	20	29	2010	1995	15
Turbines and Generators (total = manufacturing + installation)	55(=26+29)	66(=43+23)	824(=592+232)	718(=553+165)	106(=39+67)
Generating Station and Spillways Civil Works	114	135	1,334	1,267	67
Large Cranes	0	0	27	27	0
Hydromechanical Equipment	5	2	52	48	4

During the reporting period, there were no significant quality issues to report on the main civil works sub-project and the quality of the work continues to be good. BC Hydro's program of independent materials testing alongside the main civil works contractor is ongoing and there continues to be good correlation between the test results. BC Hydro and the main civil works 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.

The quality of the constructed works in the generating station and spillways and intake structures continues to be good. The contractor's thermal control performance continues to be good and additional focus will be placed on the thermal control operations as the site transitions into winter weather.

Following the failed hydrostatic pressure test of the unit 1 penstock flexible coupling in November 2021, the generating station and spillways contractor and its flexible

coupling supplier continued with the field installation and testing of alternative design options. Preliminary results from August and September 2022 continue to be inconclusive. The contractor has also engaged an alternative supplier to design a new flexible coupling as a contingency if the field tests are unsuccessful. Preliminary drawings for an alternative design were received by BC Hydro in August 2022. BC Hydro and the 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.

The quality of the turbine embedded parts welding and rotor assembly for the turbines and generators contract continues to be good, as does the quality of the unit 1 stator assembly. During a pre-installation inspection of the unit 1 spiral case flexible coupling housing, surface defects were found on the housing that affected the couplings' ability to seal. While these defects have been repaired, the water tightness of the coupling remains unproven until the successful completion of the hydrostatic pressure test (scheduled for late 2022 or early 2023). BC Hydro continues to meet with the contractor on a weekly basis to discuss upcoming inspections, quality issues and the overall quality assurance program.

The quality of the generator step-up transformer manufacturing continues to be good. The unit 1 in-tanking inspection of the core took place in September 2022 and the factory acceptance test of the transformer is scheduled for October 2022.

3.4 Assets In-Service

Prior to the first generating unit coming into service, there are several construction activities that need to be substantially completed both on the dam site and off the dam site.

The first generating unit is scheduled to be in-service approximately one year before the sixth and final generating unit goes into service. Before the first generating unit is put into service, diversion tunnel conversion must be completed to allow for reservoir filling.

Before BC Hydro is able to complete the tunnel conversion and proceed with reservoir filling (in any of the three scenarios described in section 3.1.10), 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, powerhouse (including intakes) and spillways (including gates);
- The first generating unit ready for commissioning;
- Right bank foundation enhancements;
- Modification of the right bank cofferdam in preparation for tunnel conversion; and
- Tunnel conversion preparations complete.

Off-Dam Site

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

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 BC Hydro Operations.

The pre-commissioning testing includes testing of individual pieces of equipment. The offline testing is completed prior to the signing of a Commissioning Notice to Energize, which states that the asset is safe to connect to the BC Hydro grid to commence the online testing. At the conclusion of the online testing, the signing of a Commissioning Notice to Operate formalizes the handover of the asset to the BC Hydro Operations group to operate. 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.

The Highway 29 segments are transferred to the Ministry of Transportation and Infrastructure by BC Hydro as they are completed and, once accepted, the Ministry assumes responsibility and control of the segment.

As of September 30, 2022, 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 Site C to the Peace Canyon generating station.

4 Project Schedule

4.1 Project In-Service Dates

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

BC Hydro and Site C contractors have agreed to contractual schedules that provide for the completion of their scopes of work in time to enable the possibility of reservoir filling one year ahead of the approved schedule in the fall of 2023, first power in December 2023 and an in-service date of December 2024. BC Hydro and the Project Assurance Board (and the commercial sub-committee of the Project Assurance Board) are actively overseeing construction progress and these risks. Achieving these contractual schedules remains uncertain and known risks, if materialized, would adversely affect these schedules, and filling the reservoir in fall 2023. However, the time to complete the remaining scopes of work is sufficient for the Project to meet the approved first power date of December 2024 and Project completion in December 2025.

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

Table 6 In-Service Dates

Description	In-Service Dates based on Approved Budget and Schedule (June 2021)[11]	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

[11] In-service dates based on Treasury Board's approval of the revised budget 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 $50 million (and their related changes), 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 and support to the Project team;
- EY Canada continued to provide independent oversight for the Project, including budget oversight, schedule and commercial management evaluation and risk assessment analysis;
- BC Hydro and EY Canada worked collaboratively to complete the quarterly update of the cost risk analysis and schedule risk analysis for the Project;
- Special advisor Peter Milburn continues to work with the Project to ensure that his recommendations, which have all been implemented, continue to be sustained; and
- In August 2022, Peter Milburn and an EY representative held a site visit to observe construction progress and meet Project team members.

5.2 Project Budget Summary

With the Project approximately 70% complete, BC Hydro, with oversight from the Project Assurance Board, continues to actively manage potential Project risks.

As of September 30, 2022, the life-to-date actual costs are $9.9 billion, which results in an estimated $6.1 billion of remaining costs. The Project remains on track to be completed within the approved $16 billion budget.

5.3 Project Expenditure Summary

The Project budget in Table 7 reflects the Project budget of $16 billion approved in June 2021 by key work area, life-to-date actual expenditures to September 30, 2022, and the remaining budget.

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

Description	Project Budget[12]	Actuals, Life-to-Date (as of September 30, 2022)	Remaining Budget (as of September 30, 2022)
Dam, Power Facilities and Associated Structures and Transmission[13]	8,258	5,598	2,660
Offsite Works, Direct Construction Supervision and Site Services[14]	2,895	1,950	945
Total Direct Construction Cost	**11,153**	**7,548**	**3,605**
Indirect Costs[15]	2,082	1,307	775
Total Construction and Indirect Costs	**13,235**	**8,855**	**4,380**
Interest During Construction and Contingency	2,765	1,043	1,722
Total	**16,000**	**9,898**	**6,102**

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 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 September 30, 2022, and the related variances.

Table 8 Total Project Budget Compared to Forecast Amounts to Completion and Life-to-Date Plan Compared to Actuals to September 30, 2022 ($ million)

	Total Project			Life-to-Date (LTD) to September 30, 2022		
Description	**Budget**	**Forecast to Completion**	**Variance**	**Plan**	**Actual**	**Variance**
Total Construction & Indirect Costs	13,235	13,235	0	10,101	8,855	1,246
Interest During Construction and contingency	2,765	2,765	0	1,296	1,043	253
Total	**16,000**	**16,000**	**0**	**11,397**	**9,898**	**1,499**

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

Table 9 provides a Fiscal 2023 year-to-date (**YTD**) summary as of September 30, 2022, for the plan, actual cost and related variance based on the 2022/23 to 2024/25 Service Plan.

Table 9 2022/23 to 2024/25 Service Plan Compared to Actuals to September 30, 2022 ($ million)

Description	2022/23 to 2024/25 Service Plan (September 30, 2022)	Actuals, YTD (September 30, 2022)	Variance
Total Project	1,436	1,088	348

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 British Columbia'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 September 30, 2022.

[16] 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.

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.
Adits or right bank drainage tunnel may need additional structural support.	**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 upper flexible coupling does not perform as expected.	**Impact:** Additional costs to complete the design and supply of flexible couplings. **Response**: Ongoing modification and on-site testing of the couplers; seek an alternate design and supply.
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.
Unavailability of powerhouse cranes.	**Impact:** Delays to contractors working in the powerhouse, resulting in cost and schedule impacts. **Response**: Actively manage crane schedule; continue use of a crane marshal to schedule crane activities; installation of a temporary construction crane; and determine if certain work can take place from the floor rather than require the use of the crane.
Right bank foundation enhancements at approach channel requires additional work.	**Impact**: Impacts to existing contractors' 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.

