

*Fisheries and Aquatic Habitat
Monitoring and Follow-up Program
Annual Report:
Dec 22, 2015 to Dec 31, 2016*

*Site C Clean Energy Project
March 1, 2017*

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Acronyms

EAC	Environmental Assessment Certificate
EAO	BC Environmental Assessment Office
EIS	Environmental Impact Statement
FAHMFP	Fisheries and Aquatic Habitat Monitoring and Follow-up Program
FLNR	BC Ministry of Forests, Lands and Natural Resource Operations
MOE	BC Ministry of Environment

1.0 Introduction

1.1 Background

The Fisheries and Aquatic Habitat Monitoring and Follow-up Program (FAHMFP) describes monitoring of potential changes in physical habitat, lower trophic levels, fish abundance, and community composition during construction and operations of the Site C Clean Energy Project (the Project), as required by Condition 7 of the Project's Environmental Assessment Certificate (EAC), Schedule B. Baseline studies conducted for the environmental assessment of the Project were developed with future monitoring in mind such that the sample sites and methodologies could be repeated to monitor potential changes to fish and fish habitat. The FAHMFP includes 17 monitoring programs and one follow-up program that are spatially and logistically distinct. The Monitoring Plan includes a series of Questions and Hypotheses that reflect uncertainties in predictions of the potential changes as a result of the Project, as described in the Project's Environmental Impact Statement. Each program includes a number of specific monitoring tasks.

A final version of the FAHMFP was submitted on December 22, 2015, and is available on the Project's website¹. All references to the FAHMFP in this report refer to this version of the FAHMFP.

1.2 Summary

This report is being submitted in compliance with Condition 7 of the EAC Schedule B. This annual report documents that all components of the FAHMFP that were scheduled to be implemented in 2016 were implemented (see Tables 1 to 3), in accordance with the implementation schedules in the FAHMFP.

The Project is in an early stage of construction; as a result the FAHMFP is in an early stage of implementation. Additional components of the FAHMFP are scheduled to be implemented as construction of the Project progresses. For example, the Fishway Effectiveness Monitoring Program (Mon-13) is scheduled to begin when operation of the temporary fish passage facility begins during the river diversion stage of construction. Annual reporting will continue to document the implementation of the FAHMFP.

2.0 Fisheries and Aquatic Habitat Monitoring and Follow up Program

2.1 Background

This Fisheries and Aquatic Habitat Monitoring and Follow-up Program (FAHMFP) has been developed in accordance with the Condition 7 of the EAC Schedule B.

The Conditions in the EAC contemplate three plans and programs that relate to fish and fish habitat. These are summarized below to provide context for the FAHMFP.

- 1) **Fisheries and Aquatic Habitat Management Plan:** Fisheries and Aquatic Habitat Management Plan (submitted to the Canadian Environmental Assessment Agency [CEAA] and the BC Environmental Assessment Office [EAO] in June 2015) in accordance with EAC Condition 4 and federal Decision Statement Condition 8 includes standard mitigation

¹ Available at: <https://www.sitecproject.com/document-library/environmental-management-plans-and-reports>

measures (e.g., erosion and sediment control measures) described in the Project’s Construction Environmental Management Plan² and project-specific mitigation measures (e.g. reservoir shoreline habitat enhancement works and capping of dam site material relocation site with fish habitat features).

- 2) **Fisheries and Aquatic Habitat Monitoring and Follow-up Program:** The FAHMFP is a requirement of EAC Schedule B, Condition 7. Condition 7 of the EAC requires development and implementation of a FAHMFP that provides for: a) monitoring fish and fish habitat during construction and operation of the Project, and b) an outline for a procedure to evaluate and implement future mitigation and compensation options during operation of the Project.
- 3) **Fish Passage Management Plan:** The Fish Passage Management Plan included in the EIS (Volume 2 Appendix Q) describes the approach to manage fish passage. Following EAC Schedule B, Condition 6, a Fish Passage Management Plan, which will include updates since submission of the EIS, will be prepared by Qualified Environmental Professionals and submitted prior to Project activities that may affect upstream fish passage. The EIS (Volume 2 Section 12) identified the river diversion phase of construction as the first Project activity that is expected to affect upstream fish passage. The planned monitoring for fish movement and fish passage is described in the FAHMFP.

2.2 Overview of Fisheries and Aquatic Habitat Monitoring and Follow-up Program

There are 17 monitoring programs and one follow-up program in the FAHMFP.

