

Site C Clean Energy Project

Quarterly Progress Report No. 29

F2023 Fourth Quarter

January 1, 2023 to March 31, 2023

PUBLIC

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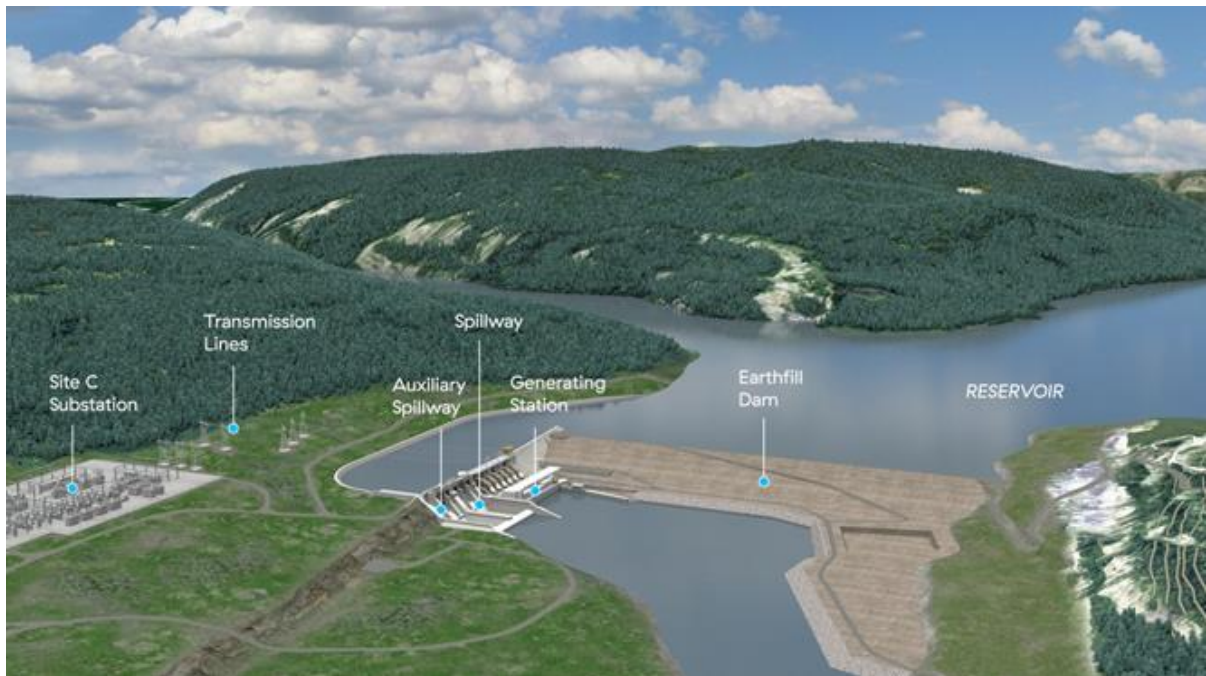
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1 Executive Summary

2 1.1 Overview and General Project Status

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



7 Construction on Site C began on July 27, 2015.

8 Quarterly Progress Report No. 29 covers the period January 1 to March 31, 2023
9 (the reporting period).

10 As of March 31, 2023, the Site C Project (**the Project**) is approximately
11 75% complete and BC Hydro remains on track to complete the Project within the
12 approved budget of \$16 billion and the Project final unit in-service date of 2025.

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

9 During the reporting period, the Project made considerable progress on many work
10 fronts including the generating station, approach channel, spillways, and tailrace.
11 Significant advances also occurred off the dam site, with the reservoir clearing
12 program substantially completed and all new Highway 29 segments open to traffic.

13 The Project remains on track to achieve the approved schedule, which includes the
14 first generating unit to be placed in-service by December 2024 (first unit in service),
15 and all six generating units in-service by the end of 2025 (final unit in service). One
16 of the key remaining construction activities required for reservoir filling and first unit
17 in service is the conversion and closure of the tunnels that are currently diverting the
18 Peace River around the Project site.

19 Based on the construction progress achieved to date and revised contractual
20 schedules, the possibility remains that reservoir filling could begin in fall 2023, which
21 could result in first power earlier than planned. The timeline for reservoir filling will
22 depend on obtaining approximately 20 regulatory approvals, meeting the operational
23 requirements of the Peace River system, the continued compliance with
24 environmental regulations, weather constraints and construction progress. There
25 continues to be uncertainty related to achieving the contractual schedules, and there
26 are identified risks that could adversely affect these schedules. The risks related to

1 achieving an earlier reservoir fill are higher than the risks related to achieving the
2 approved schedule.

3 The time available to obtain regulatory approvals and complete the remaining
4 scopes of work is expected to be sufficient for the Project to meet the Project's
5 approved schedule.

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

8 **1.2 Construction Progress**

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

11 Although placements of glacial till on the core of the earthfill dam were on hold as
12 planned during the reporting period due to winter conditions, additional shell material
13 and riprap were placed on the upstream and downstream portions of the dam and a
14 significant amount of aggregate preparation and hauling was completed for the
15 upcoming earthfill dam placement season.

16 In the generating station, concrete placements have progressed to 91% complete,
17 the intakes headworks concrete is 99% complete, and the spillways concrete is 88%
18 complete. The final turbine runner arrived at site in January 2023 and the first
19 generator rotor was placed into the generator pit in February 2023. The headworks
20 gantry crane was completed and put into service on March 31, 2023.

21 For the balance of plant work activities, the mechanical and electrical work is
22 progressing with the installation of 580 kilometres of cable completed inside the
23 powerhouse, intakes and spillways. Architectural, heating, ventilation and air
24 conditioning work also continues, and the fire protection installations have started.
25 The installation of half of the sections of isolated phase bus connecting the unit 1
26 and unit 2 generators to BC Hydro's transmission system has also been completed.

1 The Project continues to implement foundation enhancements to address
2 geotechnical issues in the bedrock foundation on the Project's right bank. The
3 foundation enhancements include the installation of 96 large diameter concrete-filled
4 vertical steel piles to further extend the foundation deeper into the bedrock, and
5 enhancements to the design of the approach channel above the powerhouse and
6 spillways. Construction of the powerhouse piles and pile caps is on track to be
7 completed in spring 2023. Ongoing reviews by the Technical Advisory Board and
8 independent international dam experts continue to confirm that the design of the
9 foundation enhancements meets the highest safety standards and international best
10 practices.

11 Off the dam site, significant progress continued on Highway 29. The Halfway River
12 Bridge, which is the fifth and final new bridge, opened to traffic on March 30, 2023.
13 All six segments of Highway 29 that were realigned are now open to traffic. The
14 decommissioning of the old Farrell Creek East and Dry Creek segments was also
15 completed.

16 The construction of the Lynx Creek boat launch resumed in March 2023.

17 Reservoir clearing is now substantially complete, including vegetation brushing in
18 the eastern reservoir area, which took place from January to March 2023.

19 Vegetation brushing is the process of removing vegetation that had regrown since
20 clearing first began in 2018. All debris burning is now also complete. There is one
21 final area to clear at Watson Slough which is on hold due to a bear occupying the
22 work area. Work will commence once the bear vacates for the season.

1 **1.3 Upholding Commitments to the Environment, Indigenous**
2 **Nations and Local Communities**

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

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

7 BC Hydro continued to secure the appropriate permits, authorizations and leaves to
8 commence construction required for the Project. As of March 31, 2023, 611 of the
9 estimated 653 provincial and federal permits and authorization have been received.

10 Work advanced in the areas of environmental monitoring and assessment, as well
11 as in the Project’s fish and wildlife habitat, vegetation management and heritage
12 programs. From January to March 2023, the temporary fish passage facility was in
13 the planned winter shut-down period.

14 Environmental compliance on the Project remains high. During the reporting period,
15 12,093 environmental compliance inspections were completed by BC Hydro staff,
16 with a compliant and partial compliant result of 99% across all contractors and works
17 areas.

18 In January 2023, BC Hydro completed construction of fish habitat near Maurice
19 Creek, west of Hudson’s Hope. The fish habitat provides spawning shoals for fish in
20 the new reservoir.

21 *Indigenous Engagement*

22 BC Hydro continues to advance economic opportunities for First Nations through
23 capacity building and procurement opportunities. Since the beginning of the Project,
24 approximately \$717 million in Site C procurement opportunities has been awarded to
25 companies designated by Indigenous Nations, pursuant to BC Hydro’s Indigenous
26 Procurement Policy. Working on the Site C Project has helped businesses

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

4 During the reporting period, BC Hydro has continued to work with Indigenous
5 Nations on a variety of initiatives. A meeting of the Environment Forum was held on
6 January 24, 2023, with representatives in attendance from 10 Indigenous Nations.
7 Topics of discussion included an update on reservoir filling, Environmental
8 Assessment Certificate amendment and wildlife permit applications, and upstream
9 fish passage and monitoring. BC Hydro also met with Indigenous Nations to discuss
10 fish consumption and methylmercury monitoring.

11 BC Hydro met with Indigenous Nations to prepare for the detailed design phase of
12 the cultural centre project, which is intended to showcase local Indigenous culture
13 and history in the region, and to store and display many of the artifacts uncovered
14 during the construction of Site C. The conceptual design was previously approved by
15 the project committee of Chiefs and Elders. The next key decision point is the
16 location of the future cultural centre. BC Hydro is working with participating Nations
17 to assess three location options.

18 In February 2023, BC Hydro hosted the eighth annual Indigenous Employment and
19 Information session with Site C contractors and participants from Treaty 8 First
20 Nations. The purpose of these sessions is to continue to assist in building
21 relationships between Indigenous communities and Site C contractors, as well as to
22 share employment and training opportunities.

23 In March 2023, 358 Indigenous people were working on the Site C Project, which
24 represents 9% of the total workforce. The Project peak was reached in
25 October 2019, with 428 Indigenous people working on the Site C Project.

1 *Local communities*

2 BC Hydro continued to engage with local communities, elected officials and
3 stakeholders. The Regional Community Liaison Committee, comprised of local
4 elected officials and local First Nations communities, met on March 8, 2023, for a
5 Project update. BC Hydro also continued to implement its construction
6 communications program, which includes updating the Project website with current
7 information, photos and videos of construction activities, as well as providing
8 information to stakeholders.

9 During the reporting period, BC Hydro distributed approximately \$70,000 to eight
10 Peace Region non-profit organizations through the Generate Opportunities (**GO**)
11 Fund. It also distributed \$180,000 to eight projects to support agricultural production
12 through the BC Hydro Peace Agricultural Compensation Fund.

13 **1.4 Indigenous Burials**

14 Consultation has been completed with impacted Indigenous Nations regarding
15 site-specific plans for the management of identified burial and cultural sites impacted
16 by reservoir filling, in particular in the Halfway River and Cache Creek Bear Flats
17 areas.

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

21 BC Hydro has worked closely with affected Nations to develop the most appropriate
22 management options and any community support needs. Despite efforts to reach
23 consensus, some Nations have chosen not to participate in burial management or
24 do not support the management approach. BC Hydro requires permits from the
25 Archaeology Branch under the *Heritage Conservation Act* prior to undertaking any
26 activities that may impact the registered burial sites, including inundation of the sites
27 during reservoir filling.

1.5 Inflationary Pressures

The inflationary pressures over the past year may have impacts to 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, materials 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.

1.6 District of Hudson's Hope Water Treatment Facility

BC Hydro continues to work closely with the District of Hudson's Hope, and has offered additional financial support beyond the \$5 million that was originally provided to build the well water treatment plant in 2019. The District has developed a three-phase plan to move back to the river (temporary) and the reservoir (future/permanent) as the source of raw water for the community. As part of this plan, the District installed two temporary pumps and a temporary above-ground supply line to draw water from the river. This system is currently providing community water from the river under a boil water advisory until final system installations are complete and water quality testing is acceptable.

1.7 Norovirus Outbreak

On March 24, 2023, a norovirus outbreak was declared at the Site C worker accommodation facility. BC Hydro worked closely with Northern Health to manage the outbreak, implementing a number of measures such as enhanced cleaning of the kitchen and dining room, enforcement of mandatory handwashing, removal of self-serve stations in the dining room, and all confirmed cases needed to isolate for 48 hours.

The outbreak was declared over on April 14, 2023.

1.8 Project Status Dashboard for the Quarter

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

The Project Status Dashboard as of March 31, 2023, is provided in [Table 1](#). There were no changes to the performance indicators from the previous quarter (as of December 31, 2022).

