BC Hydro
Power smart

Fisheries and Aquatic Habitat Management Plan Annual Report: Jan 1, 2022 to Dec 31, 2022

Site C Clean Energy Project

March 29, 2023

Table of Contents

1.0 Introduction 4

1.1 Background 4

1.2 Status of Project Construction 5

1.3 Summary 6

2.0 Fisheries and Aquatic Habitat Management Plan 7

3.0 Summary of Plan Implementation 21

Section 3.1 “Remove temporary structures as soon as they are no longer required.” 21

Section 3.2 “Maintain a 15 m machine free zone adjacent to watercourses during reservoir clearing (as measured from the Ordinary High Water Mark).” 21

Section 3.3 “Place material relocation sites (R5a, R5b, and R6) 15 m back from the mainstem to avoid affecting Peace River fish habitat.” 21

Section 3.4 “Contour mainstream bars to reduce potential for fish stranding, as advised by FLNR.” 21

Section 3.5 “Construct the Hudson‘s Hope shoreline protection with large material that will provide replacement fish habitat.” 21

Section 3.6 “Incorporate additional fish habitat features (e.g., shear zones and point bars) into the final design of the Hudson‘s Hope shoreline protection.” 21

Section 3.7 “Contour Highway 29 borrow sites prior to decommissioning to provide littoral fish habitat in the reservoir.” 22

Section 3.8 “Increase wetted habitat by creating new wetted channels and restoring back channels on the south bank island downstream of the dam. Enhance side channel complexes between the dam site and the confluence of the Peace and Pine rivers during low flows.”….22

Section 3.9 “The Plan shall include: Erosion and sediment control measures, riparian zone avoidance measures, best practices for watercourse crossings, in-stream work guidelines, and in-stream work timing windows.”” 22

Section 3.10 “The Plan shall include: Measures to avoid or reduce fish stranding.” 26

Section 3.11 “Measures to mitigate obstructed upstream fish passage for bull trout and, as appropriate and feasible, other migrating fish species.” 26

Section 3.12 “The Plan shall include: An approach to monitor changes to fish and fish habitat baseline conditions in the Local Assessment Area 26

Section 3.13 “The Plan shall include: Any other requirements identified by Fisheries and Oceans Canada in support of its application for an authorization under the Fisheries Act.”…28

Section 3.14 “The Proponent shall develop an offsetting plan, in consultation with Fisheries and Oceans Canada, to offset residual serious harm to fish and monitor the effectiveness of offsets.” 28

Section 3.15 Conditions 8.9 and 8.10 refer to “an analysis for any physical fish habitat offsets proposed in the offsetting plan.” 28

4.0 Analysis of Plan Implementation 29

5.0 Revisions to the Plan 29

6.0 Qualified Professionals.....29

LIST OF TABLES

Table 1. Environmental Assessment Certificate Conditions and Relevant Plan Sections..... 7

1.0 Introduction

1.1 Background

The Fisheries and Aquatic Habitat Management Plan (FAHMP, or the Plan) describes the measures that will be used to mitigate the adverse effects of the Site C Clean Energy Project (the Project) on fish and fish habitat during the construction and operation of the Project. The Plan has been developed in accordance with the conditions of the Project's provincial Environmental Assessment Certificate (EAC #E14-02, or the EAC), including the EAC's Schedule B, and Federal Decision Statement issued for the Project, dated October 14, 2014 and reissued November 25, 2014 (the FDS). FDS conditions 8.3 to 8.7 refer to "a fish and fish habitat management plan", while EAC condition 4 refers to "a Fisheries and Aquatic Habitat Management Plan". Each refers to similar requirements for fish and fish habitat. For simplicity, BC Hydro developed one plan, entitled "Fisheries and Aquatic Habitat Management Plan" (FAHMP, or the Plan) that satisfies the conditions of both the EAC and the FDS. Revision 2 of the FAHMP was submitted on December 20, 2021, and is available on the Project's website[1].

