



Whitehorse Rapids Hydroelectric Generating Station
Re: YESAB Project Number: 2023-0167
Southern Lakes First Nations Concerns and Recommendations Related to Fish Passage
April 25, 2024

Dear Assessor,

Carcross/Tagish First Nation (C/TFN), Kwanlin Dün First Nation (KDFN), and Ta'an Kwäch'än Council (TKC) have long been concerned about the effects that Whitehorse Rapids Generating Station (WRGS; the Dam) is having on Chinook salmon (Gyü; T'á¹). Chinook salmon are in a significant state of decline. Yukon Energy Corporations' YESAB Project Proposal indicates that adverse effects on Chinook salmon are expected to occur as a result of the Project and that these effects are expected to be significant without the application of suitable measures to avoid, mitigate, and/or offset those effects (YEC 2023).

Reducing the effects that the WRGS is having on salmon and other fish species, including safe up and downstream passage, is of utmost importance for all three Nations and as such, we have prepared a joint submission to demonstrate our solidarity on this matter.

In May of 2023, the three Southern Lakes First Nations finalized the "Connecting the Broken Salmon Trail: Our relationship with the Southern Lakes Salmon (C/TFN *et al.* 2023)". In this document, we state:

Our ancestors passed onto us the responsibility to protect our land, water, and resources as they did before us, and to pass on our traditional values and practices to future generations. We are three Nations speaking with one voice around salmon.

We have always been salmon people. We acknowledge the harsh histories that have, for many reasons, cut off our connection to the salmon trail, which itself has been broken. Culturally, spiritually, and physically we have struggled to maintain this connection. Salmon have supported us for thousands of years and now they need us to support them. The Yukon River Chinook salmon are in trouble. There are fewer of them, they are smaller, and there are many obstacles in their way.

We are salmon people. Salmon bring us together and are part of our identity. Through sharing, caring, and respecting salmon, we commit to working with each other in order to regain our connection, support recovery, and honour their presence. We will work to connect the broken salmon trail and ensure salmon are back on the landscape again, just like we worked to restore the Southern Lakes caribou population."

"We may be three Nations, but we speak with one voice"

Southern Lakes First Nations Concerns and Recommendations Related to Fish Passage at the WRGS

To help reconnect the broken salmon trail, the three Southern Lakes First Nations are advocating for safe fish passage both upstream and downstream, past the dam; increasing salmon survival rates; and reducing effects from the WRGS in four main areas:

- Reducing Entrainment Mortality Through Turbines and Spillway
- Improving Upstream Fish Passage
- Fish Hatchery Improvements
- Extending Ramping Rate Protocols to Extend from the WRGS to the Yukon River Confluence with the Takhini River.

Below, the Southern Lakes First Nations have outlined our concerns for each of these areas and provide mitigations and/or Terms and Conditions that we would like to see included in both YESAB's Recommendations and the Decision Document. We also identify additional studies that are required to implement these mitigations in an impactful way.

While salmon are our priority, we also want to see safe up- and downstream passage for all fish species and life stages, recognising this may be difficult as the ladder was initially designed for the upstream passage of Chinook salmon who have a stronger swimming ability than other freshwater species and that safe downstream movement of fish to avoid turbine mortality has not been mitigated to date.

By working with the three Southern Lakes First Nations to understand our concerns, implementing mitigations and conducting the recommended additional studies this will demonstrate that Yukon Energy is focussed on the health and welfare of Yukon River Chinook and respecting fish in a way that aligns with the Southern Lakes First Nations Traditional Laws.

When we speak about respect for salmon, we mean considering the feelings, wishes, rights, and traditions of the salmon; treating them as we would treat our family. The Broken Salmon Trail (p.42) explains:

"Salmon need us to listen. Listen to their story, listen to their struggle, and acknowledge that they are in trouble. This is important for us today and will be even more important in the future. Salmon need us to share our knowledge with future generations so they learn respect for salmon, understand their importance, and care about their conservation. Salmon need us to maintain barrier-free passage to spawning and rearing habitats and provide for clean water and pristine habitat."

~Connecting the Broken Salmon Trail (C/TFN et al. 2023)

1. Background Information

To provide context, we have summarized relevant sections of the *Fisheries Act* applicable to the continued operation of the WRGS:

Section 34.4 (1) of the *Fisheries Act*, states that *"No person shall carry on any work, undertaking or activity, other than fishing, that results in the death of fish"*.

Subsection 34.3(4) states that”

“No person shall

- *(a) damage or obstruct any fishway constructed or used to enable fish to pass over or around any obstruction;*
- *(b) damage or obstruct any fishway, fish stop or diverter constructed or installed on the Minister’s order;*
- *(c) stop, impede or hinder fish from entering or passing through any fishway, or stop, impede or hinder fish from surmounting any obstruction or leap;*
- *(d) damage, remove or authorize the removal of any fish guard, screen, covering, netting or other device installed on the Minister’s order; or*
- *(e) fish in any manner within 23 m downstream from the lower entrance to any fishway, obstruction or leap.”.*

Section 35(1) states that *“No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat.”*

Project owners are prohibited to carry out activities that are likely to result in death of fish or cause a Harmful Alteration, Distribution or Destruction of Fish Habitat (HADD) unless authorized to do so under the Ministers Order, through a *Fisheries Act Authorization*. Prior to authorization, the proponent must apply DFO’s hierarchy of measures for the conservation and protection of fish and fish habitat to prevent (avoid) impacts first, then mitigate, then offset.