The 17 monitoring programs are organized in space and time such that the section of Peace River that transitions to the Site C Reservoir is monitored under the programs titled ‘Peace River’ prior to reservoir filling, and programs titled ‘Site C Reservoir’ following reservoir filling. Table 1 summarizes these monitoring programs.

Table 1. Summary of monitoring programs.

Monitoring Program ID	Monitoring Program Name and Description
Mon-1a	Site C Reservoir Fish Community Monitoring Program Monitor the effects of river to reservoir transformation on the fish community in Site C Reservoir and associated tributaries.
Mon-1b	Site C Reservoir Tributaries Fish Community and Spawning Monitoring Program Monitor fish populations in Peace River and Site C reservoir that migrate to tributaries to determine effects of the Project and the effectiveness of mitigation measures for fish and fish habitat.
Mon-2	Peace River Fish Community Monitoring Program Monitor fish populations in the Peace River to determine effects of the Project and the effectiveness of mitigation measures for fish and fish habitat.
Mon-3	Peace River Physical Habitat Monitoring Program Monitor the effects of the Project on physical habitat.
Mon-4	Site C Reservoir Riparian Vegetation Monitoring Program Monitor the effectiveness of planned riparian planting adjacent to Site C Reservoir.
Mon-5	Peace River Riparian Vegetation Monitoring Program Monitor how the construction and operation of the Project affects the quality

² Available at: <https://www.sitecproject.com/document-library/environmental-management-plans-and-reports>

Monitoring Program ID	Monitoring Program Name and Description
	and quantity (species composition, biological productivity, spatial area) of riparian vegetation along the Peace River downstream of Site C.
Mon-6	Site C Reservoir Fish Food Organisms Monitoring Program Monitor the effects of Site C Reservoir formation on the production of fish food organisms.
Mon-7	Peace River Fish Food Organisms Monitoring Program Monitor the effects of Project construction and operations on the biomass of invertebrates and the availability of fish food organisms downstream of Site C.
Mon-8	Site C Reservoir Water and Sediment Quality Monitoring Program Monitor the effects of reservoir formation on water and sediment quality.
Mon-9	Peace River Water and Sediment Quality Monitoring Program Monitor the effects of the Project on water and sediment quality downstream of Site C.
Mon-10	Site C Fish Entrainment Monitoring Program Monitor entrainment rates and survival rates of entrained fish during the operation of Site C.
Mon-11	Site C TDG Monitoring Program Monitor Total Dissolved Gas (TDG) supersaturation and potential effects to downstream fish populations resulting from Gas Bubble Disease (GBD) during Site C Project construction and operation.
Mon-12	Site C Fish Stranding Monitoring Program Monitor Project construction and operation effects associated with flow fluctuations and fish stranding on the Peace River fish community.
Mon-13	Site C Fishway Effectiveness Monitoring Program Monitor the performance of the temporary and permanent fishways at the Project.
Mon-14	Site C Trap and Haul Fish Release Location Monitoring Program Monitor the movements following release of fish collected at Site C fishways and transported and released several upstream release locations.
Mon-15	Site C Small Fish Species Translocation Monitoring Program Monitor small fish species populations in the Peace River to determine effects of the project on genetic structure, movement, and genetic exchange.
Mon-16	Site C Reservoir Constructed Shallow Water Habitat Areas Sediment and Vegetation Monitoring Program Monitor the suitability of benthic substrates in constructed shallow water habitats of Site C Reservoir for aquatic plants and monitor the natural colonization of aquatic plants in these habitats.
Mon-17	Peace River Water Level Fluctuation Monitoring Program Investigate the effects of water level fluctuations on the catchability of Peace River fish and the biomass and production of periphyton, downstream of Site C.

There is one follow-up program in the FAHMFP, the Tributary Mitigation Opportunities Evaluation Program.

2.3 Development of the Plan and Reporting Requirements

Construction of the Project began on July 27, 2015. The final FAHMFP was submitted to the EAO on December 22, 2015 in accordance with:

- EAC Schedule B, Condition 7: “The EAC Holder must file the final Fisheries and Aquatic Habitat Monitoring and Follow-up Program with EAO, FLNR, MOE and Aboriginal Groups within 150 days following the commencement of the construction and operations phases.”

BC Hydro committed to providing reports on the implementation of the Fisheries and Aquatic Habitat Monitoring and Follow-up Program to the EAO annually by March 1 of the year following data collection. This reporting timing is consistent with conditions for reporting under the Fisheries Act authorizations for the project³. Data collection under the final FAHMFP began in spring 2016. This report is being submitted by March 1, 2017, to fulfill the reporting requirements for the period from the start of data collection following submission of the final FAHMFP through to Dec 31, 2016.