As described in the FAHMP Section 7 and per the reporting requirement in condition 8.7 of the FDS – Implementation and Reporting, BC Hydro will provide annual reports on the implementation of the Plan to the Canadian Environmental Assessment Agency, now named the Impact Assessment Agency of Canada (the Agency). Condition 8.7 states:

> The Proponent shall implement the plan and provide to the Agency an analysis and summary of the implementation of the plan, as well as any amendments made to the plan in response to the results, on an annual basis during construction and for the first ten years of operation and once every five years for the next 20 years.

This report is submitted to satisfy Condition 8.7. BC Hydro previously submitted to the Agency annual reports for earlier reporting periods of Project construction. The reporting period for this report covers January 1, 2022 through December 31, 2022. This report is specific to the implementation of mitigation measures for fisheries and aquatic habitat that are required under FDS conditions 8.3 to 8.7.

1.2 Status of Project Construction

Construction activities during the reporting period included components described in the Project's Environmental Impact Statement (Volume 1 Section 4 Project Description, sub-section .4 Construction).

Construction began at the Site C Project on July 27, 2015 and has been ongoing since.

Following the diversion of the Peace River in fall 2020, the Project has advanced construction in preparation to fill the reservoir.

The Project's website[2] provides information and regular updates on construction activities.

[1] Available at: https://www.sitecproject.com/document-library/environmental-and-socio-economic-plans-and-reports
[2] Information on construction activities available at the: https://www.sitecproject.com/construction-activities/construction-bulletins

1.3 Summary

Per FDS Condition 8.7, this report documents the measures to mitigate the adverse effects of the Project on fish and fish habitat during the reporting period (Tables 1 and 2). Standard mitigation measures and Project-specific mitigation measures were implemented to mitigate potential effects on fish and fish habitat in accordance with the implementation schedules in the FAHMP. BC Hydro audits compliance with these requirements by reviewing contractor Environmental Protection Plans (EPPs) and conducting audits and inspections during construction to verify implementation of the mitigation measures outlined in EPPs. The effective implementation of these measures was documented during most inspections. Corrective actions, where required, were identified and implemented.

Annual reporting will continue to document the implementation of the FAHMP. In addition, monitoring of physical habitat, lower trophic levels, fish abundance, and community composition under the Project's Fisheries and Aquatic Habitat Monitoring and Follow-up Program[3] (FAHMFP) will provide information to evaluate the effectiveness of these measures to mitigate potential effects on fish and fish habitat over the longer term.

[3] Available at: https://sitecproject.com/sites/default/files/Fisheries-and-Aquatic-Habitat-Monitoring-and-Follow-up-Program.pdf

2.0 Fisheries and Aquatic Habitat Management Plan

The objective of this report (the Report) is to describe the mitigation measures implemented during this period to meet the reporting requirements of FDS condition 8.7. The Report follows the information in Section 7.0 Implementation and Reporting of the FAHMP.

Tables 1 and 2 outline the structure of the Report. These tables list the Conditions (and components of the Conditions), as well as the corresponding sections of the FAHMP that pertain to the Conditions. These tables also list whether components within the Conditions occurred or were implemented during the reporting period, and if so, the corresponding section in the Report that summarizes the implementation. Section 7 of the Report is an analysis of implementation of the Plan.

Table 1. Environmental Assessment Certificate Conditions and Relevant Plan Sections.

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
FISH AND FISH HABITAT				
4	The EAC Holder must manage harmful Project effects on fish and fish habitats during the construction and operation phases by implementing mitigation measures detailed in a Fisheries and Aquatic Habitat Management Plan.	Described in rows below.	Described in rows below	Not Applicable
	The Fisheries and Aquatic Habitat Management Plan must be developed by a QEP	No. Occurred prior to the reporting period.	Not Applicable	This condition is addressed in FAHMP Section 8.0 Qualified Professionals
	The Fisheries and Aquatic Habitat Management Plan must include at least the following:	Described in rows below.	Described in rows below	Described in rows below