To date, the WRGS has not had a *Fisheries Act* Authorization for operations despite the facility killing fish, as indicated in Ecofish (2023) and is continuing to impede safe passage for fish past the current dam (both up and downstream), which is considered a barrier to fish.

In their letter dated March 10, 2024 submitted to YESAB’s Whitehorse Designated Office’s Assessment Officer, DFO stated that *“Based on the description of the Project and its anticipated and ongoing unmitigable effects on fish and fish habitat, the Program has concluded that the Project is likely to result in the death of fish by means other than fishing, and/or the harmful alteration, disruption or destruction of fish habitat. The proposal requires authorization pursuant to paragraphs 34.4(2)(b) and 35(2)(b) of the Fisheries Act in order to proceed (DFO 2024).”*

DFO’s Position Statement titled *“The Management of Existing Facilities and Structures under the Fisheries Act and the Species at Risk Act (DFO 2023)”* is intended to work with owners/operates to bring existing facilities into compliance with the *Fisheries Act*.

In addition to the requirement under the *Fisheries Act*, Yukon River Chinook are not doing well. The current decline of Yukon River Chinook is such that Fisheries and Oceans Canada (DFO) and the Alaska Department of Fish and Game (ADFG), signed an agreement (DFO and ADFG 2024) stating that beginning April 2024 through 2030, the Parties agree to:

“1. Implement a suspension of directed Chinook commercial, sport, domestic, and personal use fisheries in the mainstem Yukon River and Canadian tributaries for one full life cycle (seven years). This suspension will remain in effect regardless of run abundance.

6. The Parties place a priority on stock assessment and on scientific research on the health of Yukon River Chinook salmon to better understand the causes of low run abundances and identify possible solutions. Such stock assessment and scientific research programs shall be discussed jointly by the Parties at Yukon River Panel and Joint Technical Committee meetings. Over this seven-year period, the take of Chinook for scientific research purposes shall be minimized and non-lethal sampling methods shall be used where possible.

7. The Parties place a priority on traditional and local ecological knowledge research on the health of Yukon River Chinook salmon to better understand the causes of low run abundances and to identify possible solutions. Such traditional and local ecological knowledge research shall be discussed jointly by the Parties at the Yukon River Panel and Traditional Knowledge Committee meetings.”

10. In the absence of fisheries, the status of Chinook salmon has continued to be depressed and reflects the long-term cumulative effects of other factors, particularly habitat degradation resulting from resource and hydroelectric development, competition from hatchery production, cyclic natural phenomena, and large scale environmental variability affecting both marine and freshwater habitats. The Parties shall work collaboratively on habitat and stock restoration activities and support research to better understand the declines of Chinook salmon.

Given the current state of Upper Yukon River Chinook and that WRGS operations are currently 1) killing fish and 2) impeding fish passage, the Southern Lakes First Nations strongly advocate for Yukon Energy obtaining a *Fisheries Act* Authorization and taking the necessary measures to come into compliance.

2. Reducing Entrainment Mortality Through Turbines and Spillway

Since the dam was constructed, the Southern Lakes First Nations knew that the turbines were killing fish. A pilot study on entrainment mortality for turbines WH3 and WH4 was completed in 2023 by Ecofish Research Ltd. In their report, Ecofish stated “Based on various assumptions and analysis described throughout the report, it was estimated that 26.0% of age-0 and 33.6% of age-1 juveniles are killed during passage through the project across all routes (spillway, turbine)” (Ecofish 2023). Many of the fish that are not killed are thought to be injured and may potentially die later, with estimated injury rates ranging from 13% for 0+ juveniles in the WH3 turbine to 55% for 1+ juveniles in the WH4 turbine.

“Don’t forget about the salmon babies”

~ Charlie Burns, KDFN Elder, Weaving Salmon Connections Workshop as cited in Connecting the Broken Salmon Trail (C/TFN et al, 2023)

The effects of entrainment are unacceptable, especially given the declining state of the Chinook salmon run. Furthermore, these initial estimates rely on several untested assumptions and actual mortality rates may be higher. The current knowledge of entrainment mortality is based on a small number of trials for two of the four turbines, limited gillnet surveys near the Schwatka Lake outlet and preliminary hydroacoustic and sonar surveys at the entrance to the turbines. Entrainment mortality has not been evaluated for the spillway and is assumed to be zero but requires confirmation, and there is uncertainty

around migration timing and route selection through the facility. In addition, entrainment mortality and injury rates for resident freshwater fish species have not been estimated and could be significant.

