

Technical Memorandum

Date: August 18, 2023

From: D. Bates, Sr. Biologist

To: Sandi Bandara, Environmental Technician, SCRD

CC: Jim Wilson, Community Advisor, Fisheries and Oceans Canada
Sid Quinn, Manager, Resource Management Dept, shíshálh Nation

**Re: Proposed Chapman Creek Monitoring Plan for EFN
Reduction in 2023**

The Sunshine Coast Regional District (SCRD) is proposing to lower the current minimum “Environmental Flow Need (EFN)” of water license C050724 from 200 l/s to 160-180 l/s in Chapman Creek. This reduction would occur for the months of July, August and possibly early September, prior to and during the period of the Pink Salmon migration. In addition to monitoring the early Pink Salmon return, current conditions that support rearing juvenile salmonids, including Coho Salmon and Steelhead and Coastal Cutthroat Trout will also require monitoring during the period of reduced EFN.

It is proposed that an instream-monitoring plan be implemented immediately and prior to the reduction to ensure there is no harm to fish or habitat occurs.

Reducing the Chapman Creek flow is intended to slow drawdown on Chapman Lake allowing for the conservation and storage of water to be used for EFN and community needs during the pending predicted area drought.

The Monitoring Plan (MP) will assess the potential effects and risk of lower summer flows through the anadromous reaches of Chapman Creek to existing salmonid migration (Pink Salmon) rearing juvenile salmonids habitat/refuge. Only Pink Salmon migration is proposed at this time with the expectation that river levels and storage will increase to a normal seasonal level for the migration of Coho and Chum Salmon in October and November.

Specifically, this proposed plan addresses the following fisheries components at a reduced flow of 160-180 lps starting in July 2023. Flow monitoring is recommended at the top of Reach 2 and above the hatchery intake. This is the location previously used to monitor EFN compliance.

1. The ongoing monitoring of returning odd year dominant Pink Salmon. This population, introduced from Vancouver Island populations has in the last two cycles varied greatly in number. The monitoring of this species should occur from the beginning of August until mid-September.

Details of a proposed monitoring for Pink Salmon, is included as an attachment to this document.

2. Observational surveys should focus on the key habitats within Reaches 3 and 4 and look to document stranding and/or signs of juvenile stress. No handling of juveniles is proposed during this period because of the increased risk to juveniles during a period of potential elevated water temperatures that could result in unnecessary mortality.
3. Monitor water temperature within the reaches below the water survey station.
 - Water temperature is currently being logged at 6 locations on Chapman Creek by FSCI Biological Consultants. This data while not directly attached to an ongoing project can be accessed and provides a baseline for pre-EFN reduction comparison.
 - Water temperatures recording should continue to be logged every 15-min. The FSCI Biological Consultants and the SCRD will summarize the data.
 - Threshold trigger for pulsed water release is the exceedance of a maximum daily of 22°C that does not return to a temperature less than 20°C within three hours. The monitoring of the temperature may require data access on a frequent basis. This will be considered as previous years 7-day average daily maximum nears 20°C.
4. The establishment of a gauging station for the lower river at Reach 3.
 - Reaches 3 and 4 and the related stage and discharge estimates will be compared to “actual” flows reported at the SCRD water monitoring gauge. The data will be used to evaluate the habitat quality previously reported by Bates (pers comm)
5. Dissolved oxygen (DO) level monitoring
 - *In situ* measurements of dissolved oxygen during summer months (late July to September). This is typically the period of lowest water volume and highest air and water temperatures.
 - Dissolved oxygen will be measured midway through reach 3 and below the hatchery in Reach 1. Measurements should be collected mid-day and all data recorded.
 - Decreased oxygen is unlikely to result in harm to fish if fish have the ability to seek out refuge areas that support acceptable DO. The concern is in areas where movement may be hampered or restricted and DO values are less than 100% saturation on the day of measurements should be translated to concentration. A concentration of less than 7.0 mg/l triggers the need to complete a field survey and document fish behaviour that may indicate oxygen stress. In the event DO stress is suspected increased water release should occur and continuous DO monitoring at select points in Reaches 3 and 4.

The study locations are shown on the attached map. These areas were the basis of earlier work completed for the SCRD, shíshálh First Nation, Fisheries and Oceans Canada (DFO) and Ministry of Environment and Climate Change Strategy (MoE) from 2008 to present.