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	• Remove temporary structures as soon as they are no longer required.	Yes	Section 3.1	These conditions are addressed in Construction Environmental Management Plan (CEMP) Section 4.5, Fisheries and Aquatic Habitat Management.
	• Maintain a 15 m machine free zone adjacent to watercourses during reservoir clearing (as measured from the Ordinary High Water Mark).	Yes	Section 3.2	
	• Place material relocation sites (R5a, R5b, and R6) 15 m back from the mainstem to avoid affecting Peace River fish habitat.	Yes	Section 3.3	
	• Contour mainstream bars to reduce potential for fish stranding, as advised by FLNR.	Yes	Section 3.4	This condition is addressed in FAHMP Section 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement.
	• Incorporate fish habitat features into the final capping of material relocation sites upstream of the dam.	No, planned for implementation during subsequent stage of construction.	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.4, Dam Site Material Relocation Site Enhancement.

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	• Contour and cap with gravels and cobble substrate the spoil area between elevations 455 m and 461 m to provide a productive fish habitat that will be available to fish during the operation phase.	No, planned for implementation during subsequent stage of construction.	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.4, Dam Site Material Relocation Site Enhancement.
	• Include fish habitat features (e.g., shears, large riprap point bars, etc.) in the final design of the north bank haul road bed material that would be placed in the Peace River.	No, constructed and reported during previous reporting period.	Not Applicable	This condition is addressed in FAHMP Section 6.2.1.2, River Road Habitat Enhancement.
	• Incorporate fish habitat features into the final design of the Highway 29 roadway that would border the reservoir, east of Lynx Creek.	Yes	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.2, Highway 29 Realignment Fish Habitat.
	• Construct the Hudson‘s Hope shoreline protection with large material that will provide	Yes	Section 3.5	This condition is addressed in FAHMP Section 6.2.3.3, Hudson’s Hope Shoreline

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	replacement fish habitat.	stage of construction.		Protection Fish Habitat.
	• Incorporate additional fish habitat features (e.g., shear zones and point bars) into the final design of the Hudson's Hope shoreline protection.	Yes	Section 3.6	This condition is addressed in FAHMP Section 6.2.3.3, Hudson's Hope Shoreline Protection Fish Habitat.
	• Contour Highway 29 borrow sites prior to decommissioning to provide littoral fish habitat in the reservoir.	Yes	Section 3.7	This condition is addressed in FAHMP Section 6.2.3.1, Site C Reservoir Shoreline Enhancement.
	• Cap material repositioning areas with gravel and cobble, and contour to enhance fish habitat conditions.	No, planned for implementation during subsequent stage of construction.	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.4, Dam Site Material Relocation Site Enhancement.
	• Plant a 15 m wide riparian area along the reservoir shoreline adjacent to BC Hydro-owned farmland where necessary to provide riparian habitat and bank stabilization except as	No, planned for implementation during subsequent stage of construction.	Not Applicable	This condition is addressed in FAHMP Section 6.2.3.5, Reservoir Shoreline Riparian Planting.

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	approved by the onsite environmental monitor.			
	• Increase wetted habitat by creating new wetted channels and restoring back channels on the south bank island downstream of the dam.	Yes	Section 3.8	This condition is addressed in FAHMP Section 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement.
	• Enhance side channel complexes between the dam site and the confluence of the Peace and Pine rivers during low flows.	No, additional works planned for implementation during subsequent stage of construction.	Not Applicable	This condition is addressed in FAHMP Section 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement.
	• Manage reservoir fluctuation within a 1.8 m maximum normal operating range from the maximum operating level of 461.8 m.	No. Will occur during Project operations.	Not Applicable	
	• If the reservoir deviates from the normal operating range, the EAC Holder must report the event in accordance	No. Condition applies to Project operations.	Not Applicable	