Note that the FAHMFP refers to calendar ‘Construction Years’ that correspond to construction year 1 (2015), construction year 2 (2016) etc. (see Fig. 5 of the FAHMFP). The FAHMFP describes that monitoring under the FAHMFP begins in construction year 2 (2016; see Fig. 5 of the FAHMFP).

3.0 Summary of Implementation Status: Monitoring and Follow-up Programs

All monitoring programs scheduled to take place in 2016 were implemented. Table 2 summarizes the implementation.

Table 2. Monitoring tasks implemented in 2016, per the schedule in the Fisheries and Aquatic Habitat Monitoring and Follow-up Program

Monitoring Program ID	Description	Data Collection Tasks Implemented	Status of Analysis and Reporting ^a
Mon-1a: Site C Reservoir Fish Community Monitoring Program	Monitor the effects of river to reservoir transformation on the fish community in Site C Reservoir and associated tributaries.	N/A (Monitoring begins during Project operations)	N/A (Monitoring begins during Project operations)

³ Available at: <https://www.sitecproject.com/document-library/permits-and-authorizations>

Monitoring Program ID	Description	Data Collection Tasks Implemented	Status of Analysis and Reporting ^a
Mon-1b: Site C Reservoir Tributaries Fish Community and Spawning Monitoring Program	Monitor fish populations in Peace River and Site C reservoir that migrate to tributaries to determine effects of the Project and the effectiveness of mitigation measures for fish and fish habitat.	2b. Peace River Bull Trout Spawning Assessment	Ongoing
		2c. Site C Reservoir Tributaries Fish Population Indexing Survey	Completed
Mon-2 Peace River Fish Community Monitoring Program	Monitor fish populations in the Peace River to determine effects of the Project and the effectiveness of mitigation measures for fish and fish habitat.	2a: Peace River Large Fish Indexing Survey	Ongoing
Mon-3 Peace River Physical Habitat Monitoring Program	Monitor the effects of the Project on physical habitat.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)
Mon-4 Site C Reservoir Riparian Vegetation Monitoring Program	Monitor the effectiveness of planned riparian planting adjacent to Site C Reservoir.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)
Mon-5 Peace River Riparian Vegetation Monitoring Program	Monitor how the construction and operation of the Project affects the quality and quantity (species composition, biological productivity, spatial area) of riparian vegetation along the Peace River downstream of Site C.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)

Monitoring Program ID	Description	Data Collection Tasks Implemented	Status of Analysis and Reporting ^a
Mon-6 Site C Reservoir Fish Food Organisms Monitoring Program	Monitor the effects of Site C Reservoir formation on the production of fish food organisms.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)
Mon-7 Peace River Fish Food Organisms Monitoring Program	Monitor the effects of Project construction and operations on the biomass of invertebrates and the availability of fish food organisms downstream of Site C.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)
Mon-8 Site C Reservoir Water and Sediment Quality Monitoring Program	Monitor the effects of reservoir formation on water and sediment quality.	2a - General Water and Sediment Quality Monitoring	Ongoing
		2b - Temperature Monitoring	Ongoing
		2c - Turbidity Monitoring	Ongoing
Mon-9 Peace River Water and Sediment Quality Monitoring Program	Monitor the effects of the Project on water and sediment quality downstream of Site C.	2a - General Water and Sediment Quality Monitoring	Ongoing
		2b - Temperature Monitoring	Ongoing
		2c - Turbidity Monitoring	Ongoing
Mon-10 Site C Fish Entrainment Monitoring Program	Monitor entrainment rates and survival rates of entrained fish during the operation of Site C.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)

Monitoring Program ID	Description	Data Collection Tasks Implemented	Status of Analysis and Reporting ^a
Mon-11 Site C TDG Monitoring Program	Monitor Total Dissolved Gas (TDG) supersaturation and potential effects to downstream fish populations resulting from Gas Bubble Disease (GBD) during Site C Project construction and operation.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)
Mon-12 Site C Fish Stranding Monitoring Program	Monitor Project construction and operation effects associated with flow fluctuations and fish stranding on the Peace River fish community.	Task 2a – Identification of Monitoring Sites	Ongoing
		Task 2b - Monitoring Stranding Sites	Ongoing
Mon-13 Site C Fishway Effectiveness Monitoring Program	Monitor the performance of the temporary and permanent fishways at the Project.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)
Mon-14 Site C Trap and Haul Fish Release Location Monitoring Program	Monitor the movements following release of fish collected at Site C fishways and transported and released several upstream release locations.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)
Mon-15 Site C Small Fish Species Translocation Monitoring Program	Monitor small fish species populations in the Peace River to determine effects of the project on genetic structure, movement, and genetic exchange.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)