2.1. *Additional Studies*

The Southern Lakes First Nations request that the following studies be completed to better understand entrainment mortality and injury rates for all fish species; fish passage routes; migration timing; and the influence of operations on entrainment. This information will allow for informed decisions and mitigation design to reduce entrainment mortality.

- a. Complete additional sensor fish studies through WH1, WH2, WH3, and the spillway applicable for all fish species and life stages.
- b. Complete additional hydroacoustic scanning upstream of the dam to estimate the number and size of fish moving downstream through each potential route, ensuring coverage during the out-migration period for juvenile salmon.
- c. Complete flow modelling to evaluate velocity fields around the intakes during the salmon outmigration period (i.e. through the power canal, WH4, spillway and fish ladder).
- d. Complete an options analysis for mitigations to substantially reduce entrainment mortality. This may include engineered solutions and operational changes.

2.2. *Mitigations/Terms and Conditions*

Mitigations/Terms and Conditions *that the Southern Lakes First Nations expect to be included are:*

- a. Implement mitigation(s) to significantly reduce fish mortality through the turbines and spillway within two (2) years of the issuance of the Water Use Licence.
- b. Operational mitigations, such as shutting down WH4 during the salmon out-migration period, be tested to reduce entrainment mortality in the interim.
- c. Following the 2024 sensor fish surveys, determine mortality rates for each turbine type currently installed (Kaplin or Frances) and ensure that all turbine overhauls completed within this license period use prioritize reducing fish mortality rates.

3. Improving Upstream Fish Passage

The existing fish ladder was constructed in 1959. Much has been learned since that time. We have heard concerns from our Elders and Citizens that the existing wooden fish ladder at the Whitehorse Dam lacks any of the natural features in a stream such as logs, and rocks, and has no trees shading the water. It is constructed of creosote timbers and lined with plywood, which may interfere with olfactory cues used by migrating salmon. The construction and materials used on the ladder are not in the best interest of Chinook salmon and therefore does not align with our Traditional Laws about respecting the fish.

"I used to fish there below where the dam is. I've done lots of fishing there and here. That man stop my rats, stop my salmon, stop my money too."

~ Johnny Joe, KDFN Elder, Yukon Wildlife a Social History 1985 as cited in Connecting the Broken Salmon Trail (C/TFN et al, 2023)

Upstream passage of salmon returning to their spawning grounds through the fish ladder has been a long-time concern to the Southern Lakes First Nations. Twardek et al. 2021 conducted a telemetry study in collaboration with Carcross/Tagish First Nation and Kwanlin Dun First Nation to understand the movement of Chinook salmon past the Whitehorse Dam. This study found that many Chinook who approached the Fish Ladder did not pass through the ladder and many carcasses found downstream had retained an exceptionally high number of eggs indicating that they hadn't fully spawned. This study estimated that of the tagged Chinook who approached the fish ladder, only 33% made it past the WRGS. These numbers are lower than previously recorded estimates. This is lower than passage success of 58% previously estimated at the facility by Cleugh and Russell (1980; as referenced in Twardek et al., 2021). Twardek et al. described several potential reasons for low passage success, including the potential effects of declining Chinook density on collective migration, as well as potential sources of error in the estimate. However, the current best estimate of passage success indicates that only 33% of Chinook that attempt the passage are successful.

In November of 2021, the three Nations approached Yukon Energy with a list of short and long-term actions that they requested be completed to help have as many Chinook salmon move through the fish ladder as possible. Many of the short-term actions, such as not holding of fish in the viewing chamber, have been implemented and will be included in a Fish Ladder Operation Manual being developed. One of the long-term actions was to complete a technical assessment of the effectiveness of the Fish Ladder.

Morrison Hershfield and EDI (2023) completed a Fishways Assessment that focused on the engineering of the Whitehorse Rapids Fish Ladder, P125 Fishways and the Lewes Control Structure Fishway. From this review, the authors provided recommended options for improvement to the Whitehorse Fish Ladder, P125 fishway and Lewes Control Structure Fishway, which we have included as additional studies or mitigations below.

Observations have been made of Chinook holding in eddies downstream of the fish ladder (Pers Comm, Lawrence Vano; Morrison Hershfield and EDI 202; Twardek et al. 2021). Comments were made that the fish are waiting for critical mass needed to use collective navigation to move together as a group when enough fish have gathered. However, the fish ladder assessment noted there was a valve at the downstream entrance, which hadn't been opened in a very long time (Morrison Hershfield and EDI 2023). This valve is used to regulate flows at the ladder's downstream entrance. Once this valve was opened, it increased flow near the fish ladder entrance, pushing the eddy downstream which allowed the salmon to know which way to go to continue on their journey upstream. Once this adjustment was made, the salmon appeared to reduce holding times and travel up the ladder more quickly (Morrison Hershfield and EDI 2023).