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	with water licence requirements.			
	The EAC Holder must manage construction footprints to reduce the harmful Project effects on fish and fish habitat, in accordance with the conditions of the applicable *Fisheries Act* authorization(s) and direction provided by FLNR.	Yes. Construction footprints were managed in accordance with the conditions of the applicable *Fisheries Act* authorizations.		
	This draft Fisheries and Aquatic Habitat Management Plan must be provided to FLNR, MOE and Aboriginal Groups for review a minimum of 90 days prior to commencement of construction.	No. Occurred prior to the reporting period.	Not Applicable	This condition is addressed in FAHMP Section 2.3 Consultation
	The EAC Holder must file the Final Fisheries and Aquatic Habitat Management Plan with EAO, FLNR, MOE and Aboriginal Groups a minimum of 30 days prior to commencement of construction.	No. Occurred prior to the reporting period.	Not Applicable	
	The EAC Holder must develop, implement			

EAC Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	and adhere to the Final Fisheries and Aquatic Habitat Management Plan, and any amendments, to the satisfaction of EAO.			

Table 2. Federal Decision Statement Conditions and Relevant Plan Sections.

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
8.	**Fish and Fish Habitat**			
8.1	The Proponent shall undertake efforts to avoid or minimize adverse impacts to fish and fish habitat to ensure the continued availability of fisheries resources in the Local Assessment Area.	Yes, see rows below.	See rows below.	
8.2	The Proponent shall prepare and submit to the Agency an annual schedule identifying the location and timing of construction activities that may impact fish or fish habitat 90 days prior to such activities	Yes	Not applicable	Submitted under separate cover.

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	occurring.			
8.3.	The Proponent shall prepare, in consultation with Fisheries and Oceans Canada, Reservoir Area Aboriginal groups and Immediate Downstream Aboriginal groups, a fish and fish habitat management plan.	No. Occurred prior to the reporting period.	Not applicable	These conditions are addressed in the Fisheries and Aquatic Habitat Management Plan (FAHMP).
8.4	The Plan shall include:			
8.4.1.	Identification of baseline conditions for fish and fish habitat in the Local Assessment Area;	No. Occurred prior to the reporting period	Not applicable	This condition is addressed in FAHMP Section 4.0, Fish and Fish Habitat Baseline Conditions.
8.4.2.	Measures to mitigate potential effects on fish and fish habitat during construction and operation of the Designated Project including:	Yes, see rows below.	See rows below.	This condition is addressed in FAHMP Section 6.0, Fish and Fish Habitat Mitigation.
8.4.2.1.	Erosion and sediment control measures, riparian zone avoidance measures, best practices for watercourse crossings, in-stream work guidelines, and in-stream work timing windows;	Yes	Section 3.9	These conditions are addressed in CEMP Section 4.5, Fisheries and Aquatic Habitat Management.

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
8.4.2.2.	Measures to avoid or reduce fish stranding;	Yes	Section 3.10	This condition is addressed in CEMP Section 4.5, Fisheries and Aquatic Habitat Management. See also FAHMP 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement.
8.4.2.3.	Operational practices, technologies and design features that minimize downstream fish entrainment past the dam site;	No, planned for implementation during subsequent stage of construction.	Not Applicable	This condition is addressed in FAHMP Section 6.2.2.1, Fish Entrainment.
8.4.2.4.	Measures to mitigate the effects of Total Dissolved Gas concentrations in tailwater on fish; and	No, planned for implementation during subsequent stage of construction.	Not Applicable	This condition is addressed in FAHMP Section 6.2.2.3, Mitigation of Total Dissolved Gas.
8.4.2.5.	Measures to mitigate obstructed upstream fish passage for bull trout and, as appropriate and feasible, other migrating fish species;	Yes	Section 3.11	This condition is addressed in FAHMP Section 6.2.2.2, Upstream Fish Passage.
8.4.3.	An approach to monitor changes to fish and fish habitat baseline	Yes	Section 3.12	The approach is summarized in FAHMP Section 2.2, Scope as well