Table 1 Project Status Dashboard

● On Target ● Moderate Issues ● At Risk

Status as of:	March 31, 2023	
Overall Project Health	●	As of March 31, 2023, the overall Project health remained “amber.” The Project is approximately 75% 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	●	<p>Safety remained “amber” as of March 31, 2023. During the reporting period, the Project experienced an active winter construction season, with multiple contractors and work fronts across the dam site and especially in the powerhouse.</p> <p>During this period, the Project safety performance metrics for lost time injury frequency and all injury frequency remained consistent or improved. However, in part linked to the ongoing winter construction activity and higher than usual number of workers for the winter months, the Project saw an increase in serious safety incidents, even when corrected for work hours.</p> <p>On March 24, 2023, due to a rapid increase in cases over a 48-hour period, Northern Health declared a norovirus/gastrointestinal outbreak at Site C. During the outbreak period, there were 140 confirmed cases across all employers including BC Hydro. Due to the coordinated efforts by the worker accommodation operator, onsite medical clinic, and all Project site employers, the rate of new cases was rapidly reduced over a three-week period, returning the Project to a normal baseline. On April 14, 2023 Northern Health rescinded the outbreak status.</p>

Status as of:		March 31, 2023
Scope	●	Scope status remained “amber” as of March 31, 2023. Provisions are included in the Project plans for potential scope adjustments for site conditions and interfaces. As construction progresses, there remains a risk of design changes due to unknown field conditions.
Schedule	●	<p>Schedule status remained “amber” as of March 31, 2023. The Project is currently on schedule to achieve the approved 2025 final unit in-service date and is approximately 75% complete, however, a significant amount of work and potential schedule risks remain.</p> <p>BC Hydro and Site C contractors agreed to revised schedules, which recover certain schedule delays due to COVID-19 and provide 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; the scenario that potentially results in an earlier in-service date has a higher level of uncertainty and risk. Significant construction activities remain, which if not completed on time, could adversely affect the construction schedule.</p>
Cost	●	<p>Cost status remained “amber” as of March 31, 2023. Potential cost risks remain, as detailed in this report.</p> <p>As of March 31, 2023, the life-to-date actual costs are \$11 billion, which results in an estimated \$5 billion of remaining costs.</p>
Quality	●	<p>The quality rating for the Project continues to be “green” as of March 31, 2023, indicating that the work generally conforms to the requirements of the drawings and specifications. When a quality issue is identified during the course of construction, BC Hydro and its contractors work to rectify the issue to ensure that the quality of the completed work achieves the quality specifications.</p> <p>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.</p>
Regulatory, Permits and Tenures	●	The regulatory, permits and tenures indicator status remained “green” as of March 31, 2023. Overall, BC Hydro continues to be issued permits and authorizations in accordance with construction timelines. As of March 31, 2023, 611 of the estimated 653 provincial and federal permits required for the Project have been received and are actively being managed.
Environment	●	<p>The Project environment status remained “amber” as of March 31, 2023, due to the unresolved April 2022 potentially acid-generating rock Environmental Assessment Office order and a warning letter received on September 26, 2022.</p> <p>BC Hydro worked with the B.C. Environmental Assessment Office to address the order and letter. BC Hydro has initiated public, Indigenous and regulator consultations on amendments to the Site C Construction Environmental Management Plan to clarify that the current approaches to managing potentially acid-generating rock provide adequate environmental protection. Additionally, BC Hydro is developing final treatment plans for potentially acid-generating sites that will not be addressed through dam construction or the creation of the reservoir.</p>

Status as of:		March 31, 2023
Procurement	●	The procurement indicator status remained “amber” as of March 31, 2023, due to the remaining right bank foundation enhancements procurements that still need to be negotiated. The majority of the commercial agreements are scheduled to be in place by summer 2023.
Indigenous Relations	●	The Indigenous Relations indicator status remained “amber” as of March 31, 2023. BC Hydro has a mandate from the Government of British Columbia to reach project or impact benefit agreements with the 10 Indigenous groups that are most impacted by Site C. Eight of 10 agreements are fully executed and in implementation. BC Hydro has a standing offer to negotiate with the remaining two First Nations that have not signed agreements related to the Site C Project. BC Hydro also maintains a working relationship with those Nations through ongoing consultations and engagement. BC Hydro has completed consultations with impacted First Nations regarding options and site-specific plans for managing identified burial and cultural sites impacted by reservoir filling, in particular in the Halfway River and Cache Creek / Bear Flats areas.
Stakeholder Engagement	●	The stakeholder engagement indicator status remained “green” as of March 31, 2023. BC Hydro continues to work with the communities, regional district and stakeholder groups on the implementation of various community agreements.

1 **1.9 Significant Project Updates for the Quarter**

2 Significant Project updates that occurred between January 1 to March 31, 2023,
3 include the following:

4 **January 2023**

- 5 • The Maurice Creek spawning shoals were completed. Refer to section [3.1.9](#) for
6 more information.
- 7 • The final turbine runner was delivered to site; all six turbine runners are now at
8 site.
- 9 • The decommissioning of the Farrell Creek East segment on Highway 29 was
10 completed. Refer to section [3.1.8](#) for more information.

11 **February 2023**

- 12 • In the powerhouse, the first generator rotor was placed into the generator pit.

-
- 1 • The decommissioning of the Dry Creek segment on Highway 29 was
2 completed. Refer to section [3.1.8](#) for more information.

3 **March 2023**

- 4 • The Halfway River Bridge, the last of the five bridges on Highway 29, opened to
5 traffic on March 30. Refer to section [3.1.8](#) for more information.
- 6 • Six of the 10 generator transformers arrived at site.
- 7 • Reservoir clearing was substantially completed as of March 31, including
8 vegetation brushing of the eastern reservoir. Refer to section [3.1.9](#) for more
9 information.
- 10 • The headworks gantry crane was completed on March 31, and is now in
11 service. Refer to section [3.1.3](#) for more information.

12 Refer to [Appendix A](#) for Site construction photos from the reporting period and refer
13 to [Appendix B](#) for a list of work completed since the Project commenced in 2015.

14 **2 Safety and Security**

15 During the reporting period, the Project experienced an active winter construction
16 season, with multiple contractors and work fronts across the dam site and especially
17 in the powerhouse. During this period, the Project safety performance metrics for
18 lost time injury frequency and all injury frequency remained consistent or improved.
19 However, in part linked to the ongoing winter construction activity and higher than
20 usual number of workers for the winter months (15% increase in work hours for the
21 January to March period in 2023 compared to 2022), the Project saw an increase in
22 serious safety incidents, even when corrected for work hours.

23 **2.1.1 BC Hydro as Prime Contractor Training**

24 On January 9, 2023, a four-hour training course was delivered at site on the topic of
25 BC Hydro as prime contractor. Construction management, resident engineering, and

1 safety personnel attended the course. The training was delivered by a former
2 prevention director at WorkSafeBC with over 20 years of experience in occupational
3 health and safety law.

4 The training included a review and interpretation of British Columbia Occupational
5 Health and Safety Standard regulations, and included a discussion of cases
6 involving prime contractor orders and penalties. The session concluded with a group
7 activity assessing how well BC Hydro is completing our prime contractor
8 responsibilities. There were several important learnings for our team including
9 enhanced incident reporting and increased coordination of work activities.

10 **2.1.2 Water Comptroller’s Reservoir Filling Workshop**

11 On January 30, 2023, BC Hydro facilitated a full day reservoir filling workshop with
12 representatives from the Water Comptroller’s Office. Various teams from BC Hydro
13 provided presentations on the tunnel conversion approach and risk management,
14 flow regulation and ice management during reservoir filling, dam safety, shoreline
15 monitoring, and debris management. BC Hydro also provided an update on worker
16 safety, public safety, security planning, and emergency response for the Project.

17 **2.1.3 Occupational Hygiene in the Powerhouse**

18 With the ongoing volume of work and worker congestion in the powerhouse, the
19 Site C construction and safety teams continue to focus on occupational hygiene
20 hazards including the safe use of hazardous chemicals such as penstock coatings,
21 and the controlled emissions of restricted substances such as silica, welding
22 particulates, diesel, and carbon monoxide. As part of their Occupational Hygiene
23 safety priority, WorkSafeBC has visited the powerhouse several times since
24 February 2023, focusing on contractors’ exposure control and ventilation plans, safe
25 access into confined spaces, workers’ respiratory protection, and air quality testing
26 programs.

1 **2.1.4 Norovirus Outbreak**

2 On March 24, 2023, due to a rapid increase in cases over a 48-hour period,
3 Northern Health declared a norovirus outbreak at Site C. During the outbreak period,
4 there were 140 confirmed cases across all employers including BC Hydro, with a
5 peak of 20 new cases on March 26, 2023. Due to the coordinated efforts by the
6 worker accommodation operator, onsite medical clinic, and all Project site
7 employers, the rate of new cases was rapidly reduced over a three-week period,
8 returning the Project to a normal baseline. On April 14, 2023, Northern Health
9 rescinded the outbreak status.

10 **2.1.5 2023 Safety Kickoff**

11 In preparation for what is expected to be the busiest construction season to date for
12 the Project, a ‘2023 Safety Kickoff’ program has been developed. Four safety
13 sessions are scheduled during April and May 2023. The sessions will describe the
14 critical construction activities planned for this year, and the high-risk safety hazards
15 associated with these work activities. The key message will be for all teams,
16 including contractors, to work together to safely achieve construction goals in 2023.
17 The approach includes integrated work planning, hazard identification and training,
18 increased field safety inspections, a focus on real-time, respectful interventions, and
19 personal safety commitments.

20 **2.1.6 Summary of Safety Performance Metrics**

21 From July 2015 through March 2023, more than 51 million work hours have been
22 completed across the Project with no fatalities and one permanent partial disabling
23 injury in 2017.

24 During the reporting period, there were 13 serious safety incidents consisting of
25 five near misses with the potential for a serious injury, six serious incidents with a
26 moderate injury requiring medical treatment, and two serious incidents with lost time
27 injuries.

1 In total for the reporting period, there were 158 non-serious incidents, including
 2 45 near misses and 113 minor and moderate injuries that required first aid or
 3 medical attention treatment (e.g., stitches or prescriptions). A near miss is defined as
 4 an incident that could have resulted in an injury but did not because of effective
 5 hazard barriers or the person was out of harm’s way/missed. BC Hydro considers
 6 near miss reporting as indicative of an effective and transparent safety culture and
 7 strongly encourages all Site C contractors and employees to report near misses.
 8 [Table 2](#) reflects safety performance results for the Project, including all contractors
 9 and all sub-projects.

10 **Table 2 Summary of Site C Safety Metrics**

	Reported January 1 to March 31, 2023¹	Reported Since Inception (July 27, 2015 to March 31, 2023)¹
Fatality ²	0	0
Permanently Disabling Injury ³	0	1
Serious Incidents ⁴	13	173
Lost Time Injuries ⁵	4	47
All-Injury Incidents ⁶ (Lost Time Injuries ⁵ and Medical Attention Requiring Treatment ⁷)	13	331

1 Numbers are subject to change due to timing of when data is retrieved and when the 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 Serious incidents are any injury or near miss with a potential for a fatality or serious injury.
 5 Lost time injuries are those where a worker (employee or contractor) misses their next shift (or any subsequent shift) due to a work-related injury/illness. If a worker only misses work on the day of the injury, it is not considered a lost time injury.
 6 All-injury incidents include all work-related medical attention requiring treatment, lost time injuries, and fatalities.
 7 Medical attention requiring treatment is where a medical practitioner has rendered services beyond the level defined as “diagnostic or first aid” and the worker (employee or contractor) was not absent from work after the day of the injury. Services beyond diagnostic/first aid include (but are not limited to) receiving stitches, a prescription, or any treatment plan such as physiotherapy or chiropractic.

1 **2.1.7 Safety Performance Frequency Metrics**

2 To assess safety performance over time, the Project considers key safety metrics in
 3 the context of the total amount of hours worked (frequency), which corrects for the
 4 volume of work. [Table 3](#) summarizes these key safety metrics by quarter, for a
 5 rolling 12-month average.

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

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

8 The serious incident frequency (adjusted for work hours) for this reporting period
 9 was 1.24, compared to 0.70 for the same period in 2022. This result reflects the
 10 intense winter 2022/2023 construction season, as well as an earlier ramp up of
 11 the 2023 construction in March 2023. In addition to more construction activity, the
 12 increase in serious incidents may be attributed to work activities involving higher risk
 13 hazards such as congested work areas, movement and lifting of construction
 14 materials, working at heights, occupational exposure to hazardous materials
 15 including welding fumes and silica from concrete works, and the extreme cold and
 16 icy conditions of a northern winter.

17 All serious incidents were investigated and reviewed by BC Hydro and contractor
 18 senior management, with corrective actions implemented to avoid similar incidents
 19 going forward. Although not in the current reporting period, it is worth noting the
 20 Project has seen a significant drop in serious incidents during April 2023.

1 For the reporting period, the all-injury frequency decreased compared to the same
2 period in 2022. This drop is more a result of the rolling 12-month average
3 methodology (higher incident months no longer included) than a material change in
4 the number of reported injuries, which have remained consistent. Managing lost time
5 injuries and return to work programs remain a priority for contractors. Refer to
6 [Appendix C, Figure C-1](#) for the safety performance metrics of employee and
7 contractor serious incident/near miss frequency, lost time injury frequency and
8 all-injury frequency, in graphic format.

9 **2.1.8 Regulatory Inspections and Orders**

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

16 As shown in [Table 4](#), from January to March 2023, WorkSafeBC issued
17 11 regulatory inspection reports and 16 regulatory orders to the Project. Of the
18 11 WorkSafeBC inspection reports, seven were ‘clean sheets’ with no orders. There
19 were no regulatory inspections from the Ministry of Energy, Mines and Low Carbon
20 Innovation during this reporting period.

21 **Table 4 Safety Regulatory Inspection and Orders**

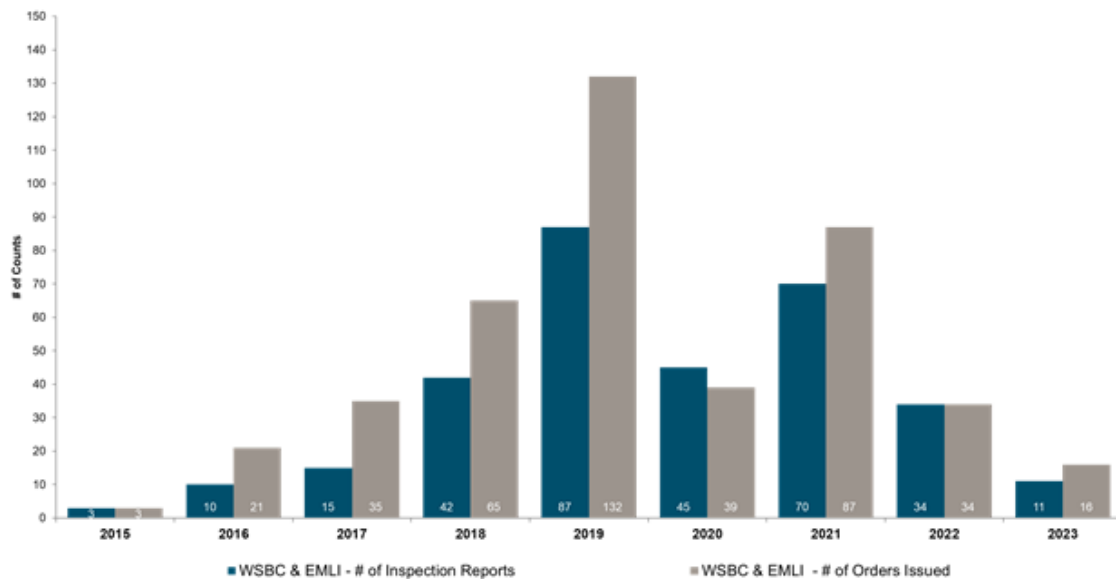
	Reported January 1 to March 31, 2023⁸	Reported Since Inception (July 27, 2015 to March 31, 2023)¹⁰
Regulatory Inspections	11	317
Regulatory Orders	16	430

⁸ Numbers are subject to change due to timing of when data is retrieved and when the injury is categorized.