The Southern Lakes First Nations would like to understand how the existing fish ladder compares with current fish ladder design standards and what other options for fish passage would be possible for this site. If redesigned today, what would a successful fish passage system look like?

In addition, the Southern Lakes First Nations are working with Yukon Energy to bring in Traditional Laws and Practices and show respect to the fish. Currently the exposed, wooden fish ladder does not mimic a natural stream. We have included mitigations to prioritize Chinook, show respect to the fish and celebrate the salmon's return.

3.1. Additional Studies

We expect that the following studies be completed to better understand functionality and design of the existing fish ladder. This information will allow for informed decisions on improving upstream passage rates in the future.

Southern Lakes First Nations Concerns and Recommendations Related to Fish Passage at the WRGS

Whitehorse Rapids Fish Ladder:

- a. Compare the design of the the existing WRGS Fish Ladder design with current design standards for fish passage. This study should consider the condition of salmon after a 3000 km journey inland while experiencing warming temperatures and should not assume broader parameters for Chinook passage elsewhere apply for Yukon River Chinook. These fish are nearing their energy reserve limits and don't have the same energy to expend as fish that are in optimal condition. Fish ladder design assessment must also consider all freshwater species that would naturally migrate within the Yukon River system.
- b. Complete an options analysis of alternate fish passage designs that would improve upstream fish passage rates (for all species, not just salmon) and can be constructed/implemented at WRGS. Designs should be considered within the Yukon River Chinook salmon context as stated in a) above. Fish passage alternatives assessment must consider all freshwater species that would naturally move throughout the Yukon River system.
- c. In the Monitoring and Adaptive Management Plan, include pre-spawn mortality studies both downstream of WRGS and with an appropriate control stream. Selection of a control site with a notable set of rapids (with spawning areas upstream and downstream of the rapids) of such as the Morley or Wolf rivers would provide additional perspective.

Lewes Control Structure Fishway:

- d. Complete an inspection to confirm that hydraulic conditions remain adequate for Chinook salmon and other migrating fish species when gates are closed, and when Marsh Lake water level is near full supply level. Such an operating condition would yield the greatest elevation differential between the upstream and downstream environments and would represent the most difficult condition that Chinook, and other resident fish species, could face when migrating upstream. This inspection will need to be completed after August 15 on a normal to low water year.

3.2. Mitigations/Terms and Conditions

Mitigations/Terms and Conditions *that the Southern Lakes First Nations expect to be included are:*

Whitehorse Rapids Fish Ladder:

- a. Southern Lakes First Nations expect that the development of a Fish Ladder Operations Manual be completed to ensure that fish ladder operations are done in a way that respects the salmon and helps them return home. While not a mitigation, this manual will serve as an important tool for knowledge sharing and should include methods for adjustments to the ladder and downstream gate as well Indigenous Practices to ensure the fish are respected and celebrated. Operations should be reviewed annually by staff and an overview of changes should be presented to the WRGS Technical Working Group (WRGS) that includes YEC, the Southern Lakes First Nations, DFO and Yukon Government. Additionally, review of the manual is included in the onboarding process for new fish ladder staff and YEC employees responsible for fish ladder operations.
- b. Adjust the downstream gate to optimize attractant flow based on river flow rates when Chinook are migrating upstream. Monitor the results, based on fish response, and adapt as necessary.
- c. Install a fish screen between the ladder entrance and the attraction control flow gate.
- d. Do not impede the movement of Chinook through the fishway in any way. Keep the fish ladder viewing chamber open at all times, except when collecting brood stock, until such time that the broodstock collection location is changed to an alternate location, such as downstream of WRGS.

Southern Lakes First Nations Concerns and Recommendations Related to Fish Passage at the WRGS

- Provide training and interpretation to staff to ensure that visitors understand these efforts are in the best interests of the Chinook given the current state of decline.
- e. Ensure that all fish have passage through the fishway for as long as possible (early May to October).
 - f. Install fish screens at the entrance of WH4 Turbine tailrace as early as practicable each year to ensure that returning Chinook do not swim into the tailrace, expending unnecessary energy. Fish screens need to be installed prior to high water as it can not be installed at high water levels. Installation early in the season and at low water levels may minimize the potential to trap adult freshwater fish behind the screen.
 - g. Naturalization of the existing fish ladder including:
 - Planting of shade trees along the length of the ladder. This should include a row of conifers adjacent the ladder (which do not shed leaf litter) followed by a second row of faster growing deciduous trees.
 - Installing interim measures to shade the fish ladder until planted shade trees are established.
 - Exploring the potential of installing large substrate (boulders) in the ladder. The boulders will need to be sized appropriately as to not move. A pilot should be completed at a couple of locations with monitoring to ensure the boulders do not create conditions for debris to accumulate.
 - Explore and implement environmentally safe options of creating a more natural environment for the viewing chamber (i.e., not bright white walls) that still allow for counting and sexing salmon as they pass by the monitoring camera.