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	conditions in the Local Assessment Area;			in the monitoring programs listed in Appendix D. Further information on monitoring is provided in the Fisheries and Aquatic Habitat Monitoring and Follow-up Program.
8.4.4.	An approach to monitor and evaluate the effectiveness of mitigation or offsetting measures and to verify the accuracy of the predictions made during the environmental assessment on fish and fish habitat; and	Yes, monitoring and evaluation occurred per the approach in the Project's Fisheries and Aquatic Habitat Monitoring and Follow-up Program.	Section 3.12	The approach is summarized in FAHMP Section 2.2, Scope as well in the monitoring programs listed in Appendix D. Further information on monitoring is provided in the Fisheries and Aquatic Habitat Monitoring and Follow-up Program.
8.4.5.	Any other requirements identified by Fisheries and Oceans Canada in support of its application for an authorization under the *Fisheries Act*.	Not applicable	Section 3.13	To date, Fisheries and Oceans Canada has not identified other requirements in support of an application for an authorization under the *Fisheries Act*. Should DFO identify other requirements, these will be taken into account in

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
				amendments to the plan, as described in condition 8.7
8.5.	The Proponent shall submit a draft copy of the plan to the Agency, Fisheries and Oceans Canada, Reservoir Area Aboriginal groups and Immediate Downstream Aboriginal groups 90 days prior to submitting its application for authorization under the *Fisheries Act*.	No. Occurred prior to the reporting period.	Not Applicable	This condition is addressed in FAHMP Section 2.3 Consultation
8.6.	The Proponent shall submit to the Agency the final plan a minimum of 30 days prior to submitting its application for authorization under the Fisheries Act. When submitting the final plan, the Proponent shall provide to the Agency an analysis that demonstrates how it has appropriately considered the input, views or information received from Fisheries and Oceans Canada, Reservoir Area Aboriginal groups and Immediate Downstream Aboriginal groups and shall describe how it has taken the plan into consideration as part of its application for an	No. Occurred prior to the reporting period.	Not Applicable	This condition is addressed in FAHMP Section 2.3 Consultation

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	authorization under the Fisheries Act.			
8.7.	The Proponent shall implement the plan and provide to the Agency an analysis and summary of the implementation of the plan, as well as any amendments made to the plan in response to the results, on an annual basis during construction and for the first ten years of operation and once every five years for the next 20 years.	Yes	This report addressed Condition 8.7	This condition is addressed in FAHMFP Section 7 Reporting
8.8	The Proponent shall develop an offsetting plan, in consultation with Fisheries and Oceans Canada, to offset residual serious harm to fish and monitor the effectiveness of offsets.	No, plan developed during a previous reporting period.	Section 3.14	Offsetting plans were submitted as a component of the applications for authorization under the Fisheries Act. Information from offsetting plans was submitted to CEAA as described under FDS Condition 8.9.
8.9	The Proponent shall conduct an analysis for any physical fish habitat offsets proposed in the offsetting plan, in consultation with Transport Canada, Environment Canada, Reservoir Area Aboriginal groups and Immediate Downstream	No, occurred during a previous reporting period.	Section 3.15	These conditions were met in a separate analysis.

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
	Aboriginal groups, that includes:			
8.9.1	the effects on migratory birds and their habitats;			
8.9.2	the effects on terrestrial species and their habitats;			
8.9.3	the effects on species at risk and species at risk habitat;			
8.9.4	the effects on current use of lands and resources for traditional purposes by Aboriginal peoples;			
8.9.5	identification of navigation impacts; and			
8.9.6	identification of potential sources of contamination (e.g. mercury).			

FDS Condition	Condition	Occurred During Construction Period for Report	Section in this Report	Plan Reference
8.10	The Proponent shall submit to the Agency the results of the analysis in condition 8.9, including a description of how the input, views or information received have been taken into account in finalizing its fish habitat offsetting plan.	No, occurred during a previous reporting period.	Section 3.15	This condition was met in a stand-alone document that was submitted to CEAA on June 24, 2016 prior to implementing the offsetting plan.