1 [Figure 1](#) shows the number of regulatory inspections and orders issued for the
2 Project since 2015.

3 Refer to [Appendix C, Table C-1](#) Safety Regulatory Inspections and Orders for a
4 summarized listing of the regulatory inspection reports.

5 **Figure 1 Regulatory Inspections and Orders,**
6 **July 2015 to March 2023**



7 **3 Construction, Engineering and Quality Management**

8 **3.1 Construction**

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

12 **3.1.1 Main Civil Works**

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

1 **Approach Channel**

2 There are approximately 100,000 cubic metres of material remaining to be removed
3 from the approach channel. This material is planned to be removed in 2023.

4 **Right Bank**

5 *Right Bank Drainage Tunnel*

6 In February 2023, the main civil works contractor began additional work in the right
7 bank drainage tunnel including the drilling of additional draining holes, the
8 installation of additional rock supports at select locations, the installation of
9 additional instrumentation and the installation of the final ventilation and lighting
10 systems.

11 **Earthfill Dam**

12 Approximately 8.1 million cubic metres of dam fill material (core, filter, and shell) was
13 placed in 2022, achieving the dam placement milestones for the season and
14 achieving an elevation of 445 metres for the earthfill dam. The cumulative progress
15 of material placed for the earthfill dam to December 31, 2022, is approximately 88%
16 of the total planned material placements, with 1.4 million cubic metres remaining to
17 be placed in 2023. Once complete, the dam will reach an elevation of about
18 470 metres above sea level. During the reporting period, the placement of materials
19 for the core of the dam remained on hold, as planned, due to the seasonal cold
20 temperatures.

21 For the period from January to March 2023, the contractor placed additional shell
22 materials and riprap on the upstream and downstream portions of the dam, reaching
23 an elevation of 451 metres.

1 **Conveyor Belt System**

2 The conveyor system that transports till material used in the construction of the dam
3 core was on seasonal hold during the reporting period and will resume operations in
4 spring 2023.

5 **Area E**

6 As of March 31, 2023, a total of 938,000 metric tonnes (out of a total of one million
7 metric tonnes) of material has been hauled from Area E.

8 The planning for the subsequent physical reclamation of the Area E pit is in progress
9 and is expected to begin later in 2023.

10 **3.1.2 Site Operations and Infrastructure**

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

14 *Worker Accommodation*

15 Through continuous collaboration and guidance from Northern Health, BC Hydro
16 and the camp operator suspended all COVID-19 measures in the camp. Enhanced
17 cleaning continues at a reduced frequency and mandatory hand washing before
18 entering the dining room remains.

19 On March 24, 2023, the Northern Health Authority declared a norovirus outbreak at
20 Site C. The camp service provider, in collaboration with BC Hydro, implemented the
21 measures outlined in their Communicable Disease Prevention Plan to control the
22 spread of the virus. These measures included enforcing mandatory handwashing
23 prior to entering the dining area, removing all self-serve dining options, increased
24 cleaning, and meal delivery to ill workers while quarantining.

1 As an added measure and to help mitigate the spread of the virus into the
2 community, the shuttle service between Site C and the City of Fort St. John was
3 temporarily suspended.

4 Subsequent to the reporting period, on April 14, 2023, Northern Health determined
5 that the norovirus outbreak at Site C was over. BC Hydro continues to take
6 precautions to minimize new outbreaks.

7 *Debris Management*

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

13 The Moberly River boom remained in the water through winter 2022/2023 and the
14 associated debris management barge was remobilized on March 28, 2023. The
15 Peace River boom and associated debris management barge were remobilized on
16 March 29, 2023.

17 *Fish Habitat on Peace River Island near Old Fort (P6 Island)*

18 The final clean-up of the abutments for the temporary bridge to P6 Island will be
19 completed in spring 2023 during a low flow period. The planting of deciduous and
20 coniferous species will be completed in 2024 once the seedlings have been grown
21 by the nursery.

22 *Fish Habitat on Peace River Island west of Old Fort (P5 Island)*

23 Subsequent to the reporting period, equipment remobilized in April 2023 and work
24 resumed on the in-river fish habitat projects upstream of the Old Fort Island (P5) and
25 on the island located on the south side of the river (P3).

1 *Howe Pit*

2 Subsequent to the reporting period, the contractor remobilized in April 2023 to
3 complete the capping of the potentially acid-generating rock slope and to complete
4 the final reclamation work.

5 **3.1.3 Generating Station and Spillways**

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

9 **Generating Station and Spillways Civil Works**

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

12 By concrete volume, the generating station and spillways civil works sub-project was
13 approximately 91% complete as of March 31, 2023.

14 *Powerhouse*

15 In response to a quality issue, nonconforming concrete needed to be removed from
16 unit 4, which has impacted the schedule for units 4, 5, and 6. The contractor is
17 currently mitigating the impact of this issue and still expects to be able to achieve the
18 approved in-service dates for all units.

19 The powerhouse is scheduled to be watertight in June 2023.

20 The powerhouse concrete is 91% complete.

21 *Intakes Headworks*

22 As of March 31, 2023, concrete placements for intakes 1, 2, 3, 5 and 6 were
23 essentially complete. Overall, intake concrete placements were 99% complete.

24 Concrete placements for intake 4 are forecast to be complete by April 30, 2023.

1 *Penstocks*

2 As of December 31, 2022, the installation of all penstock steel for all penstocks was
3 complete, with the exception of the flexible couplings. The flexible couplings
4 (penstock sections that allow the penstocks to expand and contract) are being
5 redesigned due to technical issues. The installation of the alternative flexible
6 couplings is forecast to begin in August 2023.

7 The coatings for the insides of penstocks 2, 3 and 6 are complete. Penstock coating
8 for the remaining penstocks is forecast to be complete by August 31, 2023.

9 *Spillways*

10 The contractor has completed more than 88% of the spillways concrete. Work on the
11 concrete structures to enclose the mechanical systems for the gates has started.

12 The spillway concrete is forecast to be complete by August 31, 2023.

13 **Cranes**

14 The commissioning of the headworks gantry crane was completed and the crane
15 was placed into service on March 31, 2023. The headworks gantry crane will support
16 the completion of the remaining gates.

17 The assembly of the tailrace gantry crane has progressed significantly and is
18 scheduled to be placed into service by the end of April 2023.

19 **Hydromechanical Equipment**

20 The gates guides for intakes 1, 2, 3 and 6 are complete, and the physical gates are
21 installed in intakes 1, 2 and 3. The installation of the unit 4 gate commenced in
22 March 2023.

23 Work continued on spillway operating gates 1, 2 and 3, and the assembly of the gate
24 elements are 69%, 100% and 41% complete, respectively.

1 The installation of the gate guides continued on low level operating gates 1, 2 and 3,
2 and are 43%, 43% and 45% complete, respectively. Work on low level operating
3 gates 4, 5 and 6 started in February 2023 with the installation of the sill beams being
4 completed. Work on the vertical gate guides has also commenced.

5 **3.1.4 Right Bank Foundation Enhancements**

6 As of March 31, 2023 ongoing reviews by the Technical Advisory Board and the two
7 independent, world-leading dam experts continued to confirm that the ongoing
8 design of the foundation enhancements, located on the Project's right bank, meet
9 the highest safety standards and international best practices.

10 From January 1 to March 31, 2023 detailed engineering design continued for the
11 right bank foundation enhancements, which address the geotechnical issues in the
12 bedrock foundation on the Project's right bank. Engineering design was focused on
13 enhancements to the watertightness of the approach channel and enhancements to
14 the riprap and concrete erosion protection located downstream of the powerhouse
15 and spillway piles. Construction of the right bank foundation enhancements
16 commenced in 2021 and the work completed to March 31, 2023 includes:

- 17 • The installation of all 48 large diameter concrete-filled vertical steel piles
18 located within the spillway;
- 19 • The installation of 37 of the 48 large diameter concrete-filled vertical steel piles
20 located downstream of the powerhouse, including three of the six concrete pile
21 caps; and
- 22 • The completion of approximately 43% of the approach channel waterproofing,
23 including bedrock surface excavations, cleaning and horizontal lining,
24 reinforced concrete placements, grouting and granular fill placements.

25 Construction of the powerhouse piles and pile caps is on track to be completed in
26 spring 2023. Completion of the enhancements to the erosion protection downstream

1 of the piles and enhancements to the approach channel are on track to be
2 completed in summer and fall 2023, respectively.

3 **3.1.5 Balance of Plant**

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

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

12 The mechanical contractor continues to make good progress constructing the
13 powerhouse drainage and dewatering system, and completion is scheduled for
14 mid-June 2023.

15 The electrical contractor commenced installation of the electrical station service in
16 the powerhouse, intakes and spillways, including the installation of approximately
17 580 kilometres of cable. In addition, the contractor has installed half of the sections
18 of isolated phase bus that will connect the unit 1 and 2 generators to the BC Hydro's
19 electrical system.

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

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

1 **3.1.6 Turbines and Generators**

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

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

9 The installation of the unit 2 turbine and generator is progressing and is projected to
10 be ready for the start of commissioning in fall of 2023. The turbines and generators
11 for units 4, 5 and 6 are delayed due to a quality issue related to nonconforming
12 concrete placements, but are still expected to meet the approved schedule.

13 **3.1.7 Transmission**

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

18 **3.1.8 Highway 29 and Hudson's Hope Shoreline Protection Berm**

19 The highways sub-project includes the construction of 32 kilometres of highway and
20 five new bridges along Highway 29; construction of a shoreline protection berm
21 within the District of Hudson's Hope to protect against bank erosion due to reservoir
22 wind waves and water table rise; the development and operation of the Portage
23 Mountain Quarry, which supplied riprap and filter materials for highway and berm
24 construction; and the construction of recreational facilities at Halfway River,
25 Lynx Creek, and Hudson's Hope.

1 For the Highway 29 realignment, work remains on track to support reservoir filling.
2 The following reflects progress to March 31, 2023:

3 **Cache Creek**

4 Construction of the Cache Creek segment includes 8.6 kilometres of highway and a
5 617-metre-long bridge.

6 The Cache Creek segment opened to traffic on December 1, 2022. The site was on
7 winter shut-down during the reporting period and no work occurred. Work is
8 expected to resume in spring 2023, including paving, deficiency repairs on the
9 bridge, some drainage work and the removal of two temporary bridges.

10 Decommissioning of the Cache Creek segment began in February 2023, including
11 the removal of the Cache Creek bridge, which was completed in March 2023.

12 **Halfway River**

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

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

20 Decommissioning of the Halfway River segment began in March 2023.

21 **Farrell Creek East**

22 The Farrell Creek East segment includes the realignment of 8.4 kilometres of
23 highway. Geotechnical studies in 2019 concluded that 5.7 kilometres of this segment
24 could be removed from the scope of work and monitored following the creation of the

1 Site C reservoir, reducing the length of the Farrell Creek East realignment work to
2 2.7 kilometres.

3 The construction of the Farrell Creek East segment was completed in August 2022.

4 Decommissioning of the Farrell Creek East segment was completed in
5 January 2023.

6 **Farrell Creek**

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

9 Construction of this segment was completed and opened to traffic on
10 October 27, 2022.

11 Decommissioning of Farrell Creek began in January 2023, and continued through
12 the reporting period.

13 **Dry Creek**

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

16 Construction of the highway alignment was completed in August 2022.

17 Decommissioning of the Dry Creek segment was completed in February 2023.

18 **Lynx Creek**

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

21 The Lynx Creek highway alignment opened to traffic on November 17, 2022.

22 Construction at Lynx Creek resumed in March 2023, including completion of a
23 stability buttress and the mitigation of a sand seam on the west approach of the
24 bridge. Work is expected to continue until June 2023, including final paving.

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

3 Decommissioning of the Lynx Creek segment began in January 2023 and continued
4 through the reporting period. Removal of the Lynx Creek bridge began in
5 March 2023 and is expected to be complete in May 2023.

6 **Portage Mountain Quarry**

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

10 All production of riprap for Highway 29 and the Hudson's Hope berm was completed
11 and the focus is now on the implementation of quarry reclamation. A procurement for
12 the reclamation of Portage Mountain was initiated in February 2023, and the work is
13 expected to begin in spring 2023.

14 **Hudson's Hope Shoreline Protection Berm**

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

19 The berm was completed at the end of November 2022 and the contractor has
20 demobilized from the site.

21 As part of the shoreline protection work, BC Hydro installed a new raw water intake
22 that could be used by the District of Hudson's Hope to draw water from the reservoir
23 in the future. The installation of the raw water intake was completed in
24 September 2022 by the shoreline protection contractor. In fall 2022, the District
25 initiated a three-phase plan to switch its raw water source from the well water

1 system to the Peace River. Refer to sections [1.6](#) and [12.1.1](#) for related information
2 on the District of Hudson's Hope well water system.

3 **Halfway River East Boat Launch**

4 The contract for the Halfway River East boat launch was awarded in June 2022.
5 Construction of the Halfway River East boat launch started in summer 2022 and the
6 contractor demobilized for the season in December 2022. Work is expected to
7 resume in spring 2023.

8 **3.1.9 Reservoir**

9 The following reflects progress to March 31, 2023:

10 **Lower Reservoir, Moberly River Drainage and Eastern Reservoir including** 11 **Cache Creek Drainage**

12 Clearing activities, in the Moberly River drainage, north and south banks of the
13 eastern reservoir and Cache Creek, are complete. A sweep of the reservoir area
14 identified outstanding wastewood piles in the Eastern Reservoir and Moberly
15 Drainage that were added to the winter 2022 burning program and were burned in
16 the first quarter of 2023.

17 **Middle Reservoir, Halfway River Drainage and Western Reservoir**

18 Clearing activities, including the burning of waste wood, continued in early 2023 and
19 included the continuation of the clearing of the Watson Slough area. By
20 January 31, 2023, clearing at Watson Slough was substantially complete. The
21 remaining activities to be completed are: road deactivation activities; and one animal
22 buffer area remains to be cleared once the bear vacates for the season.