Long-term Fish Passage Mitigations

All three Nations recognize the importance of effective fish passage at the WRGS, however, at this time there are differing views on the immediate path forward. As such, each Nation has shared their preferred approach for long-term fish passage improvements here:

Carcross/Tagish First Nation

C/TFN's view is that a newly designed fish ladder which improves passage success for Chinook and other fish species should be constructed. This passage should utilize the most naturalized passage options possible and should allow for both up and down stream passage. Additionally, feasibility work should be conducted to understand the possibility for passage to be open year-round which would provide a more natural environment to this major river system and its inhabitants.

Kwanlin Dün First Nation

“The salmon have been disrespected, they have told us for many years, they are hurting. We need to listen, pay our respects and make every effort to give them a chance, no matter the cost.”

~ Brandy Mayes, KDFN Citizen and Beneficiary

Chinook populations are severely depressed upstream of the dam, and spawning grounds like Michie Creek now have just a small number of Chinook returning to spawn. Given the critical state of the run, we need to make every effort possible to get fish past the dam and back to spawning grounds – every fish counts, every egg counts! The current fish ladder has the goal of allowing salmon to move past the

dam and continue their migration, but recent research studying salmon behaviour and movement through the ladder provides direct evidence that most salmon approaching the dam are unable to pass the ladder, and instead finish their migration downstream, often times unspawned (Twardek et al. 2022 and Twardek et al. 2023). How can we let these salmon down after travelling nearly 3000 km to get back to their natal streams?

It is clear improvements are needed to help salmon pass the dam. The previous fish passage assessment highlighted that salmon struggle throughout most parts of the ladder, including finding the entrance, moving through the lower ladder, and passing the viewing chamber. There have been recent efforts to improve the existing ladder, including adjusting attraction flows at the entrance, and keeping the gate open at the viewing chamber to allow salmon to migrate at night. While these changes have been important, so much more is needed to improve the existing ladder. For instance, none of the proposed changes will help salmon navigate the lower ladder.

The salmon numbers are critically low, and we are close to losing them forever. Our efforts need to put salmon first, no matter the cost. That is why we cannot settle for insufficient attempts to fix the existing ladder, we need something that works well, and we need it now. The fish ladder was built nearly 70 years ago when the idea of ‘fish passage’ was in its early stages. Since then, billions of dollars have been spent to optimize fish ladder design throughout the Pacific Northwest, and there are now designs available that allow nearly every salmon to successfully pass. These designs also, allow successful juvenile out migration and other fish species to navigate back and forth. The current outdated design simply is not good enough given the conservation crisis we are in, and it is imperative that a new fishway be constructed that puts salmon first and ensures every salmon can make it back to spawning grounds.

“Everything is related to one another. From our stories, the Elders – we know it was the responsibility of the people to take care of the salmon. If we don’t, and if we don’t respect them, they will go away.”

*~ Weaving Salmon Connections Participant as cited in
Connecting the Broken Salmon Trail (C/TFN et al. 2023);*

In KDFN’s Final Agreement, Chapter 16, special provision 16.3.2.2 states:

Canada shall contribute toward participation of the Kwanlin Dun First Nation in the Whitehorse fishway redevelopment project planning by the Yukon Energy Corporation and its partners, including participation in:

- a) Joint planning and visioning with regard to the redevelopment and management of the Whitehorse fishway and hatchery;*
- b) Planning related to fish stock rehabilitation and conservation issues;*

Ta’an Kwäch’än Council

TKC recognizes the importance of safe and effective fish passage up and downstream past the Dam. TKC would like to gain a better understanding of the following outstanding questions before determining if a new fish ladder would improve upstream fish passage rates for all species. Key questions that TKC would like answered include:

- How does the existing ladder compare to current engineering design standards for upstream fish passage with similar fish species?
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- What other options for improving fish passage are possible at the WRGS given the fish species and life stages present. For these options, what are anticipated passage rate improvements, benefits, limitations, and costs?
 - Are there alternative upstream fish passage options that align with First Nations Traditional Laws about respecting fish and treating them as our relatives.
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Lewes Control Structure Fishway:

- h. Adjust gate opening of the fish ladder based on hydraulic conditions at the structure throughout the summer and fall to create the best conditions in the ladder.
- i. Re-establish the lifting mechanism of the upstream gate of the fish ladder to allow for adequate opening and flow control under all upstream water levels (especially at high water).
- j. Refurbish the fish ladder walls and sheet pile, to ensure the long-term stability of the structure.

4. Fish Hatchery Improvements

The current Whitehorse Rapids Fish Hatchery serves to compensate for the death of juvenile salmon entrained through the turbines and spillway of the WRGS. Constructed in 1984, the hatchery takes brood stock from the ladder, fertilizes eggs, rears juveniles to fry life-history stage, and then releases them in the Upper Yukon River watershed (primarily Michie Creek).

“That salmon was lost because it doesn’t know where it was born, because it wasn’t manufactured by nature. It must have come from a hatchery somewhere. Humans are interfering with nature.”