3.0 Summary of Plan Implementation

Section 3.1 "Remove temporary structures as soon as they are no longer required."

All temporary bridges used to access areas for reservoir clearing were removed once clearing activities were completed. BC Hydro is currently seeking an amendment to this EAC Condition in order to allow for some components of temporary instream structures to be retained for inundation. This would occur when retaining the structure is assessed by a QEP to provide a potential benefit to fish and fish habitat, and/or removing the structure would cause additional disturbance to fish habitat. BC Hydro will comply with any terms related to the amendment request and EAO's final decision on the request.

Section 3.2 "Maintain a 15 m machine free zone adjacent to watercourses during reservoir clearing (as measured from the Ordinary High Water Mark)."

Reservoir clearing occurred during the reporting period. In February 2019, BC Hydro received an EAC amendment (EAC Amendment #4) allowing for the use of machines adjacent to watercourses during reservoir clearing when worker safety prohibits manual tree falling and vegetation removal methods. Works must be addressed in a site-specific prescription prepared and endorsed by a QEP. The rationale for the safety exemption must be documented in the prescription.

Section 3.3 "Place material relocation sites (R5a, R5b, and R6) 15 m back from the mainstem to avoid affecting Peace River fish habitat."

Development of Relocated Surplus Excavated Material (RSEM) areas R5a, R5b and R6 commenced greater than 15 m back from the mainstem to avoid affecting Peace River fish habitat.

Section 3.4 "Contour mainstream bars to reduce potential for fish stranding, as advised by FLNR."

Peace River Channel Contouring and Side Channel Enhancement (described in FAHMP Section 6.2.1.1) are scheduled to occur over many years, per the schedule in the FAHMP. Contouring of some bar areas occurred during previous reporting periods. Construction works to contour a mainstream bar in the Peace River was completed during the reporting period. As well, physical and biological monitoring of the previously contoured bar occurred during the reporting period, in accordance with the FAHMP.

Section 3.5 "Construct the Hudson's Hope shoreline protection with large material that will provide replacement fish habitat."

Construction of the Hudson's Hope shoreline protection, including riprap placement in the Peace River was completed in 2022. Riprap will provide cover habitat for fish species such as rainbow trout, and a diversity of habitat relative to the predominantly sandy shoreline in these areas of the Site C reservoir.

Section 3.6 "Incorporate additional fish habitat features (e.g., shear zones and point

bars) into the final design of the Hudson's Hope shoreline protection."

Construction of the Hudson's Hope shoreline protection, completed in 2022, included placement of boulder complexes at the toe of the riprap on the reservoir bed (described in FAHMP Section 6.2.3.3). The boulders will create reservoir reef habitat which would be utilized by larger (i.e., 20-30 cm) rainbow and bull trout.

Section 3.7 "Contour Highway 29 borrow sites prior to decommissioning to provide littoral fish habitat in the reservoir."

The "Peaceview" Highway 29 borrow area near Cache Creek was contoured to provide reservoir littoral zone habitat between elevation 456 m and 459.75 m. Works at this borrow area were completed in 2022. Reservoir littoral habitat development is described in the FAHMP Section 6.2.3.1, Site C Reservoir Shoreline Enhancement.

Section 3.8 "Increase wetted habitat by creating new wetted channels and restoring back channels on the south bank island downstream of the dam. Enhance side channel complexes between the dam site and the confluence of the Peace and Pine rivers during low flows."

Construction of the fish habitat enhancement sites in side channels on the south bank of the Peace River downstream of the dam site began in 2018. Habitat enhancement at this site is described in the FAHMP Section 6.2.1.1, Peace River Channel Contouring and Side Channel Enhancement. Construction of phase 1 was complete in December 2019.

Section 3.9 "The Plan shall include: Erosion and sediment control measures, riparian zone avoidance measures, best practices for watercourse crossings, in-stream work guidelines, and in-stream work timing windows."