Risk Description	Impact and Response Plan Summary
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 contractor's 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.
Inability to attract and retain sufficient skilled BC Hydro employees to work on the Project.	**Impact**: BC Hydro lack of resources cause schedule delays and additional costs. **Response**: Implement targeted programs to attract and retain BC Hydro employees for the Site C Project.
Contractor workforce strike, work stoppages and lockouts impact site work.	**Impact**: Workforce disruptions causing schedule delays and increased costs. **Response**: BC Hydro to enforce contracts and potentially seek injunctions, if required.
First 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. **Plan:** Work closely with affected First Nations to develop and implement appropriate burial site management options. Ensure sufficient amounts of time, including schedule float, are available in the Project schedule
District of Hudson's Hope may seek further funding for water supply system.	**Impact:** Additional costs for the water supply system. **Response:** Continue to meet obligations under the Water Agreement and work constructively with the District of Hudson's Hope. Install a water conveyance system into the berm to enable access by the District of Hudson's Hope in the future if they choose to use it.
Protest activity disrupts the Project.	**Impact:** Potential impacts to schedule and cost and reputation. **Response**: Active community engagement, monitor protest activity, implement risk-based security, safety protocols and controls and engagement with local RCMP.

Risk Description	Impact and Response Plan Summary
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.
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.
Risk that reoccurrence of COVID-19 impacts continuation of construction activities at site or in Vancouver.	**Impact**: BC Hydro and contractors do not have access to the required labour for daily construction and Project management activities. BC Hydro and contractor costs increase to respond to COVID-19 and schedule delay impacts; camp capacity reduction and/or shutdown due to COVID-19 outbreaks. **Response:** As per Provincial Health direction, all Site C employers have implemented Communicable Disease Plans replacing COVID-19 safety plans. The worker accommodation contractor to apply public safety/infectious disease protocols in the worker accommodation camp, especially handwashing. BC Hydro to support vaccination programs at site, for both COVID-19 and seasonal flu.

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. Where feasible, delay expenditures.

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 Contracts and Delivery Models

Component	Contract	Procurement Model	Anticipated Timing
Reservoir/ Transmission Clearing	Multiple reservoir-clearing contracts to be awarded over seven to eight years	Design-Bid-Build	Sixteen contracts completed (14 reservoir, two transmission). One remaining access and clearing package is expected to be procured in 2023.
Reclamation Program	Multiple seeding supply contracts and reclamation contracts to be awarded over three to four years	Design-Bid-Build	Under the pilot program: • Three seeding supply contracts and three reclamation contracts were awarded. For the full program: • Packaging of work will be determined once the pilot program is completed in summer 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 September 30, 2022[17] ($ million)	Contract Execution Date
Site Preparation: North Bank	60	July 2015
Worker Accommodation	684	September 2015
Main Civil Works[18]	3,189	December 2015
Turbines and Generators	537	March 2016
Transmission and Clearing	93	October 2016
Quarry and Clearing	133	February 2017
Generating Station and Spillways Civil Works[19]	2,309	March 2018
Hydromechanical Equipment	70	April 2018
Transmission Line Construction	139	May 2018
Clearing and Aggregates	74	December 2018
Highway 29	379	October 2019
Balance of Plant Mechanical	71	July 2021
Balance of Plant Electrical (includes balance of plant architectural; heating, ventilation, and air conditioning; and fire detection and protection contracts)	227	September 2021
Balance of Plant Permanent Upstream Fishway and Other Out Structures	87	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 $1.44 billion to reflect approved changes to September 30, 2022.

During the reporting period, a contract amendment was executed on August 24, 2022, to the main civil works contract, resulting in an increase to the contract value of up to $205 million, including performance based at-risk incentives for the contractor with the objective of maintaining schedule milestones for the earthfill dam completion.

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 $705 million to reflect approved changes to September 30, 2022.

7 First Nations Consultation

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.

Accommodation offers were originally extended to 10 First Nations communities. Eight agreements have been fully executed and are in various stages of implementation. Impact Benefits Agreements with the McLeod Lake Indian Band,

Doig River First Nation, Halfway River First Nation, Prophet River First Nation, Saulteau First Nations, West Moberly First Nations, and Project Agreements with Dene Tha' First Nation and Duncan's First Nations have been publicly announced. BC Hydro has a standing offer to negotiate with the two remaining First Nations that have not signed agreements related to the Site C Project. BC Hydro also maintains a working relationship with those Nations through operational consultation and engagement.

Engagement on Project construction activities has continued through regular Project update meetings with First Nations.

An Environmental Forum was held in early July 2022, which included a Highway 29 tour to view sites and discuss and share information on reservoir filling preparations. Sites included highway re-alignments, environmental projects, and the Hudson's Hope shoreline protection berm. Additional objectives were to seek funding approval for the Indigenous Traditional Use Fund Multi-Nation Ungulate Enhancement Project and to seek input on and confirm interest in the Traditional Beaver Harvest Plan for fall 2022.

In August 2022, the conceptual design cost estimate for the proposed Cultural Centre Development Project was reviewed with the Cultural Centre Working Group. Subsequently, the conceptual design for this Indigenous-led initiative was endorsed by the Cultural Centre's Elders and Chiefs Committee in September 2022.

Consultation is ongoing with impacted First Nations regarding options and 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 consultation and field investigations undertaken by BC Hydro and First 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 is working closely with affected Nations to develop the most appropriate management options and any community support needs. BC Hydro requires permits from the Archaeology Branch under the *Heritage Conservation Act* prior to undertaking any activities that may impact the registered burial sites.

The cultural monitoring program continues with First Nation monitors observing Project construction at various Project sites as well as environmental enhancement and mitigation programs. During the summer of 2022, the monitors participated in professional training combining western and Indigenous knowledge. The training was very successful and greatly appreciated by the monitors and their Nations. Wildlife, vegetation and seed collection modules were completed, with two more (methylmercury and avian) planned for fall 2022.

BC Hydro continues to advance economic opportunities for First Nations through capacity building and procurement opportunities. Since the beginning of the Project, approximately $687 million in Site C procurement opportunities have been awarded to companies designated by First Nations. Working on the Site C Project has helped these businesses to build and grow their reputations, expand the scale of their operations, and develop new expertise to compete in the regional economy.

In September 2022, 403 Indigenous people were working on the Site C Project, compared to 390 in September 2021. The Project peak was reached in October 2019, with 428 Indigenous people working on the Site C Project.

8 Litigation[20]

The details of open proceedings as of September 30, 2022, are summarized in Table 14.

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
B.C. Supreme Court: Civil Claims – *Expropriation Act*		
Property owners	Sixteen notices of claims filed to keep open each plaintiffs' rights to claim further compensation under the Expropriation Act. The claims do not impact BC Hydro's property rights. Further appraisals and other information are required from the owners to advance their claims. No requirement for BC Hydro to file responses at this time.	July 2019 to February 2022

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

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 September 30, 2022, 593 of the estimated 646 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 First Nations consultation. As of September 30, 2022, 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* (Fisheries and Oceans Canada) and the *Canadian Navigable Waters Act* (formerly *Navigation Protection Act*) (Transport Canada). All major federal authorizations for construction and operation of the Site C dam and reservoir were received in July 2016.

One additional *Fisheries Act* amendment was issued during the reporting period for the temporary placement of fill material immediately downstream of the downstream cofferdam. 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 September 30, 2022, a total of 123 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 September 30, 2022, 460 of the estimated 503 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. Future provincial permits are being planned for the remainder of the generating station and spillways construction, fish habitat enhancement sites, reservoir filling and operations.