~ Norman James C/TFN How we Walk with Salmon and Caribou 2021

Ecofish Research completed an assessment of current hatchery practices (Ecofish 2024). In this report, the authors state that “Under current conditions, we contend that the hatchery alone is unlikely to offset all impacts to Chinook Salmon associate with the WRGS, and that the hatchery’s future objectives will need to consider the status of the population and how operations continue to broader conservation and rebuilding strategies. We provide many recommendations to support this endeavour, with the general principle being that salmon enhancement should aim to address factors that are limiting natural production and mirror natural life history strategies as close as possible while maximizing survival (as recommended in Herkes (2023) (Ecofish 2024).”

Taking up to 30% of adult females from the fish ladder, from a functionally extinct salmon stock, to compensate for entrainment mortality, when the downstream migrating mortality estimate is >25%, is greatly impacting upstream populations. The Whitehorse Rapids hatchery can not be operated in isolation. Additional work is required to ensure that the hatchery is operated in alignment with an overall Yukon River Chinook salmon stock rebuilding strategy (in progress). Ecofish (2024) states that we need to “recognize that the adult returning population is low and the enhancement program should minimize risk and do no harm”. These fish have travelled 3000 km to reach their spawning grounds, they should be honored, respected, and supported to reach their destination; not taken for broodstock.

Southern Lakes First Nations Concerns and Recommendations Related to Fish Passage at the WRGS

Also important to the First Nations is updating hatchery practices to align with Yukon First Nations' Traditional Laws, this includes naturalizing the hatchery and mirroring natural life history strategies. Mitigations have been included to support this approach. Work completed by Herkes (2023) provided recommendations for the hatchery through a review of location traditional Indigenous Knowledge on salmon enhancement (Figure 1).