Monitoring Program ID	Description	Data Collection Tasks Implemented	Status of Analysis and Reporting ^a
Mon-16 Site C Reservoir Constructed Shallow Water Habitat Areas Sediment and Vegetation Monitoring Program	Monitor the suitability of benthic substrates in constructed shallow water habitats of Site C Reservoir for aquatic plants and monitor the natural colonization of aquatic plants in these habitats.	N/A (Monitoring occurs in subsequent years)	N/A (Monitoring occurs in subsequent years)
Mon-17 Peace River Water Level Fluctuation Monitoring Program	Investigate the effects of water level fluctuations on the catchability of Peace River fish and the biomass and production of periphyton, downstream of Site C.	2b – Supplementary sampling of small fish otoliths	Ongoing

^a Status of Analysis and Reporting: As of Feb 15, 2016. 'Ongoing' refers to analysis and reporting of 2016 data collection that continues or is in draft form.

Table 3. Follow-up tasks implemented in 2016, per the schedule in the Fisheries and Aquatic Habitat Monitoring and Follow-up Program.

Follow-up Program	Description	Data Collection Tasks Implemented	Status of Analysis and Reporting
Site C Tributary Mitigation Opportunities Evaluation Program	Identify enhancement opportunities for stream dependent indicator species described in the EIS including Arctic Grayling, Bull Trout, Burbot, Goldeye, Mountain Whitefish, Rainbow Trout, and Walleye.	N/A (This program begins in subsequent years)	N/A (This program occurs in subsequent years)

The following sections summarize the 2016 data collection for those programs and tasks that were implemented (Table 2).

3.1 Mon-1b Site C Reservoir Tributaries Fish Community and Spawning Monitoring Program

Task 2b: Peace River Bull Trout Spawning Assessment

The 2016 Bull Trout spawning assessment occurred in the upper portion of the Halfway River mainstem and its tributaries. Trained observers conducted three rounds of aerial and ground surveys to visually enumerate Bull Trout redds (i.e., a nest in the gravel that is excavated during spawning) in five main spawning streams: the Chowade River, Cypress River, Fiddes Creek, Turnoff Creek, and upper Halfway River. Data were collected for estimating observer efficiency and redd survey life by marking and re-sighting redds during ground and aerial surveys. To supplement the aerial survey approach, a PIT tag detection array system paired with a fish counter (e.g., resistivity counter and cameras) was operated on the Chowade River. Analysis and reporting of the data collected in 2016 are ongoing.

Task 2c: Site C Reservoir Tributaries Fish Population Indexing Survey

The following summary is from the report associated with the 2016 sampling (Golder Associates Ltd. 2016).

The Site C Reservoir Tributaries Fish Community and Spawning Monitoring Program (Mon-1b) represents one component of the FAHMFP and is designed to monitor Peace River fish populations that spend portions of their lifecycles in Peace River tributaries and migrate past the Site C location to fulfill their life history requirements. Most notably, these species include Arctic Grayling (*Thymallus arcticus*), Bull Trout (*Salvelinus confluentus*), and Rainbow Trout (*Oncorhynchus mykiss*). The Site C Reservoir Tributaries Fish Population Indexing Survey is one component (Task 2c) of Mon-1b and is intended to monitor the abundances of these target species in the Chowade River, Cypress Creek, and the upstream portion of the Halfway River (termed the Halfway River watershed), the Moberly River, and Lynx and Maurice creeks. As the first year of a multi-year study, 2016 results are intended to provide baseline data prior to subsequent phases of Site C construction and reservoir creation and to identify the most effective sampling locations and methods to employ during future study years.

Specifically, Task 2c investigated Arctic Grayling, Bull Trout, and Rainbow Trout populations in the Chowade River, Cypress Creek, and the upper Halfway River using a combination of backpack electrofishing and small fish boat electroshocking, and investigated Arctic Grayling populations in the Moberly River using a combination of backpack electrofishing, small fish boat electroshocking, and beach seining. Sampling in Lynx and Maurice creeks was proposed using a combination of backpack electrofishing and beach seining; however, Maurice Creek was not surveyed in 2016 at the request of BC Hydro due to site access limitations associated with sampling crew safety and security. Fish collection activities were not attempted in Lynx Creek due to extremely high water turbidity and conductivity that may have been associated with an upstream landslide. Data collection activities at Lynx Creek were limited to water quality measurements, habitat measurements, and photographs.