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. To date, BC Hydro has requested, and received from the Environmental Assessment Office, ten 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 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, 15,003 environmental compliance inspections were completed by BC Hydro staff, with a compliant and partial compliant result of 99% across all contractors and works areas.

During the reporting period, BC Hydro responded to one Environmental Assessment Office inspection report (based on an inspection completed in July 2022) and was inspected by the Environmental Assessment Office from September 14 to 15, 2022. On September 26, 2022, the Environmental Assessment Office issued BC Hydro a warning letter regarding containment facilities for concrete contact water. The concrete wash down area was not in operation at the time and has since been decommissioned. As such, no further risk remains.

The Impact Assessment Agency of Canada did not conduct any inspections during the reporting period. As of September 30, 2022, the Impact Assessment Agency of Canada has not issued an inspection report for the inspection conducted between June 13 to 16, 2022.

During the reporting period, the Project worked to implement repairs required by the Environmental Assessment Office order directing repair of ditch erosion within the Ministry of Transportation and Infrastructure's ditch line along Old Fort Road and into BC Hydro lands. The Project procured a contractor to undertake the works and has been working directly with the Ministry of Transportation and Infrastructure to obtain their approval to proceed with the works.

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 utilizes 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 non-compliance 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.

BC Hydro will be reviewing the charges and considering next steps.

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. On September 28, 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 subsequent to the reporting period, on October 21, 2022. 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 sub-set 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 quarterly reports.

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.

No new *Heritage Conservation Act* permits or amendments were received during the reporting period. No *Heritage Conservation Act* archaeological reports were

submitted to the B.C. Archaeology Branch and First Nations. Two heritage chance finds were identified and reported by contractors; one was archaeological and one was palaeontological.

10.5 Temporary Fish Passage Facility

The temporary fish passage facility continued operating throughout the reporting period.

From April 1 to the end of its operating season (October 31, 2022), the facility passed more than 3,700 fish from 13 different species, compared to more than 2,400 fish during the same period in 2021. This is an improvement over the previous season potentially due to refining the operations of the facility. Further refinements will be made to the permanent facility.

In general, the passage rates in 2022 are following a similar seasonal pattern as observed in 2021. Mortalities continue to be less than 1% of all fish sorted in the facility; this figure is in-line with the anticipated levels of mortality during operations.

Minor modifications continued to be implemented during the reporting period to improve the facility's biological performance. These modifications have performed as intended and appear to be contributing to incremental improvements that facilitate the capture of bull trout (the primary target species), as well as other large-and small-bodied species, in 2022. Table 15 provides a list of the type and number of fish sorted in the facility in 2022.

Table 15 Temporary Fish Passage Facility Operations Results 2022

	Number of Fish Passed through Facility (April 1 to October 31, 2022)
Mountain whitefish	1,812
Redside shiner	686
Largescale sucker	506
Longnose sucker	473
White sucker	133
Northern pikeminnow	84
Arctic grayling	46
Bull trout	17
Rainbow trout	6
Pearl dace	2
Kokanee	1
Slimy sculpin	1
Northern pike	1
Flathead chub	1
Peamouth	1
Walleye	1
Total	**3,771**

10.6 Wetland Compensation Plan and Eagle Platforms

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 wetland area required for compensation is being determined in part by ongoing wetland monitoring as the final footprint of Site C becomes more clearly understood.

During the reporting period, BC Hydro completed the installation of 13 additional artificial eagle platforms. This brings the total number of artificial platforms to 42 and completes this habitat requirement.

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 flux-chamber measurements, and soil organic carbon and vegetation sampling. 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 fall 2022 grant intake closed on September 30, 2022, with application review to take place in November 2022. As of September 30, 2022, the fund has distributed more than $2.6 million to 74 projects.

11 Employment and Training Initiatives and Building Capacity Initiatives

11.1 Labour

Unions that have participated in the construction of Site C since the beginning of the Project are listed in Table 16.

Table 16 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 Labour Updates on COVID-19 Pandemic

BC Hydro continues to provide updates to key Project unions on site regarding information that is being shared with workers, including the suspension of BC Hydro's COVID-19 vaccination policy, which occurred on September 26, 2022.

The latest number of active cases on the Project, and applicable Northern Health Orders, are posted weekly on the Site C website.

11.3 Employment

Contractors submit monthly workforce data to BC Hydro. Table 17 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 17 Site C Jobs Snapshot Reporting Period – July 2022 to September 2022

Month	Number of B.C. Primary Residents[21]	Total Number of Workers[22]
July 2022	3,647	5,414
August 2022	3,571	5,396
September 2022	3,594	5,420

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

In September 2022, there were 5,420 total workers on the Site C Project. This is the highest reported workforce on the Project to date. Sixty-six per cent of the workforce

[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.

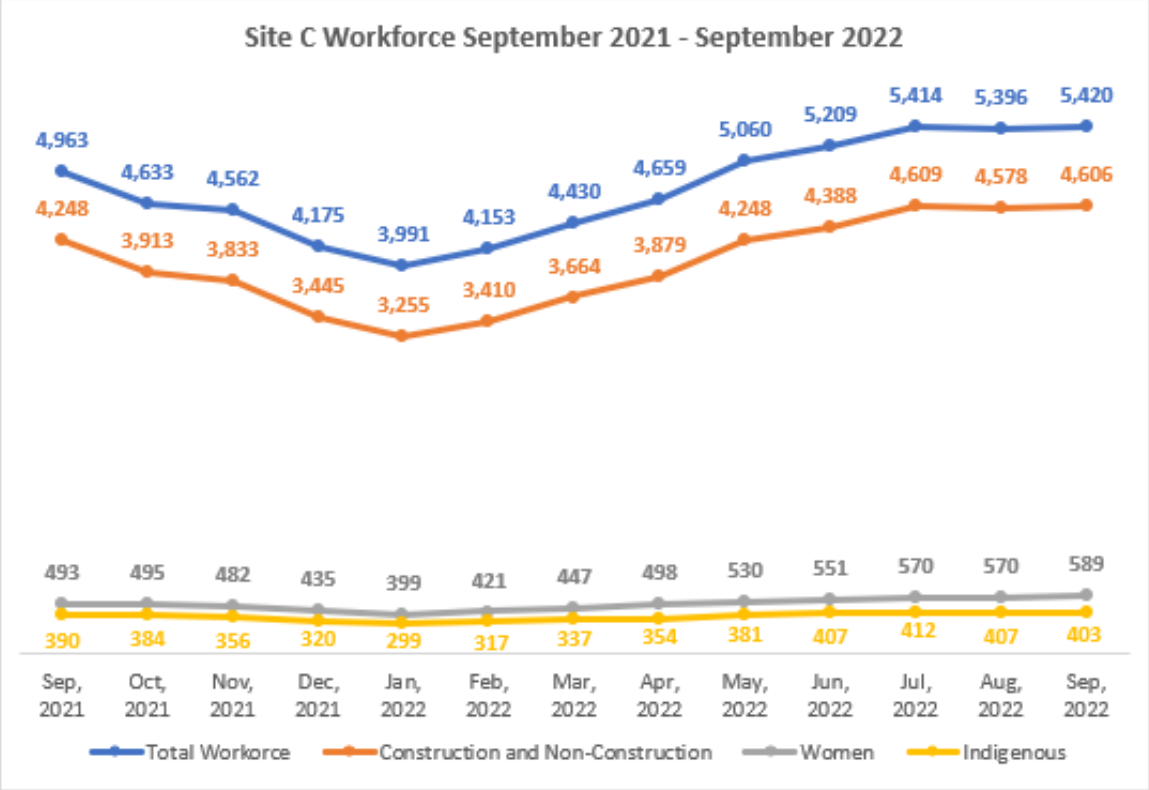
[22] Total workers include:

- 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.