23 In fall 2022, a contract was awarded to brush vegetation in the previously cleared
24 areas between the Site C dam site and Cache Creek. This work will reduce the
25 amount of nesting bird habitat within the tunnel conversion headpond area to

1 minimize the risk of flooding nests. This work started in January 2023 and was
2 completed by March 31, 2023.

3 **Other Reservoir Work**

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

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

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

13 The construction of a fish habitat site at Maurice Creek began in June 2022 and
14 stopped in September 2022. This work resumed in January 2023 when low water
15 flows suitable for construction occurred on the Peace River and is now substantially
16 complete.

17 **3.1.10 Tunnel Conversion and Reservoir Filling**

18 As described in previous reports, BC Hydro has identified three scenarios for the
19 timing of Site C tunnel conversion and reservoir filling:

- 20 1. Scenario One: tunnel conversion begins in mid-2023 and completes in
21 fall 2023, followed immediately by reservoir filling;
- 22 2. Scenario Two: tunnel conversion begins in mid-2023 but does not complete in
23 time for reservoir filling to begin in fall 2023. Reservoir filling would occur in
24 fall 2024; and

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

3 The timeline for reservoir filling depends on obtaining approximately 20 regulatory
4 approvals, the operational requirements of the Peace River system, environmental
5 regulation compliance, weather constraints and construction progress, including the
6 ability to convert and close the tunnels currently diverting the Peace River around
7 the Project site.

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

11 *Dam Site*

- 12 • The earthfill dam, approach channel and spillways (including gates);
- 13 • Right bank foundation enhancements;
- 14 • Modification of the right bank cofferdam in preparation for tunnel conversion;
- 15 and
- 16 • Tunnel conversion preparations complete.

17 *Off Dam Site*

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

21 Progress related to each of these work activities is described in other sections of this
22 report.

1 **3.2 Engineering**

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

7 **3.2.1 Main Civil Works**

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

13 Detailed geological mapping of the excavations in the approach channel continues.
14 This geological information will continue to be used to update the design parameters
15 for the site geology and foundations.

16 **3.2.2 Right Bank Foundation Enhancements**

17 During the reporting period, value engineering activities continued in support of
18 improvements to the design of the approach channel. Work included advancing the
19 design of the central channel berm within the approach channel.

20 BC Hydro continued to engage the independent international dam experts, Technical
21 Advisory Board and other subject matter experts to provide oversight of activities
22 associated with the design of the foundation enhancements and construction of the
23 Project. Refer to section [3.2.7](#) for a summary of the Technical Advisory Board
24 meetings.

1 **3.2.3 Large Cranes, Hydromechanical, and Turbines and Generators**

2 During the reporting period, the focus for engineering related to large cranes,
3 hydromechanical equipment and turbines and generators contracts was to support
4 construction, manufacturing and vendor submittal reviews and integration.

5 **3.2.4 Generating Station and Spillways, Balance of Plant, and Equipment**
6 **Supply**

7 During the reporting period, work focused on the production of record drawings for
8 the powerhouse and intakes, along with supporting construction with the review of
9 submittals for the powerhouse, intakes, penstocks, and spillways.

10 The balance of plant scope of work continued with the preparation and issuance of
11 the issued for construction drawings for the balance of plant mechanical; electrical
12 (includes architectural, heating, ventilation, and air conditioning, and fire detection
13 and protection contracts); and permanent upstream fishway and other out structures
14 contract packages. The balance of plant team also continued to support construction
15 activities for these contracts including the review of the technical submittals and
16 contractor design drawings, and performing additional factory acceptance testing
17 and factory visits for the diesel generator contract. The team also participated in
18 another round of factory inspection/quality audits for the assembly of the second set
19 of generator step up transformers.

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

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

1 **3.2.5 Transmission**

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

6 **3.2.6 Highway 29**

7 Engineering support continued to be provided for the construction activities for the
8 various highway segments, the upgrade to D.A. Thomas Road, and the Halfway
9 River boat launch. Engineering also provided support for the review of record
10 drawings and close-out documents on the Farrell Creek East and Dry Creek
11 segments.

12 **3.2.7 Technical Advisory Board and Independent International Dam**
13 **Experts**

14 A series of video conferences occurred from January through March 2023 with the
15 Technical Advisory Board. There were no reports issued by the Technical Advisory
16 Board or the independent international dam experts during the reporting period.

17 **3.3 Quality Management**

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

- 21 • Ongoing meetings with the quality management teams of key manufacturers
22 and the site contractors to address quality issues as they arise;
- 23 • Performing quality audits of the site contractors;
- 24 • Participating in factory acceptance tests at manufacturer's facilities;

- 1 • Continuing with monthly quality performance indicator assessments for each
- 2 sub-project; and
- 3 • Implementing the recommendations from the BC Hydro Corporate Audit of the
- 4 Site C Quality Management System.

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

8 **3.3.1 Quality Nonconformance Management**

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

11 [Table 5](#) summarizes quality nonconformity instances during the reporting period.

12 **Table 5 Quality Management Nonconformity Report (NCRs) Metrics**
 13 **Reporting Period – January 2023 to March 2023**

Contract	NCRs Reported January 1 to March 31, 2023	NCRs Closed January 1 to March 31, 2023	NCRs Reported as of March 31, 2023	NCRs Closed as of March 31, 2023	NCRs Open as of March 31, 2023
Main Civil Works	6	2	2,037	2,013	24
Turbines and Generators (total = manufacturing + installation)	100 (=22+78)	91 (=21+70)	998 (=627+371)	865 (=589+276)	133 (=38+95)
Generating Station and Spillways Civil Works	99	83	1,517	1,431	86
Large Cranes	0	0	27	27	0
Hydromechanical Equipment	5	2	52	48	4

14 With the earthfill dam construction shut down for winter, there were no significant
 15 quality issues on the main civil works sub-project during the reporting period.

16 BC Hydro continued to meet with the main civil works contractor on a bi-weekly
 17 basis to discuss broader topics related to quality and the planning for the
 18 2023 construction season.

1 The quality of the constructed works in the generating station and spillways and
2 intake structures continued to be good. The original penstock flexible coupling that
3 failed the hydrostatic pressure test is being replaced with an alternative design with
4 a conventional sealing arrangement. Manufacturing of the replacement coupling is
5 underway and BC Hydro's quality inspector is performing surveillance and
6 participating in witness and hold points in accordance with the manufacturing
7 inspection and testing plan.

8 In January 2023, the generating station and spillways civil works contractor informed
9 BC Hydro that approximately 450 cubic metres of nonconforming concrete was
10 placed around the unit 4 spiral casing, stay ring and turbine pit liner during a mid-
11 December 2022 placement. Further coring and investigation of the placement
12 records confirmed that the actual volume of nonconforming concrete placed was
13 significantly less, approximately 100 cubic metres. Excavation and removal of the
14 nonconforming concrete progressed throughout the reporting period and is expected
15 to continue into spring 2023, after which it will be replaced with conforming concrete.
16 Procedural and engineering controls have been put in place at the concrete batch
17 plant to ensure that this type of incident does not occur again.

18 BC Hydro and the generating station and spillways contractor continue to meet
19 weekly to discuss and resolve open nonconformity reports as well as discuss
20 broader topics related to the contractor's quality performance.

21 During the reporting period, there were no significant quality issues with the
22 approach channel construction or the tailrace piling installation.

23 For the turbines and generators contract, the quality of the assembly and installation
24 work at site continues to be good. BC Hydro continues to focus its quality assurance
25 efforts on the generator stator core stacking and stator winding installation, including
26 performing regular quality surveillance audits of these activities. The turbine spiral
27 case flexible couplings remain a quality risk as the turbines and generators

1 contractor design is similar to the penstock flexible coupling that the generating
2 station and spillways contractor was unable to successfully implement. The
3 performance of the turbines and generator contractor design remains unproven with
4 the hydrostatic pressure test expected to occur in spring 2023. BC Hydro is working
5 with the turbines and generators contractor to evaluate alternatives if the pressure
6 test is unsuccessful. BC Hydro continues to meet with the turbines and generators
7 contractor on a weekly basis to discuss upcoming inspections, quality issues and the
8 overall quality assurance program.

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

11 **3.4 Assets In-Service**

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

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

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

22 *Dam Site*

- 23 • The earthfill dam, approach channel and spillways (including gates);
- 24 • Right bank foundation enhancements;

-
- 1 • Modification of the right bank cofferdam in preparation for tunnel conversion;
 - 2 and
 - 3 • Tunnel conversion preparations complete.

4 *Off Dam Site*

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

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

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

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

21 As of March 31, 2023, the following permanent assets have been placed into service
22 on the Project:

- 23 • Site C substation;
- 24 • 500 kV gas-insulated switchgear expansion at the Peace Canyon substation;
- 25 and

- 1 • Two new 500 kV transmission lines that connect Site C to the Peace Canyon
 2 generating station.

3 **4 Project Schedule**

4 **4.1 Project In-Service Dates**

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

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

11 [Table 6](#) shows the status of key Project milestones in relation to the approved final
 12 unit in-service date in 2025.

13 **Table 6 In-Service Dates**

Description	In-Service Dates based on Approved Budget and Schedule (June 2021) ⁹	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

⁹ In-service dates based on Treasury Board's approval of the revised budget in June 2021.

1 **5 Project Governance, Costs and Financing, and Risk)**

2 **5.1 Project Governance**

3 During the reporting period, activities supporting Project governance included:

- 4 • The BC Hydro Board of Directors continued to meet on a monthly basis to
5 provide governance, financial approvals of committed contracts over \$50 million
6 (and their related changes), and received updates on Project progress and key
7 remaining risks;
- 8 • The Project Assurance Board continued to meet monthly to provide independent
9 due diligence and oversight of the Site C Project to enable the Project to be fit for
10 purpose and to be completed safely, on time and on budget;
- 11 • The commercial sub-committee of the Project Assurance Board continued to
12 meet monthly to provide oversight on claims management, commercial strategy
13 and contractual negotiations;
- 14 • The Technical Advisory Board continued to provide technical expertise and
15 guidance to the Project Assurance Board and support to the Project team;
- 16 • Ernst & Young Canada continued to provide independent oversight for the
17 Project, specifically with risk management, which included reviewing Project risks
18 and the analysis for the schedule and costs for the Project, and the evaluation of
19 commercial management;
- 20 • BC Hydro and Ernst & Young Canada worked closely and collaboratively to
21 complete the cost risk analysis and schedule risk analysis with a January 1, 2023
22 data date;
- 23 • Special advisor Peter Milburn continues to work with the Project to ensure that
24 his recommendations, which have all been implemented, continue to be
25 sustained. Mr. Milburn participated in the cost risk analysis and schedule risk
26 analysis with a January 1, 2023 data date; and

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

3 **5.2 Project Budget Summary**

4 As of March 31, 2023, the life-to-date actual costs are \$11 billion, which results in an
5 estimated \$5 billion of remaining costs. The Project remains on track to be
6 completed within the approved \$16 billion budget. BC Hydro, with oversight from the
7 Project Assurance Board, continues to actively manage the Project budget and
8 potential Project risks for the remaining work.

9 **5.3 Project Expenditure Summary**

10 [Table 7](#) includes a breakdown of the \$16 billion Project budget, approved in
11 June 2021, by key work area, life-to-date actual expenditures to March 31, 2023,
12 and the remaining budget.

1
2

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

Description	Project Budget ¹⁰	Actuals, Life-to-Date (as of March 31, 2023)	Remaining Budget (as of March 31, 2023)
Dam, Power Facilities and Associated Structures and Transmission ¹¹	8,258	6,324	1,934
Off Dam Site Works, Direct Construction Supervision and Site Services ¹²	2,895	2,099	796
Total Direct Construction Cost	11,153	8,423	2,730
Indirect Costs ¹³	2,082	1,378	704
Total Construction and Indirect Costs	13,235	9,801	3,434
Interest During Construction and Contingency	2,765	1,216	1,549
Total	16,000	11,017	4,983

3 [Table 8](#) provides a summary of the approved total Project budget, the current
 4 forecasts, and related variances. The table also presents the cumulative plan and
 5 actual costs to March 31, 2023, and the related variances. The plan amount reflects
 6 the Project budget of \$16 billion approved in June 2021 and the related preliminary
 7 forecasted annual spend at that time.

¹⁰ The total Project budget was approved in June 2021 by Treasury Board.

¹¹ Key items included are river diversion infrastructure, earthfill dam and related works, spillways, powerhouse, generation equipment and transmission and substation work.

¹² Key items included are highway re-alignment and reservoir related work, direct construction supervision, and site services such as worker accommodation.

¹³ Key items included are mitigation and compensation programs, development and regulatory costs, project management, engineering and other support services such as Project controls, contracts management, environmental, and Indigenous relations.

Table 8 **Total Project Budget Compared to Forecast to Completion and Life-to-Date Plan Compared to Actuals to March 31, 2023 (\$ million)**

Description	Total Project			Life-to-Date (LTD) to March 31, 2023		
	Budget	Forecast to Completion	Variance	Plan	Actual	Variance
Total Construction & Indirect Costs	13,235	13,235	0	11,087	9,801	1,286
Interest During Construction and contingency	2,765	2,765	0	1,529	1,216	313
Total	16,000	16,000	0	12,616	11,017	1,599

Details of the variances between life to date actual and plan are in [Appendix H](#).

[Table 9](#) provides a Fiscal 2023 summary, 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 Fiscal 2023 Plan Compared to Actuals (\$ million)**

Description	2022/23 to 2024/25 Service Plan, Fiscal 2023	Actuals, Fiscal 2023	Variance
Total Project	2,543	2,208	335

Details of the variances between actual and plan are in [Appendix H](#).

5.4 Site C Project Financing

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

5.5 Material Project Risks and Opportunities

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

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

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

5 The criteria for selecting which risks and opportunities to include in internal and
6 external reporting include both objective and subjective measures; these criteria
7 have been utilized to select the risks and opportunities included in this report.¹⁴

8 Refer to [Table 10](#) and [Table 11](#) for a list of the material Project risks and
9 opportunities as of March 31, 2023.

