March 2025

kʷikʷəƛ̓əm
Kwikwetlem First Nation

kʷikʷəƛ̓əm ƭáḵʷ Hatchery

In this issue:

Program Objective

The kʷikʷəƛ̓əm ƭáḵʷ Hatchery will strive to produce kʷikʷəƛ̓əm Sockeye smolts to release below the Coquitlam Dam in order to improve understanding of the ocean survival rate for kʷikʷəƛ̓əm Sockeye and the ability for this stock to re-anadromize — the characteristic where a freshwater born fish migrates to the ocean to grow up to be an adult, before returning to freshwater to spawn.

Banner adorning the main fence of the hatchery

kʷikʷəƛ̓əm Sockeye Hatchery is given its name—"kʷikʷəƛ̓əm ƭáḵʷ Hatchery"

The kʷikʷəƛ̓əm Community selected a name for the hatchery. Going forward, the hatchery will be referred to as kʷikʷəƛ̓əm ƭáḵʷ (Kwikwetlem Takw) Hatchery which translates to "Red Fish Up the River Return Home".

Eight Sockeye were captured in the trap at the Coquitlam Dam on August 2, 2024. Seven of these Sockeye are in this picture.

2024 kʷikʷəƛ̓əm Sockeye Recap

The 2024 Sockeye season saw the most Sockeye captured in a year. It was also a year that saw the most kʷikʷəƛ̓əm Sockeye captured on record —an encouraging sign! Thirteen Sockeye were captured, transported and released to Coquitlam Lake. All 13 were confirmed via DNA testing to be kʷikʷəƛ̓əm Sockeye. Interestingly, the Pacific Salmon Commission also encountered a kʷikʷəƛ̓əm Sockeye in their test fishery above Hope.

Hatchery completed and handed over to operations

As is with construction projects, environmental conditions may impact progress from time to time. The start of 2024 saw the continuation of hatchery construction that had commenced in 2023. Extremely cold temperatures delayed concrete works on the water treatment trailer basement.

Heightened fire risk at the start of the summer meant that the hours in the work day were shortened as work was confined to morning hours to avoid the midday heat and increased levels of fire risk. By the time we got to August, the fire risk had subsided enabling work from dawn to dusk, 7 days a week to push through and get construction completed.

Pouring concrete in January 2024 for the water treatment trailer basement.

River intake construction during the least impact fisheries window was a constant effort of managing water in the excavation.

Major construction works completed on November 15th....this enabled operational startup of the hatchery—a significant milestone in the 5 year old life of the project!

River intake construction was conducted during the summer. The team was challenged by the stability of the area, requiring shoring boxes to be placed in the hole. Each work day started with water removal in the construction zone before the days work could begin.

Ultimately, the major construction works completed on November 15th. All of the heavy equipment was removed from the hatchery site. This enabled operational startup of the hatchery—a significant milestone in the 5 year old life of the project!

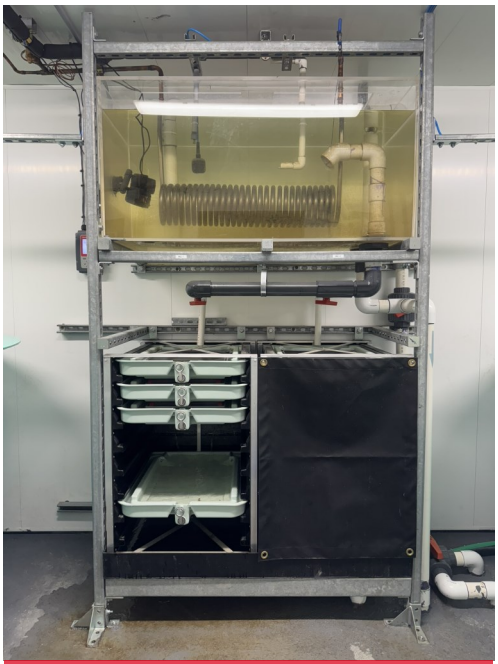
View of the hatchery grounds from the degassing tower

Select pictures of the completed hatchery

Degassing tower removes gases in the water . Water cascades through screens (inset)

Backup power is provided by a 100 kW generator running off of propane fuel.

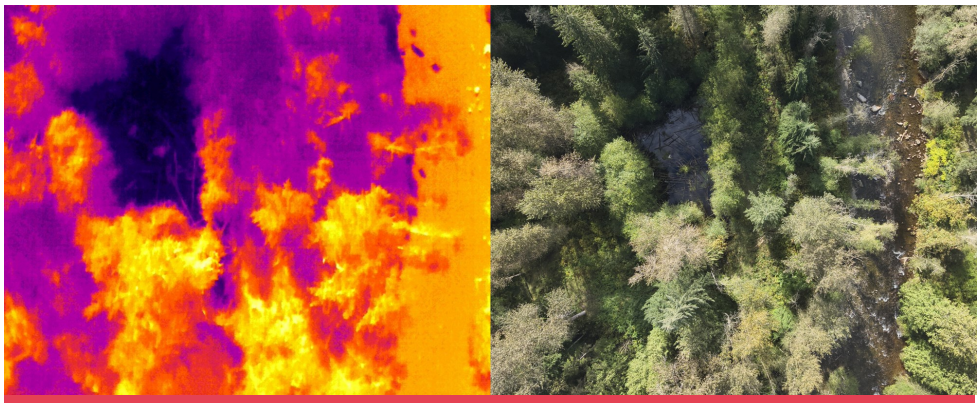
Effluent water filtration and UV disinfection in the basement of the water treatment building prior to discharge to the river.



Heath tray egg incubators. Heat pump coils in the head tank for water temp. control.