(3,594 workers) was made up of residents of British Columbia, while 22% of the workforce (1,015 workers) lived in the Peace River Regional District. The onsite contractor workforce number also includes 13% women (589 workers), 403 Indigenous workers and 161 workers who are working for various contractors as apprentice carpenters, electricians, millwrights, ironworkers, mechanics, boilermakers and plumbers.

Figure 2 shows the monthly Site C workforce over the period from September 1, 2021, to September 30, 2022.

Figure 2 Site C Workforce September 2021 to September 2022[23]



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

11.4 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 September 30, 2022, a total of 289 students had received bursaries, including 135 Indigenous students who have benefitted from the bursary in programs such as electrical, welding, millwright, cooking, social work, and many others.

BC Hydro continues to work with local employment agencies to ensure that as job opportunities become available, they are posted on the WorkBC website as well as on the Fort St. John Employment Connections website.

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, in early 2020, major on-site contractors started exploring new 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. Additional pre-skills training plans are being developed for 2022.

Joint BC Hydro and Contractor Site Training

In September 2022, BC Hydro facilitated a joint training session on Indigenous awareness and the Builders Code, with representatives from BC Hydro and five Site C contractors attending. Indigenous Awareness 201 is a BC Hydro-led course covering Indigenous history in Canada and B.C., as well as BC Hydro's history with First Nations communities and approach to advancing relationships with them. The

Builders Code training had representatives from major contractors on site and focused on Site C's commitment to the Builders Code Pledge. This training reinforced Site C's commitment to providing a safe and productive environment for all workers across site. 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.

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 virtually for its regularly scheduled quarterly meeting on September 21, 2022. 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 close to $5 million to fund engineering and water experts, studies, design, construction and administration of the works. The District of Hudson's Hope is 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.

Since the well water facility became operational, BC Hydro has been advised by the District of Hudson's Hope that it is not functioning as expected and the District of Hudson's Hope has incurred extraordinary and unexpected costs for the supply of potable water to its residents.

The District of Hudson's Hope water treatment plant failed on July 20, 2022. A "do not consume" order was issued as a result and the District of Hudson's Hope began to provide bottled drinking water to its residents.

On August 23, 2022, BC Hydro offered to reimburse the District of Hudson's Hope, on a without prejudice basis, up to a maximum of $500,000 to provide temporary drinking water and repair the well system.

On September 6, 2022, BC Hydro informed the District of Hudson's Hope that it was prepared to provide further funding (on a without prejudice basis) to a maximum of $2 million to reconfigure the well system in accordance with the District of Hudson's Hope engineer's recommendation to ensure continued supply of safe and reliable community water for at least three years. This is in addition to the $500,000 of funding BC Hydro previously committed.

As of September 30, 2022, the District of Hudson's Hope has not submitted any invoices to BC Hydro related to these commitments.

After the reporting period, on October 14, 2022, the District of Hudson's Hope announced that the 'do not consume' order was rescinded after two separate water sample tests met Northern Health Authority standards.

12.1.2 Generate Opportunities Fund

In 2016, BC Hydro launched the GO Fund, an $800,000 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, approximately $23,700 was distributed to three non-profit organizations in the Peace Region and as of September 30, 2022, 73 projects had received nearly $640,000 since the fund was launched.

12.2 Business Liaison and Outreach

No procurement notifications were sent out in this quarter.

12.2.1 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.

In July 2022, a group of Old Fort residents used their vehicles to block access to the Gate B entrance at Site C to voice their concerns regarding issues such as dust, air quality, noise and traffic.

In late July 2022, an in-person meeting took place between Old Fort residents and BC Hydro to follow-up on these concerns. In response to this meeting, BC Hydro offered to temporarily relocate residents until the end of October 2022, reimburse residents for cleaning the exterior of their homes, and continue to provide updates on dust suppression and road improvement activities as they relate to the community of Old Fort.

Further, BC Hydro's Chief Executive Officer met with a regional district elected official on September 23, 2022 and subsequent to the reporting period, met with two representatives of the community on October 26, 2022.

As of the end of this reporting period: brushing of vegetation in front of the gate was complete; sweeping of Old Fort Road in front of Gate B has occurred; substantial dust suppression has been applied repeatedly; and works directly in front of Old Fort have advanced and moved further up-stream. Subsequent to the reporting period, as of October 31, 2022, when the timeline for the offer detailed above ended, 28 residents had utilized the temporary respite for some period of time; and 15 homeowners had utilized the exterior house cleaning offered.

As of October 31, 2022, the Project has not recorded any exceedances of the 24-hour rolling provincial air quality objectives over the previous 90 days and is often well below these objectives.

Construction Bulletins

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

Public Enquiries

In total, BC Hydro received 231 public enquiries between July 1 and September 30, 2022. Table 18 shows the breakdown of some of the most common enquiry types.

In total, BC Hydro has received more than 13,700 enquiries since August 2015.

Table 18 Public Enquiries Breakdown by Topic

Enquiry Type[24]	July 1 to September 30, 2022
Employment Opportunities	55
Business Opportunities	9
General Information	87
Construction Impacts[25]	46
Other[26]	43

12.2.2 Communications Activities

Based on a search using the media database Infomart, there were 55 stories about the Site C Project in B.C. news media between July 1 to September 30, 2022.

12.3 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. The most recent report was issued in August 2022.

[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.

12.4 Human Health

12.4.1 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 42,085 patient interactions. During the reporting period, there were 1,734 patient interactions, of which 268 were occupational and 1,466 non-occupational. Several preventive health themes were promoted to workers including hepatitis awareness, heat awareness, hydration and monkey pox.

12.5 Property Acquisitions

BC Hydro continues to focus on land acquisitions to enable upcoming reservoir filling. Up to 27 remaining private landholdings are required for reservoir filling. All the remaining properties are “partial acquisitions” whereby only a portion of an overall property will be acquired.

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*. Further appraisals and other information are required from the owners to advance their claims. BC Hydro will respond as required.

12.6 Plans During Next Six Months

Table 19 shows the key milestones for activities planned during the next six months, October 2022 to March 2023.

Table 19 Key Milestones for Activities Planned During the Next Six Months (October 2022 to March 2023)

Milestone	Performance Measurement Baseline (June 2021)	Plan Date (Control Date[27])	Forecast[28]	Status[29] (Measured by Month)
Balance of Plant				
Permanent Fish Facility (Flooded Structure)	n/a	March 2023	March 2023	On Track
Generating Station and Spillways				
Headworks gantry crane commissioned and ready for travel load tests.	June 2022	October 2022	February 2023	At Risk
Reservoir				
Clearing Complete for Watson Slough	March 2024	March 2024	March 2023	On Track
Turbines and Generators[30]				
Unit 5 – Stay ring and spiral case assembled and handover of generator embedded parts.	March 2022	August 2022	November 2022	Late
Unit 6 – Stay ring and spiral case assembled and handover of generator embedded parts	May 2022	October 2022	November 2022	At Risk
Highways				
Construction finish – Hudson's Hope berm	July 2022	October 2022	November 2022	At Risk
Construction finish – Halfway River (highway and bridge)	August 2022	August 2022	October 2022	Late
Construction finish – Cache Creek (East)	October 2022	December 2022	December 2022	On Track
Construction finish – Farrell Creek	October 2022	October 2022	October 2022	On Track
Construction finish – Lynx Creek	October 2022	December 2022	December 2022	On Track

27 Control date reflects plan, adjusted for approved changes to milestone dates.

28 As of September 30, 2022.

29 As of September 30, 2022.

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.

As noted in Table 19, 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 required scopes of work. For additional clarity, not all of these milestone dates are on the Project critical path, and as a result, have some schedule float. BC Hydro is currently on track to achieve the approved 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 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 is working closely with BC Hydro Operations on the integrated planning required in advance of filling the Site C reservoir.