10 **Table 10 Material Project Risks**

Risk Description	Impact and Response Plan Summary
Safety incident resulting in a fatality or disabling injury.	<p>Impact: Serious worker injury or fatality; Project delays and associated costs.</p> <p>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.</p>
Adits or right bank drainage tunnel may need additional structural support post reservoir filling	<p>Impact: Requirement for additional structural support, resulting in additional costs.</p> <p>Response: Design additional support as required and implement measures to address as-found conditions.</p>

¹⁴ The risks and opportunities included in [Table 10](#) and [Table 11](#) are grouped thematically. The lists do not include risks and opportunities that are subject to confidentiality obligations or solicitor-client privilege, or that disclose commercially sensitive information relating to matters that are currently outstanding, including procurements and negotiations that are in progress at the time of this report, the disclosure of which would be harmful to BC Hydro’s commercial interests.

Risk Description	Impact and Response Plan Summary
Penstock flexible couplings do not perform as expected	<p>Impact: Schedule delays and/or additional costs.</p> <p>Response: Ongoing modification and on-site testing of the couplers. Implement alternative design and supply as needed.</p>
Tunnel conversion delayed due to constructability, condition, safety or operational issues.	<p>Impact: Schedule delay, Project cost increases; damage to structure requiring repairs.</p> <p>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.</p>
Right bank foundation enhancements at approach channel require additional work.	<p>Impact: Impacts to contractors' existing scopes of work and schedule due to the right bank foundation enhancements, resulting in cost and schedule impacts.</p> <p>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.</p>
Project contractors unable to attract and retain key management personnel.	<p>Impact: Exposure to schedule delays and additional costs, which could also be associated with meeting safety, environment, engineering, or quality requirements.</p> <p>Response: Monitor Project contractors' resource levels, turnover, and key role vacancies; continue to collaborate with Project contractors on the availability of key personnel.</p>
Project contractors cannot attract and retain sufficient skilled craft workers.	<p>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.</p> <p>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.</p>
Indigenous Nations burial site management and community support take longer than planned	<p>Impact: Schedule delays and/or cost impacts to recover schedule and obtain necessary regulatory approvals.</p> <p>Plan: Work closely with affected First Nations to develop and implement appropriate burial site management options. Ensure sufficient amounts of time are available in the Project schedule.</p>
District of Hudson's Hope may seek further funding for water supply system.	<p>Impact: Additional costs for the water supply system.</p> <p>Response: Continue to meet obligations under the Water Agreement and work constructively with the District of Hudson's Hope. BC Hydro Installed a water conveyance system into the shoreline protection berm to enable access by the District of Hudson's Hope.</p>

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.	<p>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.</p> <p>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.</p>
Increasing regulatory requirements relating to management of potentially acid-generating rock.	<p>Impact: Potential cost implications and schedule impacts.</p> <p>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.</p>
Risk of contractor claims.	<p>Impact: Increased construction management and contract management effort required to respond to and investigate claims; settlement of claims may result in increased costs.</p> <p>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.</p>
Demand for concrete exceeds available supply	<p>Impact: Concrete production increase may be required to maintain schedule.</p> <p>Response: Identify additional sources for materials, implement additional mining resources for sand, monitor progress rate closely to comply with the schedule.</p>
Migratory bird convention or <i>Species at Risk Act</i> non-compliance events	<p>Impact: Potential regulatory response resulting in additional costs and reputational impacts.</p> <p>Response: Conduct brushing and netting in tunnel conversion headpond area to deter birds nesting prior to nesting season.</p>
BC Hydro charged by regulator related to an environmental incident	<p>Impact: BC Hydro incurs costs and potential reputational impacts.</p> <p>Response: Ensure contractors meet contractual obligations for compliance with regulatory laws and follow their Environmental Management Plans. BC Hydro participates in legal proceedings and complies with orders and pays fines if required.</p>
Increased duties on imported transformers	<p>Impact: Transformers not delivered on time and higher costs.</p> <p>Response: Allow for additional duty payment to maintain contractual delivery dates and seek the possible remission or reduction of the additional duty. The first six (of 10) transformers have been delivered to site and are in BC Hydro's possession.</p>

Risk Description	Impact and Response Plan Summary
Additional effort required to comply with mandatory reliability standards	<p>Impact: Mandatory reliability standards require the implementation of cyber security and physical security measures in the Site C powerhouse. Additional reliability standards may result in additional work and costs.</p> <p>Response: A Site C mandatory reliability standards Steering Committee meets regularly to review requirements. A project manager has been assigned to implement measures as required.</p>
Powerhouse, spillways and intakes don't conform to specifications	<p>Impact: Schedule delays.</p> <p>Response: Follow rigorous quality program including inspection and test plans, hold and review points, and site quality surveillance.</p>
First Unit Commissioning Delay	<p>Impact: Delay to Unit 1 in-service and could result in additional costs.</p> <p>Response: A commissioning plan has been developed. The plan is being implemented with commissioning activities starting as early as possible.</p>

1 **Table 11 Material Project Opportunities**

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

2 **6 Key Procurement and Contract Developments**

3 **6.1 Key Procurements**

4 The vast majority of the major Site C contracts have been awarded. The remaining
 5 procurements on the Project are summarized in [Table 12](#).

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Table 12 Remaining Major Project Procurements 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	One remaining access and clearing package was awarded during this reporting period. This is the final Reservoir/Transmission Clearing contract to be completed. All 18 contracts are now complete (16 reservoir, two transmission).
Reclamation Program	Multiple seeding supply contracts and reclamation contracts to be awarded over three to four years	Design-Bid-Build	Under the pilot program: <ul style="list-style-type: none"> • Three seeding supply contracts and three reclamation contracts were awarded. For the full program: <ul style="list-style-type: none"> • Four planting packages and one reclamation package have been identified for the 2024 planting season. Procurement of such packages will start in June 2023.

3 **6.2 Major Construction Contracts Exceeding \$50 Million**

4 Since inception of the Project, 14 major construction contracts have been awarded
5 that exceed \$50 million in value, as shown in [Table 13](#). The contract values reflect
6 the current value including executed approved changes to the end of the reporting
7 period.

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

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Table 13 Major Project Construction Contracts Awarded

Contract	Contract Value at March 31, 2023 ¹⁵ (\$ million)	Contract Execution Date
Site Preparation: North Bank	60	July 2015
Worker Accommodation	684	September 2015
Main Civil Works ¹⁶	3,214	December 2015
Turbines and Generators	536	March 2016
Transmission and Clearing	92	October 2016
Quarry and Clearing	153	February 2017
Generating Station and Spillways Civil Works ¹⁷	2,788	March 2018
Hydromechanical Equipment	72	April 2018
Transmission Line Construction	139	May 2018
Clearing and Aggregates	74	December 2018
Highway 29	379	October 2019
Balance of Plant Mechanical	72	July 2021
Balance of Plant Electrical (includes balance of plant architectural; heating, ventilation, and air conditioning; and fire detection and protection contracts)	237	September 2021
Balance of Plant Permanent Upstream Fishway and Other Out Structures	90	January 2022

3 **6.3 Contracts Exceeding \$10 Million**

4 For open contracts procured and awarded in excess of \$10 million, refer to
 5 [Appendix F](#).

¹⁵ 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.

¹⁶ Includes some of the scope of work for the right bank foundation enhancements.

¹⁷ Includes some of the scope of work for the right bank foundation enhancements.

1 **6.4 Contract Management**

2 **6.4.1 Material Changes to the Major Contracts**

3 The main civil works contract is a unit price contract and as such variations in
4 quantities and design are expected over the term of the contract. Since contract
5 award in December 2015, the main civil works contract value has increased by
6 \$1.47 billion to reflect approved changes to March 31, 2023.

7 The generating station and spillways contract is also a unit price contract and, as
8 such, variations in quantities and design are expected over the term of the contract.
9 Since contract award in March 2018, the generating station and spillways contract
10 value has increased by \$1.184 billion to reflect approved changes to
11 March 31, 2023.

12 **7 First Nations Consultation**

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

19 BC Hydro continues to advance economic opportunities for First Nations through
20 capacity building and procurement opportunities. Approximately \$717 million in
21 Site C procurement opportunities have been awarded to companies designated by
22 First Nations since the beginning of the Project, pursuant to BC Hydro's Indigenous
23 Procurement Policy. Working on the Site C Project has helped businesses
24 designated by First Nations to build and grow their reputations, expand the scale of
25 their operations, and develop new expertise to compete in the regional economy.

1 During the reporting period BC Hydro has continued to work with Indigenous Nations
2 on a variety of initiatives. For example, a meeting of the Environment Forum was
3 held on January 24, 2023 with representatives in attendance from 10 Indigenous
4 Nations. Topics of discussion included an update on reservoir filling, Environmental
5 Assessment Certificate amendment and wildlife permit applications, and upstream
6 fish passage and monitoring. BC Hydro also met with Indigenous Nations to discuss
7 fish consumption and Methylmercury monitoring.

8 BC Hydro met with Indigenous Nations to prepare for the detailed design phase of
9 the cultural centre, based on the conceptual design approved by the project
10 committee of Chiefs and Elders. The next key decision point is the location of the
11 future cultural centre. BC Hydro is working with participating Nations to assess three
12 location options.

13 In February 2023 BC Hydro hosted the eighth annual Indigenous Employment and
14 Information session with Site C contractors and participants from Treaty 8 First
15 Nations. The purpose of these sessions is to continue to assist in building
16 relationships between Indigenous communities and Site C contractors, as well as to
17 share employment and training opportunities.

18 In March 2023, 358 Indigenous people were working on the Site C Project which
19 represents 9% of the total workforce. The Project peak was reached in October 2019
20 with 428 Indigenous people working on the Site C Project.

21 **8 Litigation¹⁸**

22 The details of open proceedings as of March 31, 2023, are summarized in [Table 14](#).

¹⁸ As indicated in the prior quarterly progress reports, the Litigation summary level of detail has been simplified and the indicator in [Table 1](#) has been removed.

1

Table 14 Litigation Status Summary

Description		Date
B.C. Supreme Court: Treaty Infringement Claims		
West Moberly First Nations	Civil claim filed.	January 15, 2018
	Settlement of claims related to Site C.	June 24, 2022
B.C. Supreme Court: Civil Claims		
Building and Construction Trades Council	Civil claim filed. No steps have been taken in litigation that require a response from BC Hydro.	March 2, 2015
Michael Acko, etal (Residents of Old Fort community)	Civil claim filed.	January 18, 2021
	Response to claim filed.	September 8, 2021
Allianz Global Risks US Insurance Company, etal	Civil claims filed. Claims were filed by BC Hydro to preserve BC Hydro's rights to claim under Site C property insurance for losses related to left bank tension crack events and the rockfall event near a diversion tunnel inlet portal.	February 5, 2021 July 13, 2021
Vezer Industrial Professionals Canada Ltd.	Civil claim served. No steps have been taken in litigation that require a response from BC Hydro.	March 29, 2022
Armitage	Civil claim filed.	October 24, 2022
	Response to claim filed.	January 5, 2023
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 <i>Expropriation Act</i> . The claims do not impact BC Hydro's property rights. Appraisals and other information are required from the owners to advance their claims. No requirement for BC Hydro to file responses as of this reporting period.	July 2019 to February 2022

2

9 Permits and Government Agency Approvals

3

9.1 Background

4

BC Hydro continues to be issued permits and authorizations in accordance with its

5

construction timelines. As of March 31, 2023, 611 of the estimated 653 provincial

6

and federal permits and authorizations required throughout the life of the Project had

7

been obtained and are actively being managed.

1 Multiple conditions are attached to each permit or authorization, which cover
2 subjects such as air quality, water quality, fish and aquatics, wildlife, heritage, health
3 and safety, construction environmental management and First Nations consultation.
4 As of March 31, 2023, all required conditions and submissions have been met in
5 accordance with the schedule and requirements of the conditions.

6 **9.2 Federal Authorizations**

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

11 Additional *Canadian Navigable Waters Act* approvals and notifications for discrete
12 works in the reservoir (e.g., shoreline works, debris booms and Highway 29 bridges)
13 are being issued at the regional level. As of March 31, 2023, a total of 127 federal
14 approvals have been received and are actively being managed. Seven future
15 approvals are planned.

16 **9.3 Provincial Permits**

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

22 As of March 31, 2023, 474 of the estimated 508 provincial permits and approvals
23 that are required throughout the life of the Project had been obtained and are
24 actively being managed. These include permits for the dam site area, worker
25 accommodation, Highway 29 realignment and decommissioning of the existing
26 highway, transmission line and eastern, middle, and western reservoir. Future

1 provincial permits are being planned for the remainder of the generating station and
2 spillways construction, fish habitat enhancement sites, the permanent upstream
3 fishway, reservoir filling and operations.

4 **9.4 Environmental Assessment Certificate**

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

9 As with any large construction project, refinements to the design are expected. As of
10 March 31, 2023, BC Hydro has requested, and received from the Environmental
11 Assessment Office, 10 amendments to the Project's Environmental Assessment
12 Certificate to reflect changes in Project design. The amendments have not resulted
13 in any material impacts to the cost of the Project.

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

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

18 **10 Environment**

19 **10.1 Mitigation, Monitoring and Management Plans**

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

1 **10.2 Project Environmental Compliance**

2 Environmental compliance on the Project remains high. During the reporting period,
3 12,093 environmental compliance inspections were completed by BC Hydro staff,
4 with a compliant and partial compliant result of 99% across all contractors and work
5 areas.

6 During the reporting period, BC Hydro responded to four separate information
7 requests (remote inspections) by the Environmental Assessment Office. Final
8 inspection reports from these remote inspections were not issued within the
9 reporting period. The Environmental Assessment Office did not complete any on-site
10 inspections during the reporting period. On January 20, 2023, the Environmental
11 Assessment Office granted relief from the requirement for ongoing turbidity
12 monitoring in L3 Creek that was required by their March 3, 2017, Order.

13 In January 2023, the Project finalized repairs required by the Environmental
14 Assessment Office order directing repair of ditch erosion within the Ministry of
15 Transportation and Infrastructure's ditch line along Old Fort Road and into BC Hydro
16 lands.