Broodstock holding tanks segregated at the back of the hatchery equipped with airlift recirculation to chill water in Summer.

Coquitlam River Thermal Refugia Assessment



A drone equipped with a thermal imaging camera conducted a number of flights over the upper part of the Lower Coquitlam R. to create baseline images in attempts to identify sources of cold water with which to focus on and create thermal refuges.

Warm water temperatures (particularly in a dam controlled, low summer flow regime) are not a good environment for migrating adult Sockeye. Temperatures above 18C are detrimental to Sockeye and can result in pre-mature death and reduced spawning success. Areas of cooler water flows help provide resting spots on their migration to the spawning grounds. With the help of thermal imaging drones, DFO's Resource Restoration team helped create baseline images which can be used to help identify areas of cold water inflows. This is where habitat enhancement efforts can focus on promoting thermal refugia for the benefit of migrating Sockeye and other salmonids present in the Coquitlam River during warm water conditions.

(Photo: R. Lee)

kʷikʷəƛ̓əm Sockeye smolt captured in the Rotary Screw Trap in 2024

Coquitlam Lake Hydro-Acoustic Survey

Hydro-acoustic surveys use sound waves to map "targets" in the hydro-acoustic device. This tool is a way to estimate the population of Residualized Sockeye in Coquitlam Lake. Biologists, Elmar Plate and Jessica Johnson-Mackinnon, surveyed Coquitlam Lake in early October 2024. Based on the results of the survey, the Coquitlam Residualized Sockeye population was estimated to be ~30,700 fish (95% confidence interval: 16,200—49,100). For comparison purposes, we observed the following estimates in the prior survey years:

Year	Estimate	Low Bound 95% CI	High Bound 95% CI
2024	30,700	16,200	49,100
2023	39,000	20,500	62,000
2011	58,500	26,600	90,300
2010	42,000	20,500	63,600
2005	97,500	8,700	186,000

We will continue to survey the lake in future years to monitor the health of the Sockeye population and potential impacts of the program.

kʷikʷəƛ̓əm ƭáḵʷ Hatchery Incubates Coho Eggs to Test the Hatchery

The Grist Goesen Memorial Hatchery, a Port Coquitlam based, volunteer salmon hatchery, provided the Coho broodstock from the which the eggs and milt (collectively, otherwise known as “gametes”) were harvested for the **kʷikʷəƛ̓əm ƭáḵʷ** Hatchery. These gametes were brought back to the **kʷikʷəƛ̓əm ƭáḵʷ** Hatchery where they were counted, fertilized, disinfected and loaded into the incubator to start incubation. Raising Coho allows the hatchery to use a healthy stock (i.e. the Coquitlam R. Coho population is strong) that’s easy to raise (i.e. Coho) and doesn’t have bio-security risks present with Sockeye.

By testing with Coho, the **kʷikʷəƛ̓əm ƭáḵʷ** Hatchery will be in good position to start raising Sockeye later in the 2025 season.

Only kʷikʷəƛ̓əm Sockeye will be used to fulfill the hatchery production plan of 30,000 eggs

Fran and Violet spawn this female Coho at the Grist Goesen Memorial Hatchery. (Photo: R. Lee)

What’s next in 2025?

2025 is expected to be a big year for the **kʷikʷəƛ̓əm ƭáḵʷ** Hatchery! The Coho fry will be raised at the hatchery until June when they will be transported and released to Cedar Creek. In addition, the hatchery is raising a small number of 2023 Coho pre-smolts that originated from the Grist Goesen Memorial Hatchery. These Coho will be released above the Coquitlam Dam at the lake outlet to observe how they move through the valves that control water flow to the lower river to see if the valves injure fish. Following the release of all the Coho, the hatchery will be setup to receive and hold adult Sockeye when they return to the fish trap at the base of the Coquitlam Dam.

One of the 13 kʷikʷəƛ̓əm Sockeye encountered in 2024! (Photo: J. Madden)

Any Sockeye captured will be transported back to the hatchery where DNA samples will be taken and sent to the lab to determine the origin of the fish. Only **kʷikʷəƛ̓əm** Sockeye will be used to fulfill the hatchery production plan of 30,000 eggs. Considering the historically low number of **kʷikʷəƛ̓əm** Sockeye returning in any one year, we fully expect to have to target Residualized Sockeye from Coquitlam Lake to help round out brood stock collection for the hatchery.

kʷikʷəƛ̓əm

Kwikwetlem First Nation

About kʷikʷəƛ̓əm t̓áḵʷ Hatchery:

kʷikʷəƛ̓əm t̓áḵʷ Hatchery is an important next step in the Nation's long-term goal of building a sustainable run of Sockeye salmon back to the Coquitlam River and Coquitlam Lake Watershed. Since 2003, the Nation has been working to restore Sockeye salmon through the kʷikʷəƛ̓əm Salmon Restoration Program which has included conducting studies to inform the BC Hydro Fish Passage Decision Framework and rebuilding fish habitat areas. We work in collaboration with many other organizations including First Nations, governments, community groups, NGOs, and universities. For information on kʷikʷəƛ̓əm First Nation stewardship initiatives, please visit our website https://www.kwikwetlem.com/stewardship.htm

Construction of the hatchery commenced in 2023 and was completed in November 2024.

For more information, please contact:

Rodney Lee, Project Coordinator, kʷikʷəƛ̓əm First Nation, rodney.lee@kwiketlem.com

kʷikʷəƛ̓əm First Nation Communications, communications@kwikwetlem.com

A partnership between:

kʷikʷəƛ̓əm
Kwikwetlem First Nation

BC Hydro
Power smart

metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

Fisheries and Oceans Canada | Pêches et Océans Canada