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Quarterly Progress Report Quarterly Progress Report No. 27

Appendix A

Site Photographs

Figure A-1 Progress on the Hudson's Hope shoreline protection berm (July 2022)

Figure A-2 Concrete deck placements being completed for the Lynx Creek bridge on Highway 29 (July 2022)

Figure A-3 Construction of the spillway upper headworks and stilling basin (July 2022)

Figure A-4 Panorama view, looking downstream, over the diversion tunnel inlet portals on the left, the earthfill dam in the centre, and the approach channel on the right (July 2022)

Figure A-5 Farrell Creek final concrete placement (August 2022)

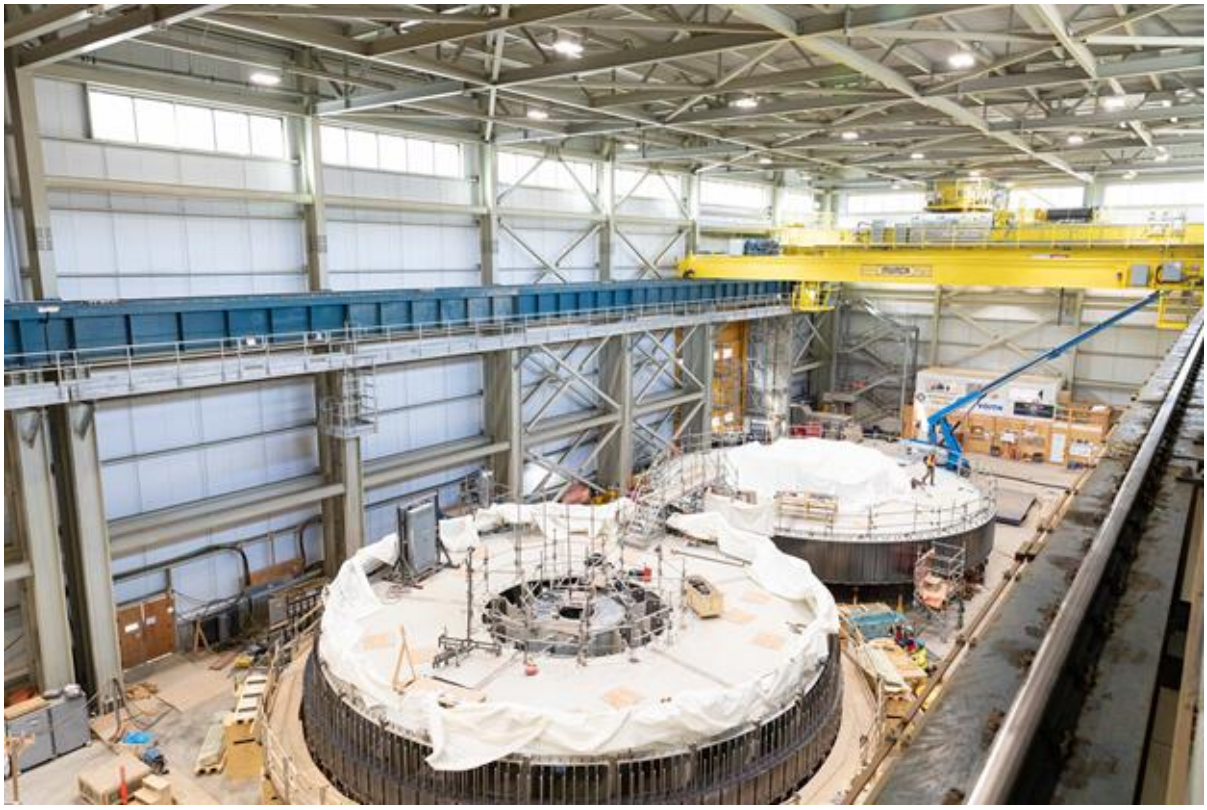
Figure A-6 The ongoing construction of the approach channel, looking upstream (September 2022)

Figure A-7 The Site C dam under construction, looking north (September 2022)

Figure A-8 Fish habitat enhancements downstream of the dam site (September 2022)

Figure A-9 **Construction of the Site C spillways and stilling basin, powerhouse and tailrace (September 2022)**

Figure A-10 **Generator rotors for units 1 and 2 being assembled in the powerhouse service bay, as an additional bridge crane is assembled in the background (September 2022)**



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Appendix B

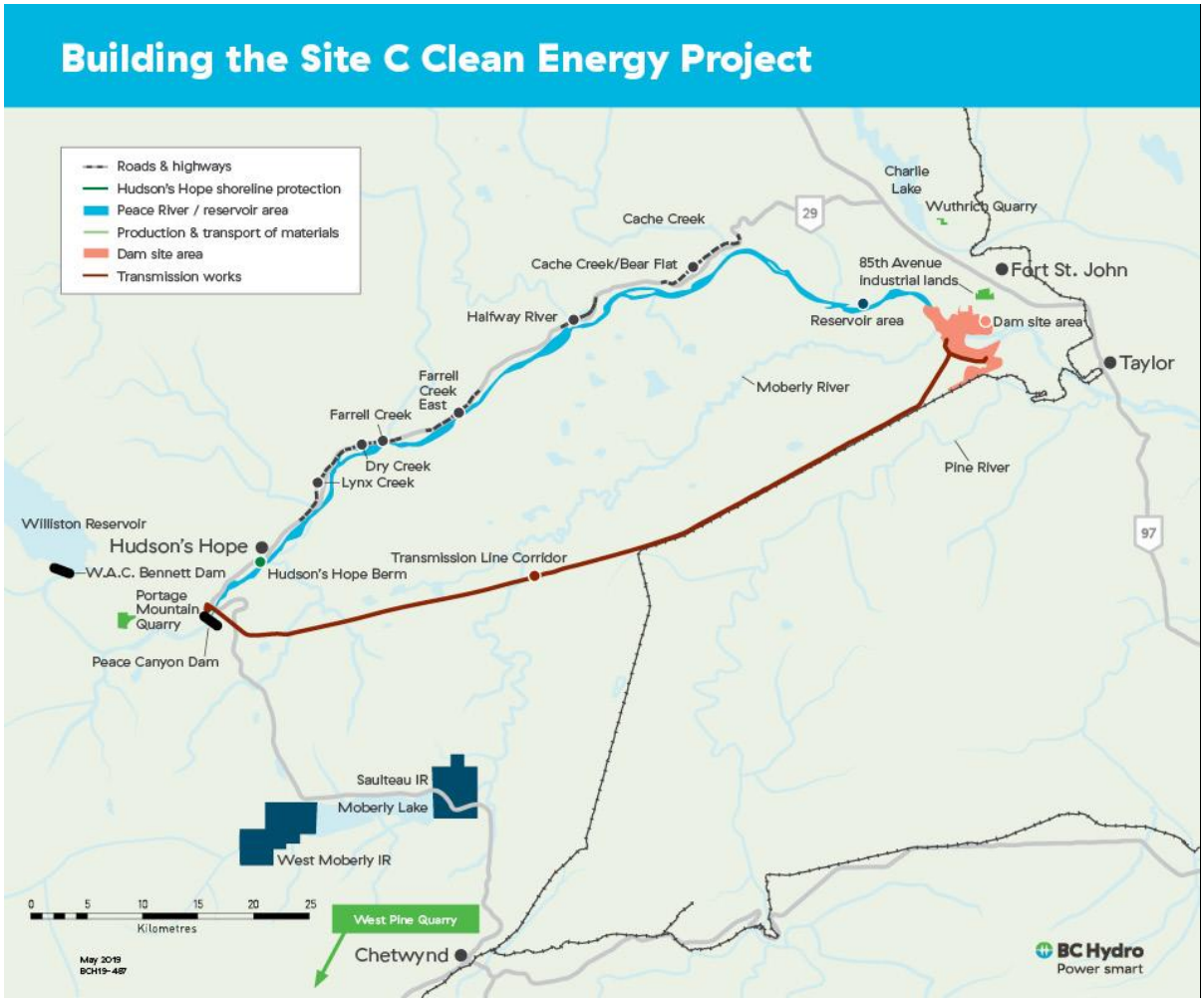
Work Completed Since Project Commencement in 2015

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;
- Clearing activities in the lower reservoir;

- 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 first of two new 500 kV transmission lines;
- Completion of the finishing concrete work inside the 454-metre-long left bank drainage tunnel;
- Dam and core 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 have been 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; and
- Completion of the Dry Creek bridge as part of the Highway 29 realignment.