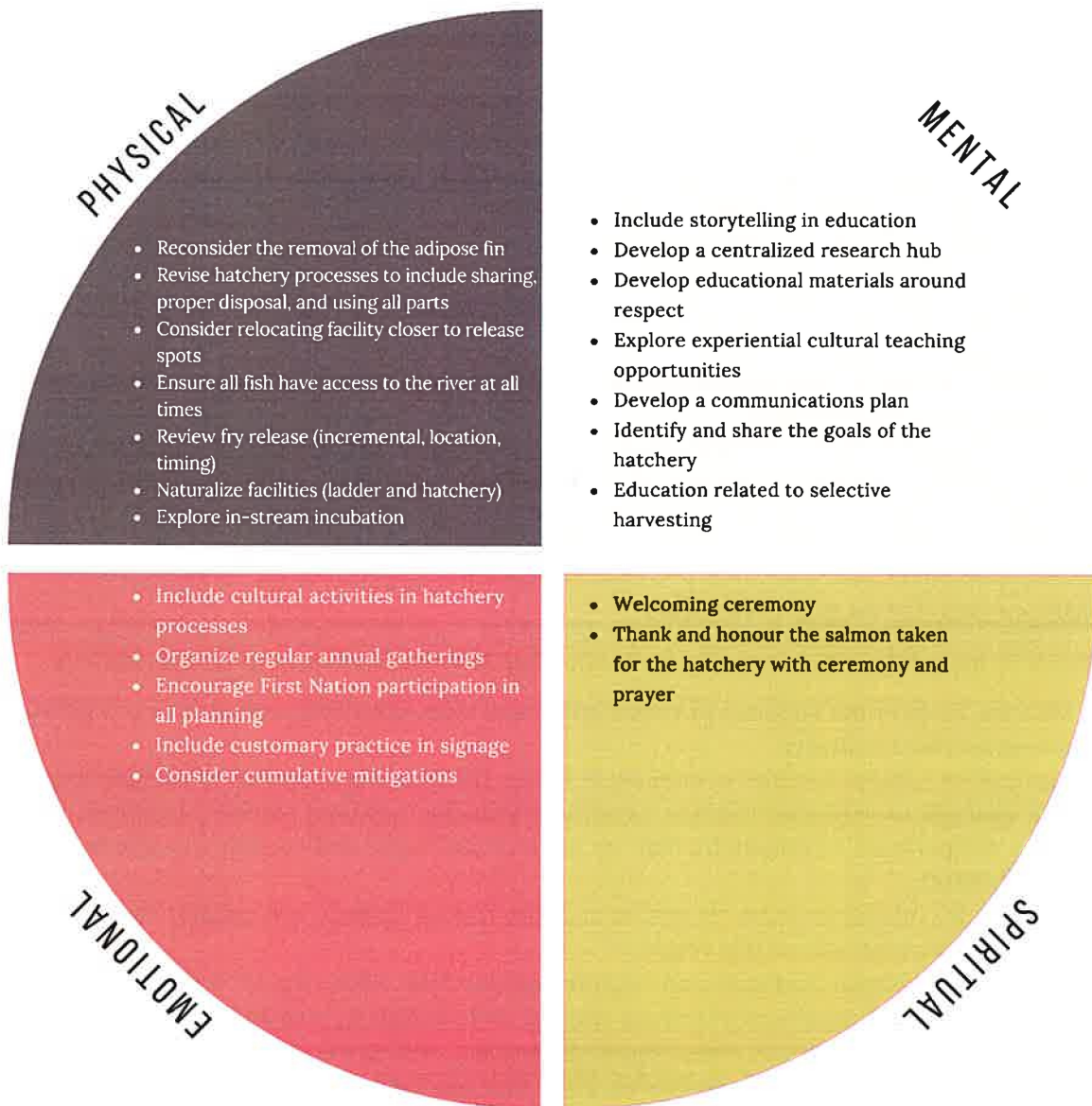


Figure 1. Recommendations for the Whitehorse Rapids Fish Hatchery that align with rebuilding the upper Yukon River Chinook Salmon population (Herkes 2023).

4.1. *Additional Studies*

Additional studies/work that the Southern Lakes First Nations would like completed to improve hatchery practices are:

- a. Determine clear overarching goals, objectives, and success criteria for the fish hatchery and develop a Hatchery Plan that outlines the updates required of the facility, updates to existing practices and timelines.
- b. As part of the development of the Hatchery Plan, coordinate efforts and align with the Yukon River Chinook Rebuilding Strategy (currently under development) as well any other hatchery or stewardship related initiatives (e.g. Chu Niikwän Gyu Salmon Stewardship Centre Feasibility Study and Michie Creek Chinook Salmon Monitoring Project).
- c. Include Southern Lakes First Nations communities in annual planning sessions to ensure holistic and collaborative approaches (as per Ecofish 2024).
- d. Research alternative fry release locations supporting establishment of other spawning populations.
- e. Develop metrics of hatchery success tied to the return of adults, rather than the number of Chinook reared and released.
- f. Investigate potential of collecting brood stock from locations immediately downstream of WRGS (e.g., near Robert Service Campground) and allowing adults who have successfully navigated as far as the viewing chamber of the fish ladder to continue to their spawning grounds.

4.2. *Mitigations/Terms and Conditions*

Mitigations/Terms and Conditions that the Southern Lakes First Nations expect to be included are:

- a. Shift the focus of the hatchery to conservation and stock rebuilding, rather than compensation for entrainment mortality.
- b. Incorporate cultural activities as outlined in Herkes (2023) in the operation of the hatchery.
- c. Test changes to naturalize hatchery conditions including updating hatchery practices, such as water temperature, to release fry that are more similar in size and condition to wild fish (as per Ecofish 2024).
- d. Evaluate fry release locations to ensure that the release streams are suitable for rearing and spawning for those salmon that return.
- e. Evaluate fry release methods and explore options that allow fry to acclimatize to water temperatures and conditions of release streams more gradually, instead of a quick release into the stream. This may include observational assessments during the release.
- f. Implement recommendations in Ecofish 2024 that the Technical Working Group identifies as important.
- g. Ensure that the WRGS hatchery is in compliance with all Federal and Territorial permitting and licensing requirements. Aquaculture facilities and activities in Canada are regulated under a number of acts, legislations, regulations, and programs related to environmental management and shared use of aquatic resources.

5. Extend Ramping Rate Protocols to Yukon River confluence with Takhini River

Flow ramping, or changing the flow rate, is the gradual or progressive alteration of discharge in a stream channel resulting from the operation of a hydroelectric facility. Currently, Yukon Energy's ramping protocols for the WRGS were designed for juvenile Chinook using Robert Service Channel and do not consider other areas downstream of the facility that may be cut off from flow when the flow rate is decreased at WRGS or consider potential impacts on resident fish species. Ramping studies that identify areas that could be impacted by changes in flow rate between WRGS and the Takhini River confluence are nearing completion by Environmental Dynamics Inc. for the Technical Working Group. The Southern Lakes First Nations expects that these ramping rate studies be included in YESAB's assessment.

"When we talk about being caretakers of the salmon, that extends to the waters"

~ Connecting the Broken Salmon Trail (C/TFN et al. 2023)

5.1. Additional Studies

- a. Complete the "in progress" ramping studies between WRGS and the Takhini River confluence to inform the update to the existing ramping protocol. This update must consider both salmon and freshwater fish species.

5.2. Mitigations/Terms and Conditions

Mitigations/Terms and Conditions that the Southern Lakes First Nations expect to be included are:

- a. Implement updated ramping protocols that are effective at mitigating stranding losses inclusive of the section of Yukon River between the WRGS and Takhini River confluence.
- b. If ramping protocols can not be met, dispatch fish salvage crews to all potential side channel habitat to salvage any stranded fish. Note: the timing and extent of fish salvage crew deployment is critical and ideally crews should be present before ramping commences when protocols can not be met.
- c. Include an annual review of flow rates and fish stranding events to in the annual MAMP report.
- d. Update ramping protocols as necessary to account for changing geomorphology in the river. To determine if updates are required, changes to geomorphology should be monitored on a frequent basis, period to be determined.