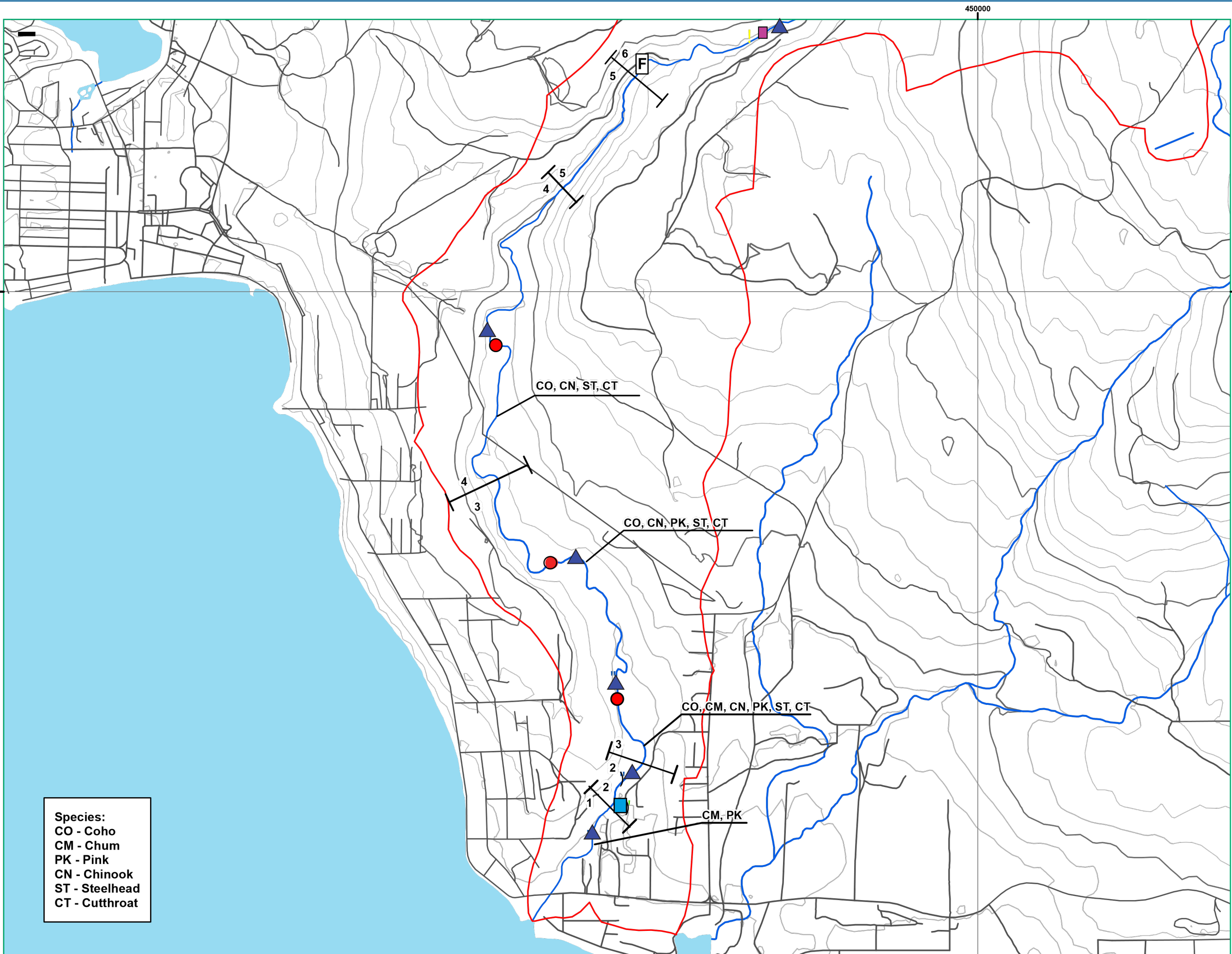
The proposed field activities are intended to obtain information on anadromous fish behaviour and response to low flows in Chapman Creek. The information will enable any planned response to ensure fisheries values are protected during low flow conditions.

Monitoring will take place daily by the Lead Qualified Environmental Professional (QEP) or alternate QEP/trained SCRD staff while flow reductions are occurring. Water quality including temperature and DO will be measured during each site visit.

Reporting timelines will include bi-weekly written updates from the SCRD and a final report of the findings in the late fall of 2023. The bi-weekly reports will present the daily monitoring results, highlight concerns with the data or impacts on the environment, and summarize actions taken in response to those concerns. Reports are to be forwarded to the shíshálh First Nation, DFO and Ministry of Forests (MOF).

In the event data and/or field observations find fish and fish habitat at risk of serious harm and loss, the appropriate release of water would be required to rectify the concerns.

A handwritten signature in dark ink, appearing to read "David R. Bell", with a stylized flourish at the end.



Species:
CO - Coho
CM - Chum
PK - Pink
CN - Chinook
ST - Steelhead
CT - Cutthroat

Chapman Creek Anadromous Reaches

June 15, 2020



- Legend**
- Chapman Creek WS
 - Reach Break
 - Assessment Sites
 - Fish Sample
 - Hatchery
 - Falls
 - SCRD Intake
 - Temperature Logger
 - Streams
 - Roads
 - Species Observed

Source: Province of British Columbia
Scale: 1 : 20,000
Map projection: UTM Zone 10N
Datum: NAD 1983

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