Figure B-1 Site C Project Components



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Quarterly Progress Report No. 27

Appendix C

Safety

Safety Incidents

The following safety incidents occurred from July 1 to September 30, 2022:

Serious Safety Incidents

1. A large cleaning bucket was not secured to the loader forks as it was being transported; the bucket slid off the forks and the bucket rolled once before stopping.
2. An untethered nail bar dropped from a height of 80 feet.
3. A piece of lumber dropped from height and contacted a worker.
4. A propane leak was detected in the unit 6 work area.
5. A limits of approach encroachment occurred when a contractor was excavating near a 138kV line.
6. A worker failed to tie off at a height of 40 feet.
7. An excavator entered an unknown water depth in the Peace River, forcing the equipment operator to exit the excavator.
8. A guardrail failed in the powerhouse, which created a fall exposure of 30 feet.
9. While removing sheet piles from a berm, the lifting chain attached to an excavator broke and contacted a worker’s face.
10. A light duty truck operator failed to follow haul traffic right of way procedures which caused a haul truck to use their emergency brakes.
11. A worker fell from a height of 12 feet and suffered a laceration to their ear, requiring stitches.
12. A worker was leaning backwards out of a window, without fall protection, at a height of about 15 feet.
13. A forklift operator lifted an occupied portable toilet.
14. A large pipe rolled off a trailer.

15. A light duty vehicle entered a heavy equipment work area.
16. There was a rigging sling failure which caused an excavator attachment to drop from the trailer.
17. A wrench dropped from 75 feet.
18. A vehicle dislodged a rock towards an employee.
19. A worker slipped and fell off a lowbed trailer and fractured their arm.
20. A pipe wrench slipped out of an overflowing skip box that was being lifted at a height of 20 feet.
21. A piece of 4x6 lumber dropped from seven feet and contacted a worker's hand.
22. A worker was welding above transformer towers on top of the powerhouse roof in unit 2, and the welding sparks fell on tarps. A fire started on the transformer deck on top of the coupling chamber.
23. A ruptured haul truck tire injured a worker.

All Injury Incidents

The 20 injury incidents that occurred during this reporting period include three lost time injuries and 17 medical attention requiring treatment injuries (moderate and minor). Note that serious incidents resulting in an injury will be listed under both serious incidents and all injury incidents.

Lost Time Injuries:

1. While removing sheet piles, the chain from the excavator broke and contacted a worker's face.
2. A worker slipped and fell off a lowbed trailer and fractured their arm.
3. A ruptured haul truck tire injured a worker.

Medical Attention Requiring Treatment Injuries:

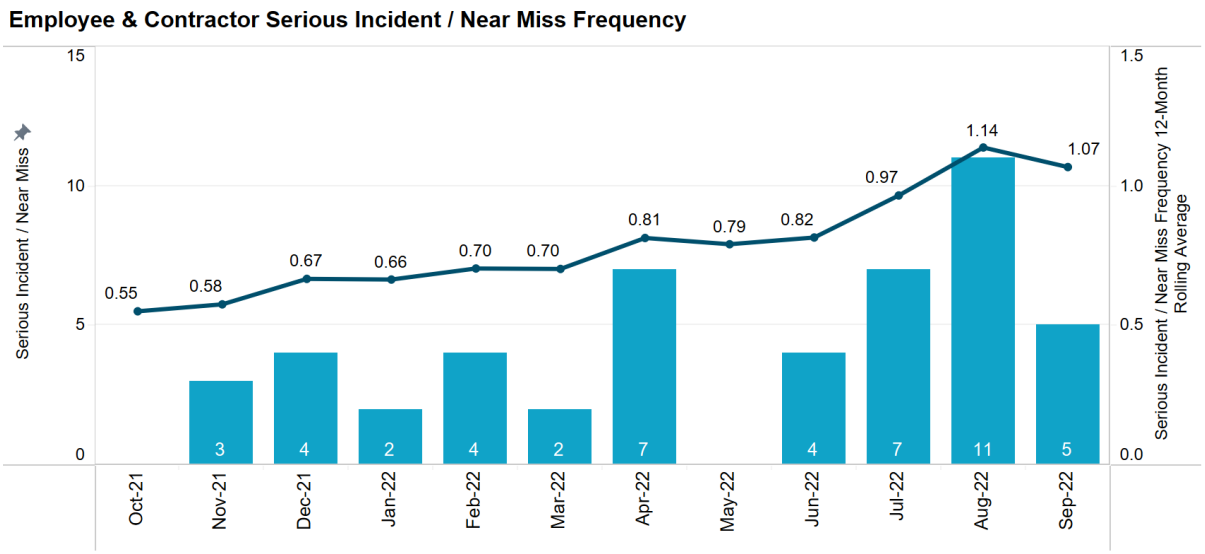
1. A worker was using a utility knife to cut a suction line when the knife slipped. The worker suffered a laceration on their hand that required stitches.

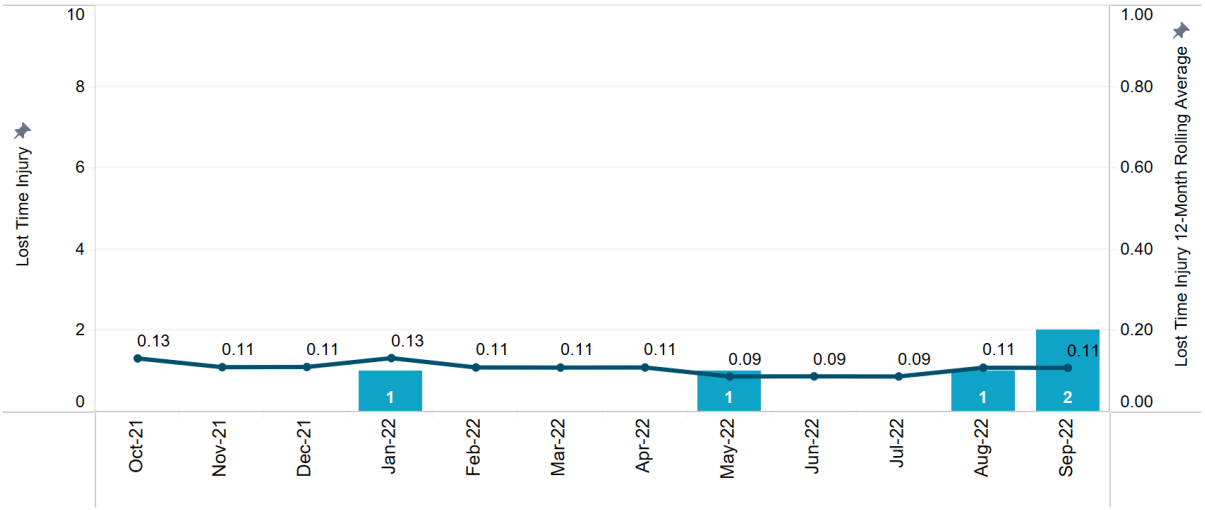
2. A worker fractured their hand while using a wrench.
3. A worker was using a utility knife to cut corks when the knife broke. The worker suffered a laceration on their hand that required stitches.
4. A worker tripped on uneven ground and injured their leg.
5. A worker slipped on rebar and suffered a laceration on their leg that required stitches.
6. A worker fell from a height of 12 feet and suffered a laceration to their ear that required stitches.
7. A worker fractured their finger while using a pipe wrench.
8. A worker slipped on mud and fractured their foot.
9. A worker slipped and injured their arm.
10. A worker was using a utility knife to cut tape when the knife slipped. The worker suffered a laceration on their hand that required stitches.
11. A worker cut their hand between a burke bar and a piece of coil rod.
12. A worker injured their chin while disconnecting a hose connector.
13. A worker cut their arm while using a power tool.
14. A worker pinched their finger between a 2x6 board and a concrete wall.
15. A worker was stung by a wasp and required medical treatment.
16. A worker slipped on a scaffolding plant and injured their hand.
17. A worker tripped on a deck and dislocated their finger.