These measures are listed in the CEMP Section 4.5, Fisheries and Aquatic Habitat Management. The CEMP specifies the requirements for site-specific EPPs that are developed for specific components of work. BC Hydro audits compliance with this requirement by reviewing contractor EPPs and conducting environmental audits during construction to verify implementation of the EPPs. In addition, BC Hydro has implemented an enhanced site-wide erosion and sediment control program that requires assessment of sites and preparation of detailed prescriptions by Qualified Erosion and Sediment Control Professionals and overseeing installation of measures by these professionals and ongoing re-inspections.

Suspended sediment levels in the Peace River, as well as inputs to the Peace River as a result of construction, were monitored during the reporting period and indicated that construction inputs were low relative to the background suspended sediment levels. These results are consistent with past years and predictions in the Project's Environmental Impact Statement (EIS). Baseline suspended sediment load in the Peace River at the dam site is estimated at 1,136,000 tonnes / year, and increases to 3,540,000 tonnes / year downstream of the Pine River confluence (Table 5.3 and Fig 5.3a of the EIS, Vol 2 Appendix I Fluvial Geomorphology and Sediment Transport Technical Data Report). Over the ten-year construction phase, fine sediment inputs related to instream construction activities would represent an estimated increase of 0.2% to 0.3% above mean annual baseline sediment load immediately downstream of the Site C dam site (EIS Volume 2 Appendix I).

Section 3.10 "The Plan shall include: Measures to avoid or reduce fish stranding."

The contouring of mainstem bars (described in the Section 3.4) has reduced the risk of fish stranding by reducing the area of the bars that dewaters when discharge in the Peace River fluctuates.

Section 3.11"Measures to mitigate obstructed upstream fish passage for bull trout and, as appropriate and feasible, other migrating fish species."

Fish passage management was implemented as described in the Fish Passage Management Plan and FAHMP Section 6.2.2.2, Upstream Fish Passage. River diversion represented the first activity in the construction of the Project to affect upstream fish movement in the Peace River. As such, the temporary upstream fish passage facility (hereafter temporary facility) was operated from April 1 to October 31, 2022 to pass fish upstream and allow them to fulfill portions of their lifecycles upstream of the Project. In general the operation of the temporary upstream fish passage facility was effective at providing for the upstream passage of fish. Three thousand seven hundred and seventy fish were sorted and sampled at the temporary facility and transported and released upstream of the Project. Specifically, the facility operator sorted 1812 Mountain Whitefish, 686 Redside Shiner, 506 Largescale Sucker, 473 Longnose Sucker, 133 White Sucker, 84 Northern Pikeminnow, 46 Arctic Grayling, 17 Bull Trout, 6 Rainbow Trout, 2 Pearl Dace, 1 Flathead Chub, 1 Kokanee, 1 Northern Pike, 1 Peamouth, and 1 Slimy Sculpin. More details can be found in the operations reports for 2022[4].

In 2022 water surface elevations at the temporary facility were high and above the operating range (i.e., engineering design criteria) of the temporary facility, which led to a number of adjustments to infrastructure and operations to allow the temporary facility to operate above design criteria. High water surface elevations also have the potential to reduce the biological effectiveness of the temporary facility. As a result, BC Hydro implemented the contingent measures listed in Section 4.8 of the Fish Passage Management Plan. Contingent measures consisted of weekly boat electroshocking surveys (hereafter contingent fish capture and transport) to capture target species downstream of the diversion tunnel outlet and transport and release them upstream of the Project. Only those species undergoing spawning migrations during the reporting period (EIS, Volume 2, Appendix O; BC Hydro 2015) were transported and released upstream of the Project. All other species were released at their capture location downstream of the Project. One thousand four hundred and eighty-five fish (652 Largescale Sucker, 637 Longnose Sucker, 70 Bull Trout, 67 White Sucker, 24 Rainbow Trout, 19 Arctic Grayling, and 16 Mountain Whitefish) were transported and released upstream of the Project via this contingent approach.