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

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

23 Additionally, the Project has engaged both an Independent Environmental Monitor
24 and an Independent Engineer that report directly to provincial regulators. The
25 Independent Environmental Monitor provides weekly reports that have also
26 demonstrated substantial compliance across the Project while continuing to identify

1 areas of focus for sediment and erosion control, water management and spill
2 prevention. The Independent Engineer works directly with site personnel to
3 proactively identify design issues that may impact the environment and develop
4 mitigation plans to avoid or minimize impacts.

5 *2018 Stormwater Release Event and Environment Canada Investigation*

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

10 The Site C main civil works contractor uses various holding ponds, as well as a
11 water treatment plant, to manage water prior to discharge. As the rain event
12 continued, the holding ponds reached capacity. Over a period of approximately
13 24 hours, the controlled release of approximately four million litres of water into the
14 Peace River was taken to protect the water management infrastructure and ensure
15 the structural integrity of the holding ponds.

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

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

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

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

8 The next court date in respect of these charges is scheduled for July 31, 2023.

9 **10.3 Potentially Acid-Generating Rock Management**

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

18 The April 2022 Environmental Assessment Office order related to potentially
19 acid-generating rock exposures has necessitated revisions to the Construction
20 Environmental Management Plan. In September 2022 the Environmental
21 Assessment Office requested BC Hydro to provide additional supporting evidence
22 from its Qualified Environmental Professional for potentially acid-generating rock in
23 support of these Construction Environmental Management Plan revisions. This
24 submission was provided to the Environmental Assessment Office in October 2022.
25 On January 11, 2023, the Environmental Assessment Office provided clarity on what
26 revisions should be considered material, to which BC Hydro submitted a revised
27 Qualified Environmental Professional assessment and Construction Environmental

1 Management Plan. On March 24, 2023, the Environmental Assessment Office
2 reviewed this submission and advised that BC Hydro should consult on all the
3 revisions to the Construction Environmental Management Plan. This Consultation
4 was initiated after the reporting period on April 11, 2023.

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

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

16 **10.4 Heritage**

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

23 During the reporting period, no new *Heritage Conservation Act* permits or
24 amendments were received, no *Heritage Conservation Act* archaeological reports
25 were submitted to the B.C. Archaeology Branch and First Nations, and one
26 palaeontological heritage chance find was identified and reported by contractors.

1 **10.5 Temporary Fish Passage Facility**

2 BC Hydro operated the temporary fish passage facility from April 1 to
3 October 31, 2022. From January to March 2023, the temporary fish passage facility
4 was in the planned winter shut-down period. In 2022, the facility passed 3,770 fish
5 from 15 different species, compared to 2,465 fish from 11 different species during
6 the same period in 2021. This improvement over the previous season is potentially
7 due to refining the operations of the facility, and these refinements will be
8 incorporated into the permanent fish passage facility. The temporary fish passage
9 facility is expected to commence operation for the 2023 season on April 1, 2023.

10 **10.6 Wetland Compensation Plan**

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

20 **10.7 Greenhouse Gas Monitoring**

21 In October 2022, BC Hydro began collecting data to support a pre-reservoir fill
22 greenhouse gas (**GHG**) emission study. Three locations upstream of the dam site
23 were selected for terrestrial flux-chamber measurements, and soil organic carbon
24 and vegetation sampling. In 2023, surface water flux-chamber measurements will be
25 added. This pre-reservoir fill information will be used to augment reservoir GHG
26 monitoring data to support net GHG emissions calculations for the reservoir.

1 **10.8 Agricultural Mitigation and Compensation Plan**

2 The BC Hydro Peace Agricultural Compensation Fund spring 2023 grant intake
3 closed on January 31, 2023, with application review taking place on March 8, 2023.
4 During this reporting period, BC Hydro distributed approximately \$180,000 in grant
5 funding to eight projects to support agricultural production and related economic
6 activity in the Peace Region. As of March 31, 2023, the fund has distributed more
7 than \$2.7 million to 82 projects.

8 **11 Employment and Training Initiatives and Building**
9 **Capacity Initiatives**

10 **11.1 Labour**

11 Since the beginning of the Project, unions that have participated in the construction
12 of Site C are listed in [Table 15](#).

13 **Table 15 Participating Unions**

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

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

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

4 **11.2 Employment**

5 Contractors submit monthly workforce data electronically to BC Hydro. [Table 16](#)
6 presents the monthly number of construction contractors, non-construction
7 contractors, engineers, and Project team workers for this period.

8 As with any construction project, the number of workers – and the proportion from
9 any particular location – will vary month-to-month and also reflects the seasonal
10 nature of construction work.

11 **Table 16 Site C Jobs Snapshot Reporting Period –**
12 **January 2023 to March 2023**

Month	Number of B.C. Primary Residents ¹⁹	Total Number of Workers ²⁰
January 2023	3,308	4,778
February 2023	3,330	4,856
March 2023	3,597	5,233

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

14 In March 2023, there were 5,233 total workers on the Site C Project. Residents of
15 British Columbia made up 69% of the workforce (3,597), while 20% of the workforce
16 (905 workers) lived in the Peace River Regional District. The onsite contractor
17 workforce number also includes 12% women (522 workers), 10% Indigenous
18 (419 workers). There were 243 apprentices working on the Project, which is 15% of

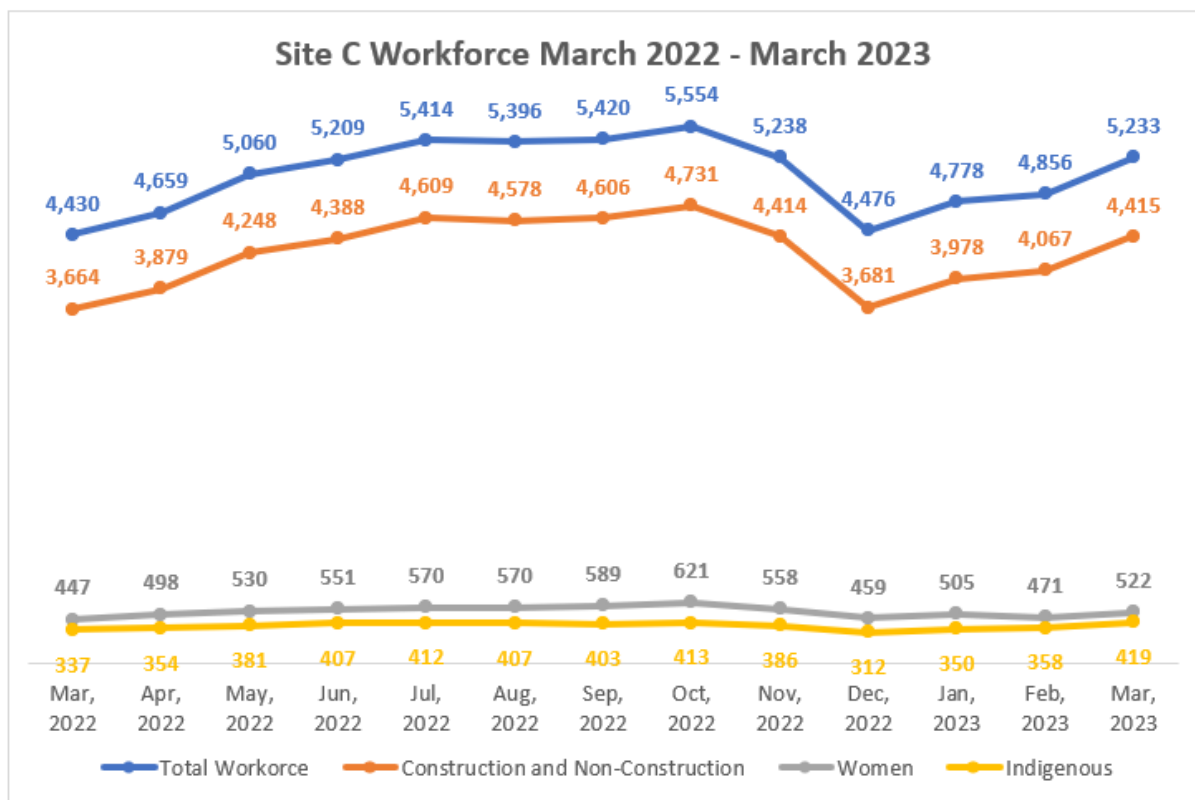
¹⁹ Employment numbers provided by Site C contractors and consultants are subject to revision. Data not received by the Project deadline may not be included in the above numbers. Employment numbers are direct only and do not capture indirect or induced employment.

²⁰ 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.

1 the apprenticeable trades within the construction and non-construction workforce.
 2 These workers were working for various contractors as apprentice carpenters,
 3 electricians, millwrights, ironworkers, mechanics, boilermakers and plumbers.
 4 [Figure 2](#) shows the monthly Site C workforce over the period from March 1, 2022 to
 5 March 31, 2023.

6 **Figure 2 Site C Workforce March 2022 to**
 7 **March 2023²¹**



²¹ The Indigenous workers and women workers numbers are a subset of the construction and non-construction contractors workforce number.

11.3 Training and Capacity-Building Initiatives

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

Northern Lights College Foundation continues to distribute the BC Hydro Trades and Skilled Training Bursary Awards, established in 2013. As of March 31, 2023, a total of 290 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, on-site contractors continue to explore opportunities for apprentice and other training to take place on-site.

BC Hydro worked with Northern Lights College and Site C contractors to develop several on-site pilot programs which have been successfully delivered at site and virtually over the past couple of years.

Joint BC Hydro and Contractor Site Training

In March 2023, BC Hydro continued to facilitate joint training sessions on the Builders Code. 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 March 8, 2023. Eight local governments and four local First Nations communities (McLeod Lake Indian Band, Doig River First Nation, Saúlteau First Nations, and Blueberry River First Nations) as well as the two MLAs for Peace River North and Peace River South, are invited to participate as committee members. Representatives from the Project’s major contractors may also attend the meetings as invited guests.

12.1.1 District of Hudson’s Hope Well Water System

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

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

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

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

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

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

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

11 In fall 2022, the District initiated a three-phase plan to switch its raw water source
12 from the well water system to the Peace River. BC Hydro and the District of
13 Hudson's Hope have finalized an agreement that will provide additional funding for
14 Phase 1 and Phase 2 of this plan. The District has installed a surface water intake
15 and treatment facility and is providing community water via this source under a boil
16 water advisory. The District is working to refine the operation of the facility and
17 expects to rescind the advisory in spring 2023.

18 **12.1.2 Generate Opportunities Fund**

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

22 The GO Fund is administered by Northern Development Initiative Trust on behalf of
23 BC Hydro. During this reporting period, BC Hydro distributed approximately
24 \$70,000 to eight non-profit organizations in the Peace Region and as of
25 March 31, 2023, 83 projects had received nearly \$730,000 since the fund was
26 launched in 2016.

1 **12.2 Business Liaison and Outreach**

2 No procurement notifications were sent out during the reporting period.

3 **12.2.1 Community Relations and Construction Communications**

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

9 *Construction Bulletins*

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

13 *Public Enquiries*

14 In total, BC Hydro received 198 public enquiries between January 1 and
15 March 31, 2023. [Table 17](#) shows the breakdown of some of the most common
16 enquiry types.

17 In total, BC Hydro has received more than 14,079 enquiries since August 2015.

1

Table 17 Public Enquiries Breakdown by Topic

Enquiry Type ²²	January 1 to March 31, 2023
Employment Opportunities	69
Business Opportunities	15
General Information	50
Construction Impacts ²³	28
Other ²⁴	36

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12.3 Labour and Training Plan

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In accordance with an Environmental Assessment Certificate condition, a Labour and Training Plan was developed and submitted to the Environmental Assessment Office on June 5, 2015. This plan, as well as Environmental Assessment Certificate Condition 45, includes annual reporting requirements to support educational institutions in planning their training programs to support potential workers in obtaining Project jobs in the future. This report has been issued to the appropriate training institutions in the northeast region annually since 2016. The most recent report was issued in August 2022. The next report is scheduled to be issued in July 2023.

²² This table is a sample of enquiry types and does not include all enquiry types received. Some enquiries received cover more than one topic.
²³ The nature of the construction impact enquiries are primarily related to air quality and dust, traffic and road conditions, and safety.
²⁴ "Other" accounts for enquiries related to a variety of other topics, such as wildlife and beavers, river closure, and tour requests.

1 **12.4 Human Health**

2 **12.4.1 Health Care Services Plan and Emergency Service Plan**

3 The on-site health clinic provides workers with access to primary and preventative
4 health care and work-related injury evaluation and treatment services and is
5 currently open seven days a week, 24 hours a day. Since opening the health clinic,
6 there has been a total of 45,743 patient interactions. During the reporting period,
7 there were 1,607 patient interactions, of which 321 were occupational and
8 1,286 non-occupational. Several preventive health themes were provided to workers
9 during the reporting period, including information on eye health and safety, cancer,
10 tuberculosis, and back care. In February 2023, the clinic began seeing workers
11 present with gastrointestinal symptoms. The case numbers continued to increase in
12 March 2023 resulting in the Northern Health Authority declaring an outbreak status
13 on March 24, 2023. BC Hydro worked closely with Northern Health to manage the
14 outbreak, implementing a number of measures such as enhanced cleaning of the
15 kitchen and dining room, enforcement of mandatory handwashing, removal of self-
16 serve stations in the dining room, and all confirmed cases needed to isolate for
17 48 hours. The outbreak was declared over on April 14, 2023.

18 **12.5 Property Acquisitions**

19 Property acquisitions required for the Project remain on track. During the reporting
20 period, BC Hydro acquired land and rights from a number of landholdings required
21 prior to reservoir filling and substantially advanced the remaining acquisitions.

22 BC Hydro continues to focus on land acquisitions to enable upcoming reservoir
23 filling. Up to four remaining acquisitions are required prior to reservoir filling. Land
24 and rights will be acquired from a further 12 landholdings within the first year of
25 reservoir operations.

26 In cases where BC Hydro acquired or expropriated land or rights for the Project
27 under the *Expropriation Act*, notices of claim have been filed by the owners to keep

1 open their rights to claim further compensation under the *Expropriation Act* as noted
 2 in section [8](#) of this report.