Safety Performance Frequency Metrics

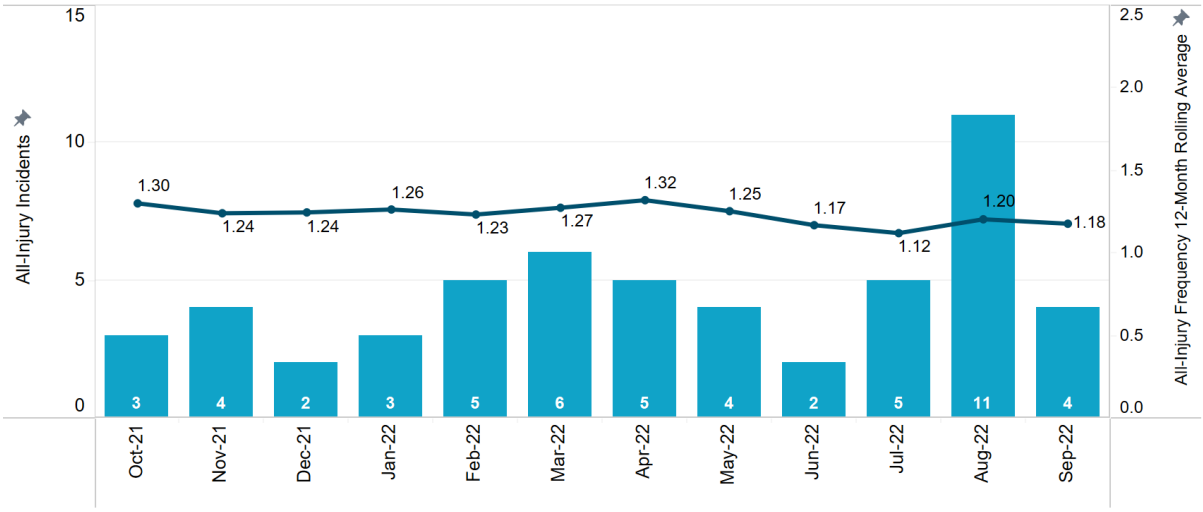
The following graphs provide information on employee and contractor serious incidents/near miss frequency, lost time injury frequency and all-injury frequency from October 2021 to September 2022.

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 July 1, 2022, to September 30, 2022.

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	July 5, 2022	WorkSafeBC	Turbine Generator	202217791075A	First Aid Compliance	In Progress	2	First aid procedures Coordination at multiple-employer workplaces	Order(s): OHS3.17(1); WCA24(1)(b) Reference(s): WCA88(1); WCA88(2); OHS3.20
2	July 12, 2022	WorkSafeBC	All	202217791099A/B	Dust management	Closed	1	General duties of owners	Order: WCA25(a) Reference(s): WCA88(1); WCA88(2)
3	August 7, 2022	WorkSafeBC	GSS	202217009085A	Incident Investigation - injury of a worker	Closed	1	Obligation to use fall protection	Order(s): OHS11.2(1)(a) Reference(s): WCA69(1); WCA71(2)(c); WCA72(2)(b), OHS2.8(1)
4	August 10, 2022	WorkSafeBC	Infrastructure	202217791096A/B	Order to stop use unsafe equipment	Closed	2	Load handling attachments Stop use order	Order(s): OHS16.30(1); WCA89(1) Reference(s): WCA88(1); WCA88(2); WCA89(4); OHSA4.3(1)(B)(i)
5	August 11, 2022	WorkSafeBC	Main Civil Works	202217791097A	Incident Investigation - injury of a worker; Order to stop use unsafe equipment	In Progress	2	Special inspections are required Stop use order	Order(s): OHS3.7; WCA89(1) Reference(s): WCA88(1); WCA88(2); WCA69(1); WCA71(2)(c); WCA72(2)(b); WCA89(4)
6	August 24, 2022	WorkSafeBC	GSS	202217876056A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA68(1)(a), WCA69(1), WCA72(2), OHS3.16(1)(a), OHS3.19(3), OHS3.18(1)(a)
7	August 24, 2022	WorkSafeBC	Main Civil Works	202217876055A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA68(1); WCA69(1), WCA72(2)
8	September 24, 2022	WorkSafeBC	GSS	202217876060A	Incident Investigation - injury of a worker; Access / Egress	Closed	2	Inadequate guardrails Stability of ladders	Order(s): OHS4.57; OHS13.5(2)(b) Reference(s): OHS13.3; OHS13.5(2)(a); OHS11.2(1)(a); OHS11.2(1)(b); OHS20.5(4); WCA24(1)
9	September 24, 2022	WorkSafeBC	GSS	202217876062A	Incident Investigation - injury of a worker; Access / Egress	Closed	0	-	Reference(s): OHS13.3; OHS4.55; OHS4.57; OHS13.5(2)(b); OHS11.2(1)(a); OHS11.2(1)(b); OHS20.5(4)

Total **10**

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Quarterly Progress Report No. 27

Appendix D

Workforce Overview

Table D-1 Current Site C Jobs Snapshot (July 2022 to September 2022)[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
July 2022	B.C. Workers	2,906	741	3,647
	Total Workers	4,609	805	5,414
August 2022	B.C. Workers	2,828	743	3,571
	Total Workers	4,578	818	5,396
September 2022	B.C. Workers	2,841	752	3,594
	Total Workers	4,606	814	5,420

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 in the above numbers.

BC Hydro has contracted companies for major contracts, such as main civil works, who have substantial global expertise. During the month of September 2022, there was one worker in a specialized position working for a Site C construction contractor, which was subject to the Labour Market Impact Assessment process under the Federal Temporary Foreign Worker Program. Additionally, there were 42 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 area, 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 Preliminary Site C Apprentices Snapshot (July 2022 to September 2022)

Month	Number of Apprentices
July 2022	163
August 2022	162
September 2022	161

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 (July 2022 to September 2022)

Month	Number of Indigenous Workers
July 2022	412
August 2022	407
September 2022	403

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 Site C dam site, transmission corridor, reservoir clearing area, 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 September 2022, there were 589 women working for Site C construction and non-construction contractors (a project high). 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.

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Quarterly Progress Report No. 27

Appendix E

Independent International Dam Experts Report (#6)

Site C Technical Review Panel
John W. France, P.E., D.GE, D.WRE and Kaare Hoeg, ScD, NAE
REPORT NO. 6
September 23, 2022

EXECUTIVE SUMMARY

This report presents an update to the Technical Review Panel's (Panel's) findings subsequent to Panel Reports Nos. 1, 2, 3, 4, and 5, issued on January 22, 2021, February 15, 2021, April 6, 2021, August 12, 2021, and February 28, 2022, respectively.

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. 5.

The right bank enhancement work has been generally proceeding well, but with some schedule delays that do not threaten reservoir filling by 2024.