Section 3.12 "The Plan shall include: An approach to monitor changes to fish and fish habitat baseline conditions in the Local Assessment Area.

An approach to monitor and evaluate the effectiveness of mitigation or offsetting measures and to verify the accuracy of the predictions made during the environmental assessment on fish and fish habitat."

BC Hydro developed and implemented the FAHMFP to monitor changes in habitat conditions in the Local Assessment Area and the effectiveness of mitigation and offsetting measures, and to verify the predictions made during the environmental assessment. The general monitoring approach in the FAHMFP is to monitor changes in baseline conditions in the Local Assessment Area for physical habitat, lower trophic levels, fish abundance, and community composition. This

[4] Available at: https://sitecproject.com/document-library/environmental-and-socio-economic-plans-and-reports.

information will be used to evaluate the effectiveness of Project mitigation or offsetting measures and verify the accuracy of predictions made during the Environmental Assessment. Monitoring under the FAHMFP in 2022 has been summarized in BC Hydro's report: Fisheries and Aquatic Habitat Monitoring and Follow-up Program Annual Report: Jan 1, 2022 to Dec 31, 2022. This report, as well as previous reports under the FAHMFP are available on the Project website[4].

[3] Available at: https://www.sitecproject.com/document-library/environmental-management
[4] Available at: https://www.sitecproject.com/document-library/environmental-and-socio-economic-plans-and-reports

Section 3.13 "The Plan shall include: Any other requirements identified by Fisheries and Oceans Canada in support of its application for an authorization under the Fisheries Act."

Fisheries and Oceans Canada has not identified other requirements in support of an application for an authorization under the *Fisheries Act* in addition to those in the FAHMP.

Section 3.14 "The Proponent shall develop an offsetting plan, in consultation with Fisheries and Oceans Canada, to offset residual serious harm to fish and monitor the effectiveness of offsets."

Offsetting plans were developed in consultation with Fisheries and Oceans Canada, and are described in:

1. "Section 9.0 Offsetting Plan" of the document titled "DFO – Application for Authorization Site Preparation – Site C Clean Energy Project British Columbia Hydro and Power Authority"
2. "Section 9.0 Offsetting Plan" of the document titled "DFO – Application for Authorization Dam Construction, Reservoir Preparation, and Filling – Site C Clean Energy Project British Columbia Hydro and Power Authority"

Section 3.15 Conditions 8.9 and 8.10 refer to "an analysis for any physical fish habitat offsets proposed in the offsetting plan."

The analysis of physical fish habitat offsets[5] was completed and submitted to the Agency during a previous reporting period.

[5] "Site C Clean Energy Project, Site Preparation: Environmental Analysis of Physical Fish Habitat Offsets" dated Aug 5, 2015 and "Site C Clean Energy Project, Dam Construction, Reservoir Preparation and Filling: Environmental Analysis of Physical Fish Habitat Offsets" dated June 24, 2016.

4.0 Analysis of Plan Implementation

The FAHMP describes the following categories of measures:

- Standard mitigation measures during construction activities described in the CEMP (e.g., erosion and sediment control measures); and
- Project-specific mitigation measures described in the FAHMP (e.g., habitat enhancements for reservoir shoreline habitat enhancement works, capping of dam site material relocation site with fish habitat features).

During the reporting period, both standard mitigation measures and Project-specific mitigation measures were implemented to mitigate potential effects on fish and fish habitat.

Monitoring of physical habitat, lower trophic levels, fish abundance, and community composition under the FAHMFP will provide information to evaluate the effectiveness of these measures to mitigate potential effects on fish and fish habitat over the longer term.

5.0 Revisions to the Plan

The initial version of Fisheries and Aquatic Habitat Management Plan, Revision 1 dated June 1, 2015, was revised in 2021. These revisions were summarized in the 2021 annual report.

6.0 Qualified Professionals

This report was prepared by the following Qualified Individuals:

Qualified Individual	Expertise
Brent Mossop, MRM, RPBio	Fisheries
Dave Hunter, RPBio	Fisheries