3 **12.6 Plans During Next Six Months**

4 [Table 18](#) shows the key milestones for activities planned during the next six months,
 5 April 2023 to September 2023.

6 **Table 18 Key Milestones for Activities Planned**
 7 **During the Next Six Months (April 2023 to**
 8 **September 2023)**

Milestone	Performance Measurement Baseline (June 2021)	Plan Date (Control Date ²⁵)	Forecast ²⁶	Status ²⁷ (Measured by Month)
All				
Burial Sites Relocation Construction Finish	March 2022	March 2022	June 2023	Late
Balance of Plant				
Powerhouse Drainage & Dewatering for Tailrace Fill Units 1-3 Complete	January 2023	January 2023	June 2023	Late
All Work in Powerhouse Bay 2 is Complete (Electrical)	n/a	June 2023	August 2023	At Risk
Permanent Fish Facility Complete (generating station and spillways contractor)	n/a	September 2023	September 2023	On Track
All Work in Powerhouse Bay 1 is Complete (Mechanical)	March 2023	March 2023	September 2023	Late
Powerhouse AC Station Service for Tailrace Filling	n/a	February 2023	September 2023	Late
All Work in Powerhouse Bay 1 is Complete (Electrical)	n/a	July 2023	September 2023	At Risk

²⁵ Control date reflects plan, adjusted for approved changes to milestone dates.

²⁶ As of March 31, 2023.

²⁷ As of March 31, 2023.

Milestone	Performance Measurement Baseline (June 2021)	Plan Date (Control Date ²⁵)	Forecast ²⁶	Status ²⁷ (Measured by Month)
Generating Station and Spillways				
Tailrace Gantry Crane Power Conductor System Complete	February 2022	February 2022	April 2023	Late
Intake Operating Gate and High Pressure Unit Assembly and Installation Complete - Intake Unit 2	July 2022	July 2022	May 2023	Late
Intake Operating Gate and High Pressure Unit Assembly and Installation Complete - Intake Unit 3	April 2022	April 2022	June 2023	Late
Intake Operating Gate and High Pressure Unit Assembly and Installation Complete - Intake Unit 1	January 2022	January 2022	July 2023	Late
Intake Operating Gate and High Pressure Unit Assembly and Installation Complete Intake Unit 4	April 2023	April 2023	July 2023	Late
Spillway Operating Gates 1-3 Wire Rope Hoists Installed (generating station and spillways contractor)	June 2023	June 2023	August 2023	At Risk
Gate and Wire Rope Hoist Assembly and Installation Complete – Spillway Operating Gate 3 (generating station and spillways contractor)	June 2023	June 2023	August 2023	At Risk
Unit 6 - Spiral Case Embedded and Generator 2nd Stage Concrete Complete; Pit Free	January 2023	January 2023	August 2023	Late
Low Level Outlet Gates 4 to 6 – High Pressure Unit Installation Complete	April 2023	April 2023	September 2023	Late
Main Civil Works				
Earthfill Dam up to Elevation 468.4 metres Complete	July 2023	July 2023	June 2023	On track
Ready for Tunnel Closure to Install Orifice (main civil works contractor)	June 2023	June 2023	June 2023	On track
Tunnel Conversion Work Complete	August 2024	August 2024	September 2023	On Track
Right Bank Foundation Enhancement				
Approach Channel Ready for Reservoir Filling	n/a	August 2023	August 2023	On Track
Reservoir				
Reservoir Prepared for Inundation	April 2024	April 2024	June 2023	On Track

Milestone	Performance Measurement Baseline (June 2021)	Plan Date (Control Date ²⁵)	Forecast ²⁶	Status ²⁷ (Measured by Month)
Turbines and Generators²⁸				
Unit 1 – Ready to Turn	May 2023	June 2023	June 2023	On Track
Unit 2 – Ready to Turn	August 2023	October 2023	September 2023	On Track
Highways				
Complete Highway 29	July 2023	July 2023	July 2023	On track

- 1 As noted in [Table 18](#), some of the required key milestones are at risk, or late.
- 2 BC Hydro is working with Site C contractors to recover delays and complete all
- 3 required scopes of work. BC Hydro is currently on track to achieve the approved
- 4 final unit in-service date of 2025.

5 **13 Impacts on Other BC Hydro Operations**

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

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

²⁸ 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.

Site C Clean Energy Project

Quarterly Progress Report No. 29

Appendix A

Site Photographs

Figure A-1 Phase 1 of the P6 island (an island in the Peace River near Old Fort) reclamation work was completed in mid-January 2023. The island's original soil has been spread over the disturbed areas to allow for growth of seedlings which will be planted in spring 2024 | January 2023



Figure A-2 The upstream wall of the passive spillway (foreground) where water enters the spillway | January 2023



Figure A-3 Assembly of the permanent gantry crane, used for heavy lifts, located above the intakes for the generating units | January 2023



Figure A-4 Formwork being built to encase the unit 5 penstock in concrete | January 2023

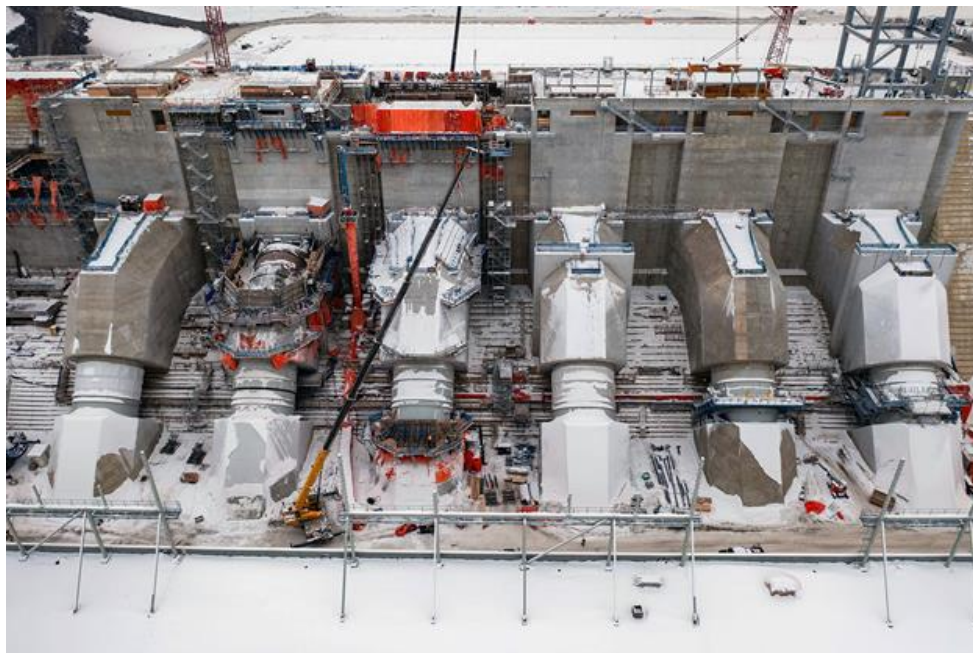


Figure A-5 Construction of the approach channel wall | February 2023



Figure A-6 Unit 1 rotor is lowered into position inside the unit 1 stator | February 2023



Figure A-7 The unit 2 and 3 trash rack guides are under the winter hoardings and work continues to complete the intakes for units 4 and 5 | March 2023



Figure A-8 The end wall of the auxiliary spillway as it transitions into the slurry wall. This is a trench filled with a concrete mix and rebar (slurry) down to bedrock to prevent water seepage | March 2023



Figure A-9 Where the Moberly and Peace rivers meet upstream of the dam (foreground), the debris boom can be seen, along with the inlet portals for the diversion tunnels (top right) where the river flows around the dam | March 2023



Figure A-10 The asphalt and sub-base gravel from the original Farrell Creek section of Highway 29 has been broken and hauled away to be ground and re-used in future road construction | March 2023



Site C Clean Energy Project

Quarterly Progress Report No. 29

Appendix B

**Work Completed Since Project Commencement
in 2015**

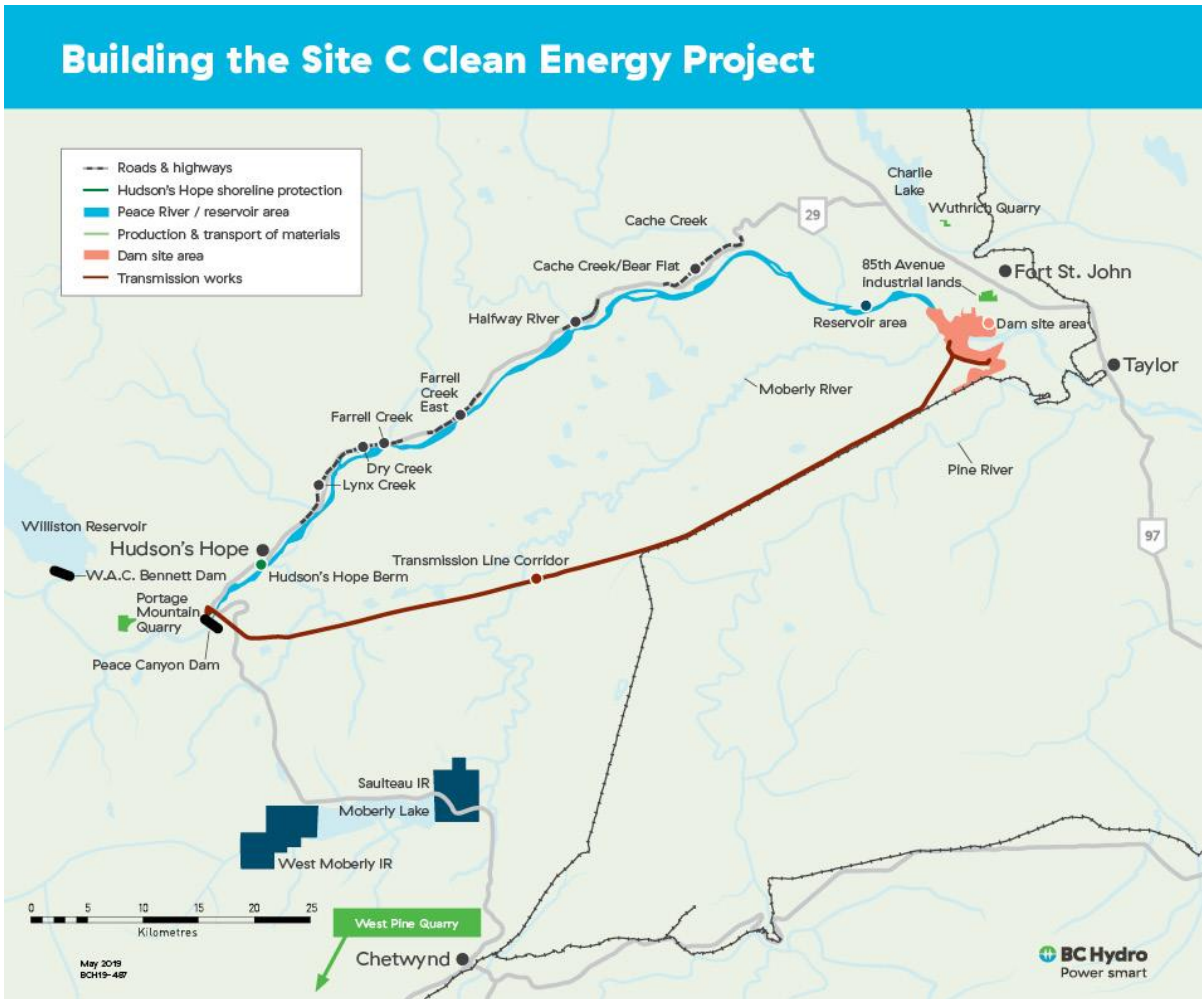
1 Construction began on July 27, 2015, and is ongoing. Since the commencement of
2 construction, the following work has been completed:

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

-
- 1 • Completion of the upstream and downstream cofferdams;
 - 2 • Construction and commissioning of the temporary fish passage facility;
 - 3 • Diversion of the Peace River around the Site C construction site;
 - 4 • Completion of the Peace Canyon 500 kV gas-insulated switchgear expansion to
5 enable connection of Site C to the BC Hydro electrical system;
 - 6 • Completion of the Site C substation and the first of two new 500 kV
7 transmission lines;
 - 8 • Completion of the finishing concrete work inside the 454-metre-long left bank
9 drainage tunnel;
 - 10 • Earthfill dam excavation, and the placement of 450,000 cubic metres of
11 roller-compacted concrete in the dam and core buttress, marking the
12 completion of the Project’s overall roller-compacted concrete placement
13 program. In total, nearly 1.7 million cubic metres of roller-compacted concrete
14 was placed since 2017;
 - 15 • Completion of the steel super-structure for the powerhouse;
 - 16 • Completion of the second of two new 500 kV transmission lines that connect
17 Site C to the Peace Canyon generating station;
 - 18 • Completion of the bridges at Dry Creek, Lynx Creek, Farrell Creek, Halfway
19 River, and Cache Creek as part of the Highway 29 realignment;
 - 20 • Completion of the shoreline protection berm at Hudson’s Hope;
 - 21 • Completion of the Maurice Creek spawning shoals; and
 - 22 • Completion of the headworks gantry crane.
 - 23 • [Figure B-1](#) shows the location of the key Site C components that are being
24 constructed.