The pile installations for the spillway with pile heads anchored inside the roller compacted concrete (RCC) slab under the stilling basin, have been completed. These pile installations proceeded without significant issues. Pile and pile cap installations in the powerhouse tailrace are currently about three months behind schedule, principally because of constructability issues associated with the locations of these piles. Eight of a total of 48 tailrace piles, have been completed. The constructability issues have now been resolved and the first eight tailrace piles were installed without significant issues and at a rate of construction consistent with the estimated schedule. Efforts are being made to recover some of the lost schedule time, but, even if the three months schedule delay is not recovered, the piles should be completed by spring of 2023, and they are not on the critical path for the project.

Final design of the approach channel has been completed and construction has advanced significantly since February 2022. Excavation for the approach channel has been completed except for a relatively small area near the south end that cannot be excavated until an access road is relocated. Center berm and grout plinth construction has begun, and deployments of liner systems have also started. Foundation grouting has not yet started but is expected to commence soon. At the time of the Panel's last previous report, it had been estimated that liner construction would be completed in June 2023. Some of the approach channel construction activities, such as mud slab-foundation placement and structural concrete, have lagged behind the baseline schedule, principally because of increased volumes of excavation and concrete infill needed to address irregular geometries associated with shears encountered in the approach channel. Efforts are being made by the project team to make up lost schedule time, and the team appears to be appropriately focused on the approach channel construction, which is quite complicated with several concurrent activities.

In the Panel's opinion, the schedule delays experienced to date in the approach channel construction do not threaten the completion of work required for a 2024 reservoir filling. Completion of the approach channel in 2023 is probable however an early winter or late spring coupled with construction delays may push the approach channel completion past the favorable

reservoir filling window. Approach channel construction, rather than earthfill dam construction, may now, or in the near future, be on the critical path for the project. This is in large part because of the excellent production in earthfill dam construction.

Construction of right bank drainage holes has commenced.

Work remains to be done on the improvements to the right bank drainage tunnel (RBDT). The project team indicates that this work will commence later this year. As the Panel has stated previously, the RBDT must be made safe and functional, as it is indispensable for the future drainage work. Improvements to the RBDT could be more difficult to construct if the work is not completed before the reservoir is filled.

There have been no significant changes to the earthfill embankment design since early 2021. Both foundation grouting and earthfill dam embankment placement progressed very well in 2021 and 2022. 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 to verify that pore water pressures in the foundation remain within limits to ensure dam stability and that there are no unexpected movements.

Earthfill dam placement is on a trajectory to equal or exceed the target elevation for the 2022 campaign, such that earthfill dam construction may no longer be on the critical path for the project. There is high confidence in completion of the earthfill dam in 2023.

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, 2, 3, 4, and 5, dated January 22, 2021, February 15, 2021, April 6, 2021, August 12, 2021, and February 28, 2022, respectively.

Since February 28, 2022, the Panel has attended virtual briefings to the Technical Advisory Board (TAB) by the Engineering Design Team (EDT) on March 7, March 29, May 3, June 9, July 6, and August 3, 2021, during which the EDT updated the TAB on activities related to the right bank enhancements, the approach channel, and the earthfill dam. The Panel has also reviewed project information provided by BC Hydro and attended virtual meetings with the EDT on April 6 and August 31, 2022.

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

Site C Technical Review Panel
John W. France, P.E., D.GE, D.WRE and Kaare Hoeg, ScD, NAE
REPORT NO. 6
September 23, 2022

FINDINGS

Right Bank Enhancements

The Panel has been regularly updated on the various activities related to the right bank enhancements through the TAB briefings and separate briefings to the Panel. In the Panel's opinion, the project team has been proceeding well with the implementation of the right bank enhancements. The principal activities completed or commenced since February 28, 2022 have been spillway pile construction, tailrace pile and pile cap construction, completion of design for the approach channel, excavations for the approach channel, grout plinth construction, and liner installation. Work remaining to be done includes completion of construction of the tailrace piles and pile caps, construction of the tailrace erosion slabs, completion of the approach channel, and completion of the foundation drainage system, including improvements to the right bank drainage tunnel (RBDT). A detailed schedule has been established for the remaining activities. The schedule indicates a high likelihood that all project elements can be completed for reservoir filling in 2024, as currently planned, and the possibility that the work can be completed to allow for the initiation of reservoir filling in 2023.

Since the Panel's last report, it has become clear that the approach channel construction now has the potential to become the critical path for 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. 5, all of the piles in the spillway have been completed. This work was completed without significant issues.

The work for construction of the tailrace piles has advanced. Eight of a total of 48 tailrace piles, or about 17 percent, have been completed. The pile cap for the first eight piles has also been constructed. The work on the tailrace piles was delayed by constructability challenges related to the locations of the piles. Rather than beginning in March 2022, as originally planned, tailrace pile construction did not begin until June 2022. The constructability issues have now been resolved and the first eight tailrace piles were installed without significant issues and at a rate of construction consistent with the estimated schedule. It was previously estimated that the tailrace piles would be completed by February 2023. With the current approximately three-month delay, the piles would still be completed by May 2023, and efforts are being made to recover some the lost schedule time.

Approach Channel – Final design of the approach channel has been completed and construction has advanced significantly since February 2022. Excavation for the approach channel has been completed except for a relatively small area near the south end that cannot be excavated until an access road is relocated. Center berm and grout plinth construction has begun, and deployments of liner systems have also started. Foundation grouting has not yet started but is expected to commence soon. Foundation preparation and liner installation will be paused when the ground

freezes for the winter. The foundation preparation and liner installation will resume in March 2023.

At the time of the Panel's last previous report (February 28, 2022), it had been estimated that liner installation would be completed in June 2023. Some of the approach channel construction activities, such as mud slab-foundation placement and structural concrete, have lagged behind the baseline schedule. One of the principal causes for the schedule delays has been increased volumes of excavation and concrete infill needed to address irregular geometries associated with shears encountered in the approach channel.

Efforts are being made by the project team to make up lost schedule, and the team appears to be appropriately focused on the approach channel construction, which has multiple concurrent activities that interact with each other.

As noted above, approach channel construction has the potential to be on the critical path for the project. This is in large part because of the excellent production in earthfill dam construction, as discussed further below. In the Panel's opinion, the schedule delays experienced to date in the approach channel construction, partly caused by weather challenges during April and May, do not threaten reservoir filling in 2024.

Right Bank Drainage Features – Construction of right bank drainage holes has commenced.

Work remains to be done on the improvements to the RBDT. The project team indicates that this work will commence later this year. As the Panel has stated previously, the RBDT provides access for some of the contingency actions for the right abutment, if such contingency actions are found to be needed. The RBDT also provides access for observation of right bank drainage and for conveyance of collected drainage. As such, the RBDT must be made safe and functional, as it is indispensable for the future drainage work. Improvements to the RBDT could be more difficult to construct if the remedial work is not completed before the reservoir is filled.

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 grouting for the earthfill dam progressed well in 2021 and again in 2022. Reports of grouting results presented at the TAB briefings indicate an effective and high-quality grouting program.

Placement of earthfill also progressed well in 2021 and 2022. 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 is being carefully monitored, and thus far does not indicate any data of concern. This effort will need to continue during further embankment placement 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 likely no longer the critical path item for the project construction schedule, which is a change from February 28, 2022. By the end of August almost 70 percent of the total embankment volume had been placed, and fill placement is on a trajectory to equal or exceed the target elevation for the 2022 campaign. There is high confidence in completion of the earthfill dam in 2023.

STATEMENT OF LIMITATIONS

The Panel functioned as independent reviewers 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.

Our review 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

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Appendix F

Summary of Individual Contracts Exceeding $10 Million

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Appendix G

Project Progression

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Appendix H

Detailed Project Expenditure

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