Prior to sampling, habitat within the Halfway River watershed was categorized as either single channel, braided, or tributary confluence using historical data and aerial photographs. This stratification resulted in 11 sections within the Chowade River study area, 4 sections within Cypress Creek study area, and 6 sections within the upper Halfway River study area. The Moberly River was separated into 12 sections using the classification system and section delineations outlined by Mainstream (2011).

Overall, 53 backpack electrofishing sites, 140 small fish boat electroshocking sites, and 14 beach seine sites were surveyed during the 2016 field season (all study areas combined). Tributaries of the Halfway River watershed were sampled between August 6 and 28. The Moberly River was sampled between September 8 and 18.

In the Chowade River, 4 Arctic Grayling, 111 Bull Trout, and 66 Rainbow Trout were captured (all methods combined). Of those, 4 Arctic Grayling, 17 Bull Trout, and 65 Rainbow Trout were implanted with half-duplex (HDX) passive integrated transponder (PIT) tags. In Cypress Creek, 1 Arctic Grayling, 42 Bull Trout, and 30 Rainbow Trout were captured (all methods combined). With the exception of one Rainbow Trout, all of the target fish captured in Cypress Creek were implanted with a PIT tag. In total, 23 Bull Trout (18 tagged) and 9 Rainbow Trout (all tagged) were captured in the upper Halfway River. Arctic Grayling were not recorded in the upper Halfway River during the 2016 survey. Most (72%) Bull Trout were recorded during backpack electrofishing surveys, whereas Arctic Grayling and Rainbow Trout were only recorded during small fish boat electroshocking surveys. Young-of-the-Year (YOY) Bull Trout were recorded in the Chowade River only and were too small to receive PIT tags (i.e., less than 120 mm fork length [FL]). All Rainbow Trout recorded in the Halfway River watershed were larger than 150 mm FL.

In the Moberly River, 105 Arctic Grayling were recorded; however, only 19 of these fish were large enough to receive a PIT tag. In total, 3 adult Arctic Grayling and 15 immature Arctic Grayling were recorded in the Moberly River. All remaining Arctic Grayling (n = 87) were YOY. Arctic Grayling were most commonly recorded in the middle sections (Sections 5 through 8) of the Moberly River and were not recorded within the future inundation zone of the proposed Site C reservoir (i.e., Section 10). Higher than normal water levels and turbidity in the Moberly River during the 2016 study period may have influenced results; however, Arctic Grayling catch rates in the Moberly River were similar to or higher than catch rates recorded during previous studies (Mainstream 2010, 2011, 2013). Two immature Bull Trout were recorded within the future inundation zone of the proposed Site C reservoir (i.e., Section 10). Rainbow Trout were not recorded in the Moberly River during the 2016 survey.

3.2 Mon-2 Peace River Fish Community Monitoring Program

Task 2a: Peace River Large Fish Indexing Survey

Sampling for the Indexing Survey was conducted in six different sections of the Peace River mainstem located between Peace Canyon Dam (PCD) and the Many Islands area in Alberta. All large-bodied fish were monitored; however, the Program focused on seven indicator species including Arctic Grayling (*Thymallus arcticus*), Bull Trout (*Salvelinus confluentus*), Burbot (*Lota lota*), Goldeye (*Hiodon alosoides*), Mountain Whitefish (*Prosopium williamsoni*), Rainbow Trout (*Oncorhynchus mykiss*), and Walleye (*Sander vitreus*). Fish were sampled by boat electroshocking within nearshore habitats (less than 2.0 m depth). Length, weight, and ageing structures were collected from all captured indicator species. Depending of fish size and sample session, captured indicator species were marked with passive integrated transponder (PIT) tags. Analysis and reporting of the data collected in 2016 are ongoing.

3.3 Mon-8 Site C Reservoir Water and Sediment Quality Monitoring Program and Mon-9 and Peace River Water and Sediment Quality Monitoring Program

These two water and sediment quality monitoring programs (Mon-8 and Mon-9) monitor the same parameters but in different locations: the area or the future Site C Reservoir, and the

Peace River downstream of the Site C dam site, respectively. For simplicity, the following section summarizes the 2016 implementation for both programs. These programs collect information and parameters focused on fish and fish habitat.