1

Figure B-1 Site C Project Components



Site C Clean Energy Project

Quarterly Progress Report No. 29

Appendix C

Safety

1 Safety Incidents

2 The following safety incidents occurred from January 1 to March 31, 2023:

3 *Serious Safety Incidents*

- 4 1. While one contractor was dismantling a placing boom, a metal pin dropped
5 down the shaft, landing in the underwatering gallery pit where another
6 contractor was working.
- 7 2. During a high wind event, a scaffolding plank dislodged and fell near an
8 occupied smoking area.
- 9 3. A bulldozer rolled over while loosening frozen materials from the edge of an
10 aggregates pile.
- 11 4. While placing a panel, a rigger slipped and their arm was caught between the
12 panel and wall. The worker required medical attention for a fracture.
- 13 5. A worker slipped and fell while doing an environmental assessment on
14 Septimius Hill. The worker fractured their wrist, resulting in a lost time injury.
- 15 6. A worker tore their bicep while helping lift a 200-pound cabinet, requiring
16 surgery. The worker returned to work with modified duties.
- 17 7. A piece of 2x4 lumber dropped four feet and contacted a worker's hard hat.
- 18 8. Workers were removing penstock stiffener legs inside a Unit 4 penstock
19 section, and one leg fell about 100 feet, landing outside of the exclusion zone.
- 20 9. Hot water from a pressure washer contacted a worker's face.
- 21 10. A worker was coring on top of the unwatering gallery sump pit wall, at a height
22 of 20 feet, without a proper fall protection system.
- 23 11. Workers were exposed to grouting machine exhaust emissions inside hoarding.
- 24 12. A mobile crane operator fell while dismounting their crane. The operator
25 fractured their elbow and hip, resulting in a lost time injury.
- 26 13. A worker's arm was trapped inside an energized hydro-vac hose.

1 *All Injury Incidents*

2 There was also 13 injury incidents that occurred during this reporting period
3 including four lost time injuries and 9 medical attention injuries. Note that some of
4 the 13 serious incidents resulting in an injury will be listed under both serious
5 incidents and all injury incidents.

6 *Lost Time Injuries:*

- 7 1. A worker slipped and strained their knee while dismounting from their haul
8 truck.
- 9 2. A worker slipped on a patch of ice and fractured their wrist.
- 10 3. A worker slipped and fell while doing an environmental assessment on
11 Septimius Hill. The worker fractured their wrist.
- 12 4. A mobile crane operator fell while dismounting their crane. The operator
13 fractured their elbow and hip.

14 *Medical Attention Requiring Treatment Injuries:*

- 15 5. A worker fractured their hand while using a hammer.
- 16 6. A worker was using a utility knife to cut fabric material when the knife slipped.
17 The worker suffered a laceration on their hand that required stitches.
- 18 7. While a worker was adjusting a panel, the metal corner of the panel cut their
19 hand and they required stitches.
- 20 8. While placing a panel, a rigger slipped and their arm was caught between the
21 panel and wall. The worker required medical attention for a fracture.
- 22 9. A worker tore their bicep while helping lift a 200-pound cabinet, requiring
23 surgery. The worker returned to work with modified duties.
- 24 10. A worker cut their hand while using a drill.
- 25 11. Hot water from a pressure washer contacted a worker's face.
- 26 12. A worker fractured their finger while using a burke bar.

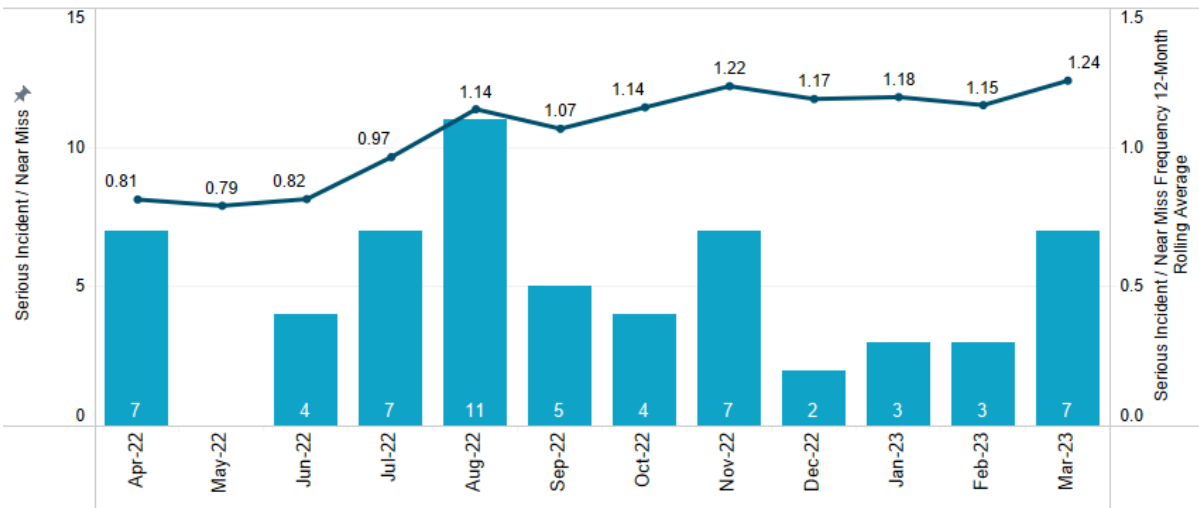
13. Concrete contacted a worker's face.

Safety Performance Frequency Metrics

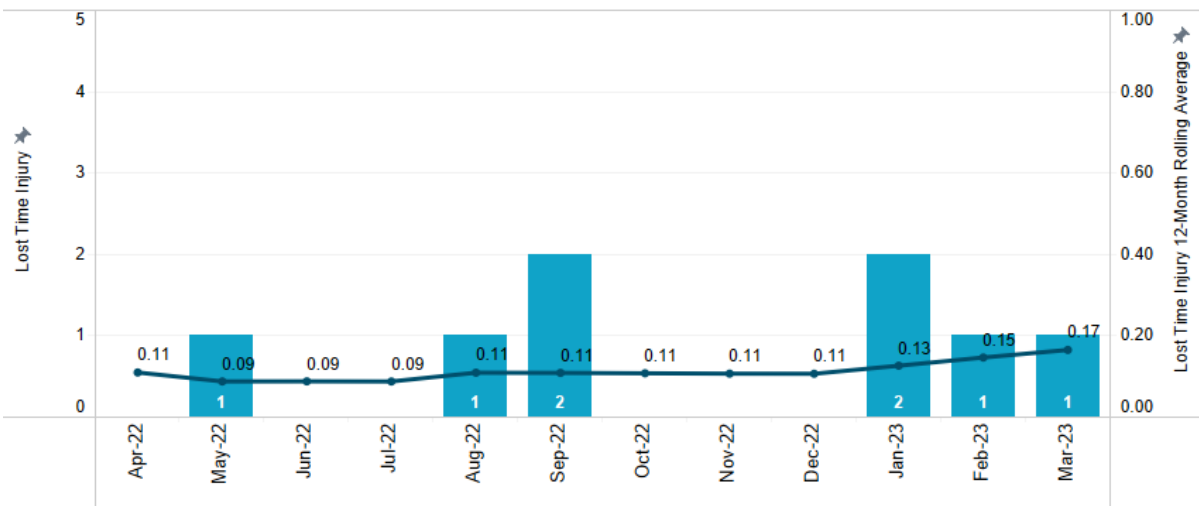
The following graphs provide information on employee and contractor serious incidents/near miss frequency, lost time injury frequency and all-injury frequency from April 2022 to March 2023.

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

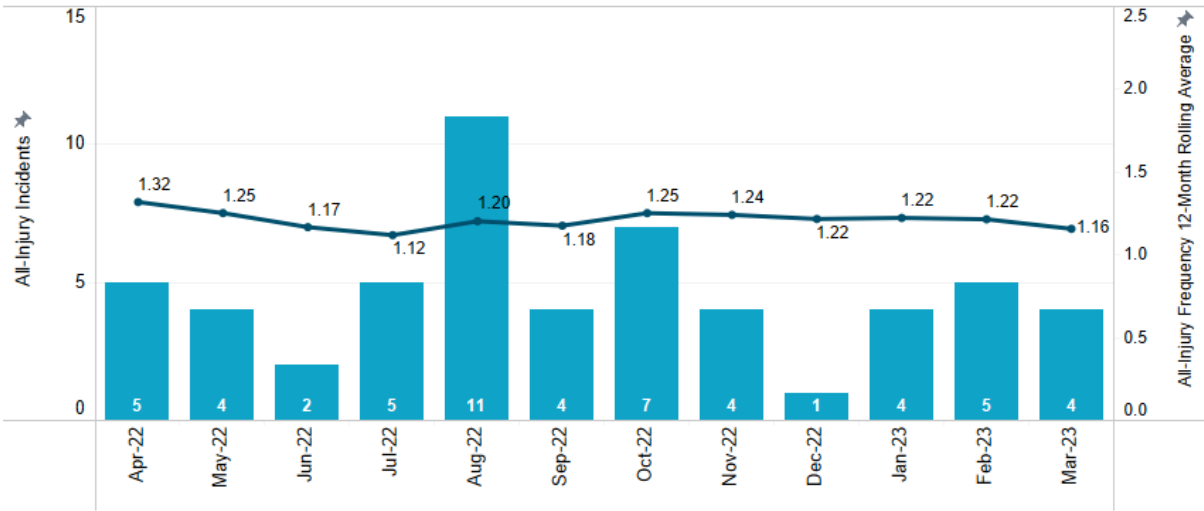
Employee & Contractor Serious Incident / Near Miss Frequency



Employee & Contractor Lost Time Injury Frequency



Employee & Contractor All-Injury Frequency



1 **Regulatory Inspections and Orders**

2 [Table C-1](#) lists the safety regulatory inspections and orders received from WorkSafeBC and the Ministry of Energy, Mines and Low Carbon Innovation from January 1, 2023, to March 31, 2023.

3 **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	January 16, 2023	WorkSafeBC	Main Civil Works	202217876001A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA71(2)(c); WCA72(2)(b); OHS3.21(1)(c); OHS8.22(1)
2	January 17, 2023	WorkSafeBC	GSS	202317876002A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1); WCA72(2)(b)
3	February 9, 2023	WorkSafeBC	GSS	202317876007A	Incident Investigation - injury of a worker	Closed	2	Failure to notify WorkSafeBC of a serious injury and freeze the scene of an accident (Serious Incident #4)	Order(s): WCA68(1)(a); WCA68(2) Reference(s): WCA69(1), WCA71(2)(c), WCA72(2)(b)
4	February 9, 2023	WorkSafeBC	GSS	202317876009C	Incident Investigation - injury of a worker	Closed	7	Inadequate safe work practices, safe lifting procedures and regular inspections of work area (Serious Incident #4)	Order(s): OHS14.40(2); OHS14.38(5); OHS4.33(1); OHS20.25(1); OHS4.39(1); OHS4.41; OHS3.5
5	February 28, 2023	WorkSafeBC	GSS	202317876015A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b)
6	March 6, 2023	WorkSafeBC	GSS	202317876016A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b)
7	March 13, 2023	WorkSafeBC	GSS	202317876018A	Incident Investigation - injury of a worker	In Progress	3	Inadequate safe work procedures and supervision (Serious Incident #9)	Order(s): OHS4.38(2); OHS8.8; OHS8.9(1)(a) Reference(s): WCA69(1)(b); WCA72(2)(b); WCA88(1); WCA88(2); OHS8.17(2); OHS8.17(4)
8	March 18, 2023	WorkSafeBC	GSS	202317876019A	Incident Investigation - injury of workers	In Progress	4	Inadequate ventilation and personal protective equipment and workplace monitoring (Serious Incident #11)	Order(s): OHS5.72; OHS8.40(2.1)(b); OHS8.32(a); OHS5.53(1)(b) Reference(s): WCA69(1); WCA71(2)(c); WCA72(2)(b); WCA79(2)(b); WCA88(1); WCA88(2); OHS5.73(b), WCA90(1)
9	March 20, 2023	WorkSafeBC	GSS	202317876020A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b)
10	March 20, 2023	WorkSafeBC	GSS	202317876021A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1); WCA71(2)(c); WCA72(2)(b); OHS14.34.1(a)
11	March 22, 2023	WorkSafeBC	GSS	202317876022A	Incident Investigation - injury of a worker	Closed	0	-	Reference(s): WCA69(1)(b); WCA72(2)(b)

Total

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Site C Clean Energy Project

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Appendix D

Workforce Overview

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**Table D-1 Current Site C Jobs Snapshot
 (January 2023 to March 2023)²⁹**

	Number of B.C. Workers and Total Workers	Construction and Non-Construction Contractors ³⁰ (Including Some Subcontractors). Excludes Work Performed Outside of B.C. (e.g., Manufacturing)	Engineers and Project Team ³¹	Total
January 2023	B.C. Workers	2,559	749	3,308
	Total Workers	3,978	800	4,778
February 2023	B.C. Workers	2,590	740	3,330
	Total Workers	4,067	789	4,856
March 2023	B.C. Workers	2,837	760	3,597
	Total Workers	4,415	818	5,233

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

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

BC Hydro has contracted companies for major contracts, such as main civil works, who have substantial global expertise. During the month of March 2023, there were no workers in specialized positions working for a Site C construction and non-construction contractors, who were subject to the Labour Market Impact Assessment process under the Federal Temporary Foreign Worker Program. Additionally, there were 39 management and professionals working for Site C construction and non-construction contractors through the Federal International Mobility Program.

²⁹ Employment numbers are direct only and do not capture indirect or induced employment.
³⁰ 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.
³¹ 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.

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**Table D-2 Site C Apprentices Snapshot
(January 2023 to March 2023)**

Month	Number of Apprentices
January 2023	174
February 2023	201
March 2023	243

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

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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						

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

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**Table D-4 Indigenous Inclusion Snapshot
(January 2023 to March 2023)**

Month	Number of Indigenous Workers
January 2023	350
February 2023	358
March 2023	419

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

10 The information shown has been provided by BC Hydro’s onsite³² construction and
 11 non-construction contractors and their subcontractors that have a contractual
 12 requirement to report on Indigenous inclusion in their workforce.

³² Onsite includes work performed on Site C dam site, transmission corridor, reservoir clearing area, public roadwork, worker accommodation and services.

1 Employees voluntarily self-declare their Indigenous status to their employer and
2 there may be Indigenous employees that have chosen not to do so; therefore, the
3 number of Indigenous employees may be higher than shown in [Table D-4](#).

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

8 *Women*

9 In March 2023, there were 522 women working for Site C construction and
10 non-construction contractors. The number of women was provided by on-site
11 construction and non-construction contractors and engineers that have a contractual
12 requirement to report on the number of women in their workforce.

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Appendix E

**Technical Advisory Board and Independent
International Dam Experts Report**

There were no reports issued by the Technical Advisory Board or the independent international dam experts during the reporting period.

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Appendix F

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

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ATTACHMENT

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Appendix G

Project Progression

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Appendix H

Detailed Project Expenditure

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