Closing

In closing, we appreciate the opportunity to share our concerns and recommendations with your team.

Participant quotes from Story telling event Dátsuq̄ k̄ȳ yù dānāl kwändür "Our Grandma's House, There She Tells Us Stories" (KDFN 2023):

"We need to work with Yukon Energy, governments and the FNs because it is important for us to sustain all waterways for future generations. We can share our outlook on water and how we can take care of it because it is so important for us and the fish and other animals that live in this water and land."

"My hope and dreams for the fish and water are that they need each other and us to help them thrive and we need them to help us live. The water and fish are our relations. We also enjoy the benefits of hydro electricity and need to learn how to all live together."

A quote shared by TKC Elder Betsy Jackson (TKC 2024):

"Our great grandparents and grandmas, had their fish camps at Robert service. And when the dam was put in, and Charlie Burns, said it so very well; that they broke the salmon trail. They broke that connection to the spawning grounds. And so when that decline started slowly happening, because the fish couldn't make it to their spawning ground. So where did they spawn? What did they do and was 5 years or something like that, before they finally put a fish ladder in. And that was over many demands of people saying it needed to be done. But at that time, our voice was never heard. And so we had fish camps all along the Yukon River. And the fish camps were a communal way of life, where we got together, families would come together over the summer. Communities would come together over summer at fish camps. And that's when you would be able to do your harvest, do your visiting, do your trading, marriage in between the different communities and through from that time, until about in, in 2010 that we really saw the decline of the salmon in closing down of fish camps and asking us not to fish and so the dam really has impacted not just us here in the Whitehorse area but throughout the whole Yukon River Watershed because of breaking that salmon trail."

We need to come together to help bring back our salmon.

Carcross/Tagish First Nation Elders Statement:

Our Clan Elders have provided us with spiritual guidance and cultural instruction and have clearly stated the following principles and directions to be caretakers of our Lands and Waters and to work with Others in a good way for all:

*We who are Tagish and we who are Tlingit
Our heritage has grown roots into the earth since the olden times
Therefore we are part of the earth and the water
We know our Creator entrusted us with the responsibility
Of looking after the land into perpetuity, and the water
And whatever is on our land, and what is beneath our land
So those coming after us, will give them that responsibility into perpetuity
Our Elders have assigned us the task of showing respect to things
Therefore, we will look after our land as they have told us to do,
As did our Elders*

*Because we were the first to come to this land
That is now called Canada
We will be the bosses of our land
We will watch over our land
As we have agreed upon
And as we ourselves manage things according to our traditions
We will bequeath it to those coming after us into perpetuity
We will work with people to strengthen our heritage
To give a firm foundation to our people's lives
And to manage our land well
We will work with all peoples to take good care of our land
And all the resources of this land
As we have agreed on, and we will be our own masters
We who are Tagish and we who are Tlingit
We will protect our land
So that things will be according to what has been agreed to
So that they will live by it
According to what we have agreed on
We will reform the way we work with the government
We will work together with mutual respect
And act truthfully toward each other
We will all work together
Those who own the land those who use the land
We will manage together
The land and the water and what is on the land
Then everything will be prepared for those coming after us
As we have on, so we will act
We will work as our elders instruct us
And improve the lot those coming after us
We will use our land with other Nations
Moreover, we will look after our land well
So that our descendants can see how good it is
And in this way we will respect our land from which we were born*

Southern Lakes First Nations Concerns and Recommendations Related to Fish Passage at the WRGS

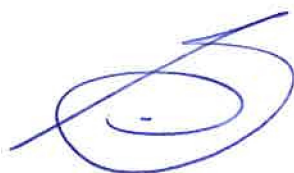
Given the importance of salmon to both our people and to our ecosystem, we trust that YESAB will consider the concerns raised above in the assessment and incorporate our recommendations in YESAB's Terms and Conditions. We also request that the Decision Bodies incorporate our three Nation voices to include these recommendations into the Decision Document(s).

Shàw níthän, Gunalchéesh,
The Southern Lakes First Nations



Chief Leas

Ta'an Kwäch'än Council



Chief Smith

Kwanlin Dun First Nation



Haa Shaa Du Hen Benoit

Carcross/Tagish First Nation

Cc:

Chris Milner, President, Yukon Energy Corporation

Premier Pillai, Premier of Yukon, Minister of Executive Council Office and Aboriginal Relations, Yukon Government

Minister Clark, Minister of Environment, Yukon Government

Minister Streicker, Minister of Energy, Mines and Resources, Yukon Government

Steve Gotch, Senior Director, Pacific Region, Fisheries and Oceans Canada

Bill Waugh, Director, Yukon/Transboundary Area, Fisheries and Oceans Canada

Dennis Zimmerman, Chair, Yukon Salmon Subcommittee

Elizabeth MacDonald, Manager of Fisheries, Yukon First Nation Salmon Stewardship Alliance

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- Personal Communications:*
- Lawrence Vano, former Hatchery Manager for Whitehorse Rapids Fish Hatchery.