Task 2a: General Water and Sediment Quality Monitoring

General water quality monitoring was conducted monthly between May and October at nineteen (19) Peace River sampling locations between Peace Canyon Dam (PCD) and the Many Islands area in Alberta. Two additional reference sites monitored water flowing into the Site C Reach from Dinosaur and Williston reservoirs. The eight upstream Peace River sites are within the Site C Reach, defined as the 83 km portion of the Peace River that will be inundated by the Project and includes the Peace River between Peace Canyon Dam (PCD) and Site C dam site, and those sections of the Halfway and Moberly rivers that will be inundated following reservoir creation (approximately 10 km sections). The nine sites downstream Peace River are between the Site C dam site and the Many Islands area in Alberta, a distance of approximately 120 km. Water quality sampling focussed on measuring parameters that may change in concentration throughout the growing season. Parameters followed those measured during baseline studies including a mixture of field-based measured parameters (e.g., water conductivity [$\mu\text{S}/\text{cm}$], pH, and dissolved oxygen [mg/L and percent saturation]), and collection of samples for laboratory analysis of nutrients and general parameters.

Sediments were collected during the fall from depositional areas (i.e., areas of predominantly fine substrates) in Williston and Dinosaur reservoirs. Samples were analyzed for particle size, nutrients, and total metals. Sediment monitoring of all Peace River monitoring sites including the Site C reach and downstream to Many Islands will occur in 2017 and following monitoring years. These samples will be collected during the fall to collate sediment data with data collected under the Peace River Fish Food Organisms Monitoring Program (Mon-7) and Site C Reservoir Fish Food Organisms Monitoring Program (Mon-8). Analysis and reporting of the water and sediment quality data collected in 2016 are ongoing.

Task 2b: Temperature Monitoring

Continuous measurements of water temperature were recorded at thirteen (13) Peace River sites between Williston Reservoir and the Pouce Coupe River confluence. Temperature loggers were checked for calibration, set to record temperature at hourly intervals and secured to the river bank or anchored to the river bed. Data loggers were downloaded approximately every three months. Analysis and reporting of the data collected in 2016 are ongoing.

Task 2c: Turbidity Monitoring

Continuous Peace River turbidity monitoring occurred at four Peace River monitoring sites during the 2016 monitoring period. Two turbidity monitoring stations, Peace above Pine - Left Bank (PAP-LB) and Peace above Pine – Right Bank (PAP-RB), are located in the Downstream Reach between the Site C dam site and the Pine River confluence. The two upstream monitoring stations, Peace above Moberly – Left Bank (PAM-LB) and Peace above Moberly – Right Bank (PAM-RB) are located on opposite banks of the Peace River immediately upstream of the Site C dam site and Moberly River confluence. Analysis and reporting of the data collected in 2016 are ongoing.

3.4 Mon-12 Site C Fish Stranding Monitoring Program

The fish stranding monitoring program is intended to determine the magnitude of baseline fish stranding along the Peace River, from the Diversion Headpond (upstream of Site C) to the Many Islands area in Alberta, and compare the baseline conditions to construction and operations phases of the Project. Site selection for the 2016 program was completed following a review of available data (e.g., aerial imagery, hydraulic modeling data, literature review) and a reconnaissance survey of the study area to identify monitoring sites that have potential to isolate or strand fish. Ten days of sampling were undertaken in 2016, each of which was coordinated with BC Hydro during forecasted flow reduction events at Peace Canyon Dam. A total of 150 sites were sampled using a combination of electrofishing and dip nets in isolated pools, and transect surveys for interstitial standing in dewatered areas. Analysis and reporting of the data collected in 2016 are ongoing.

3.5 Mon-17 Peace River Water Level Fluctuation Monitoring Program

Task 2b: Supplementary sampling of small fish otoliths

Otoliths were collected from young-of-the-year Arctic Grayling, Longnose Sucker, Mountain Whitefish, and Rainbow Trout. These fish were collected from shoreline habitats of the Peace River mainstem between the dam site and the CNR railway bridge. Otoliths were submitted to a laboratory where the widths of daily growth rings will be measured. Analysis and reporting of the data collected in 2016 are ongoing.

4.0 Qualified professionals

This report was prepared by the following Qualified Individuals:

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

5.0 References

Golder Associates Ltd. 2016. Site C reservoir Tributary Fish Population Indexing Survey (Mon-1b, Task 2c) – 2016 Investigations. Report prepared for BC Hydro, Vancouver, British Columbia.