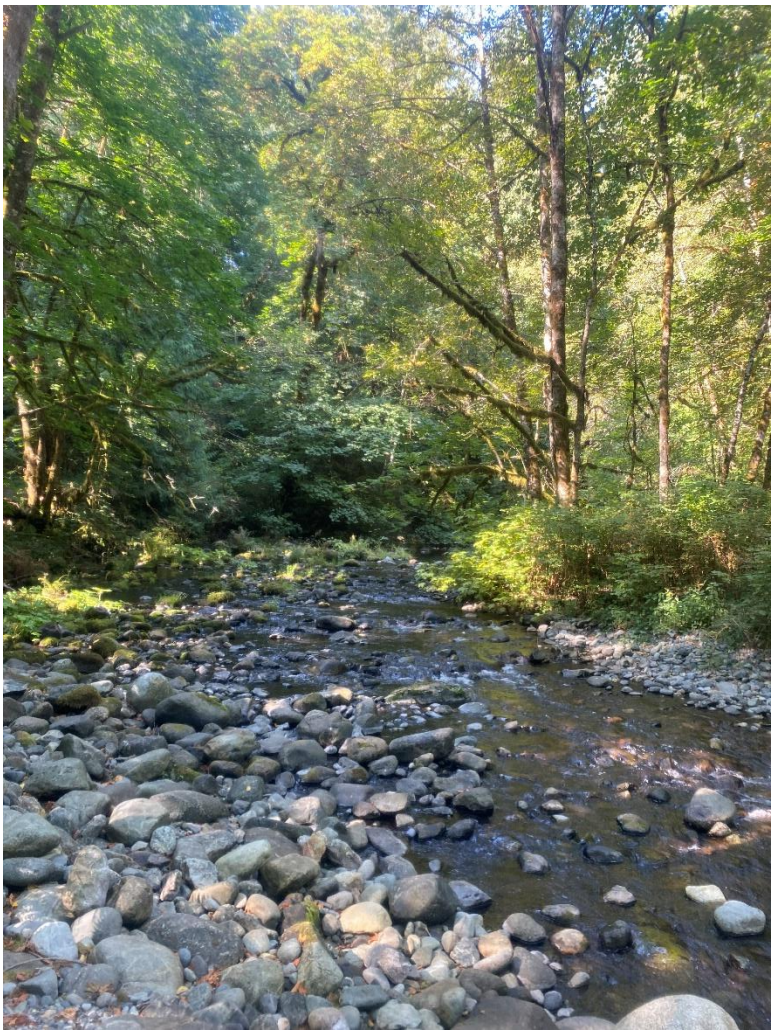


Aquatic Creek Assessment

For Waugh Creek

Amber Rose | ENVR 112 | Jan 28,2026

Land Acknowledged

Camosun College respectfully acknowledges that our campuses are situated on the territories of the Lək̓ʷəŋən (Songhees and Kosapsum) and W̱SÁNEĆ peoples.

We also acknowledge that our testing site is on the tradition territory of the MÁLEXEŁ or Malahat Nation as one of the five Coast Salish Indigenous community of the W̱SÁNEĆ (Saanich) Nations

We honor and respect our ability to access, use and study on these traditional territorial lands.

Executive Summary

The Goldstream river system is of key interest to be studied as each November salmon come to spawn in river and its tributaries. While salmon especially wild caught salmon is a lucrative industry for BC, salmon are an essential part of the BC coastal ecosystem as a important food source for terrestrial and marine animals including the coastal wolf, bear, and orca to name a few. Salmon population are a concern as we watch the Resident Orca population struggle to thrive and can been seen to be showing sign of malnutrition (CanGov, 2022).

The Key findings of this CABIN report for the Goldstream river, is that the water chemistry is supportive of healthy fish spawning habitat based on the dissolved oxygen levels and pH, and that based on the high proportion of disturbance sensitive benthic macroinvertebrates the water shows that is has maintained a good water quality consistently.

However, with a low diversity and the presence of only one of the three Disturbance sensitive benthic macroinvertebrates, the area should be carefully watch to ensure that the quality is maintained.

Table of Contents

Study Area

In this aquatic site assessment 1 report we will be assessing the health of the Goldstream River. The Goldstream River is part of the Waugh creek water basin and has a stream order of 3.

The sample site is located near a busy trans Canada highway, in the Goldstream Park near the Goldstream Campsite. To get to the sample site you take the turn-off for the Goldstream campsite and park at the upper parking lot. From this parking lot it's about a 100m walk down towards the water. A feature to consider is that the sample site is 150 m upstream from the fishing weir.

The sample site is located at the GPS coordinate of 48.46058" N and -123.55280" W, the approximant GPS coordinates can be seen in Figure 1 and 2. The sample site has an elevation of 58m above sea level.

The area immediately surrounding the sample site is forested with a dense canopy used for recreation with popular hiking trails and campsite nearby. Outside of Goldstream park the surrounding area is a mix of residential and commercial land use, The land use can be seen in Figure 1, where the grey areas represent residential and commercial land use areas, the darker green areas represent the forested park area, and the lighter green represents the Goldstream campsite. In Figure 2 and Figure 5 you can see the density of the canopy cover from a satellite view in figure 2 and a ground view in figure 4. Figure 3 is the site drawing that can be compared to the photos of the upstream view (figure 6), cross stream view (figure 4) and downstream view (figure 7).

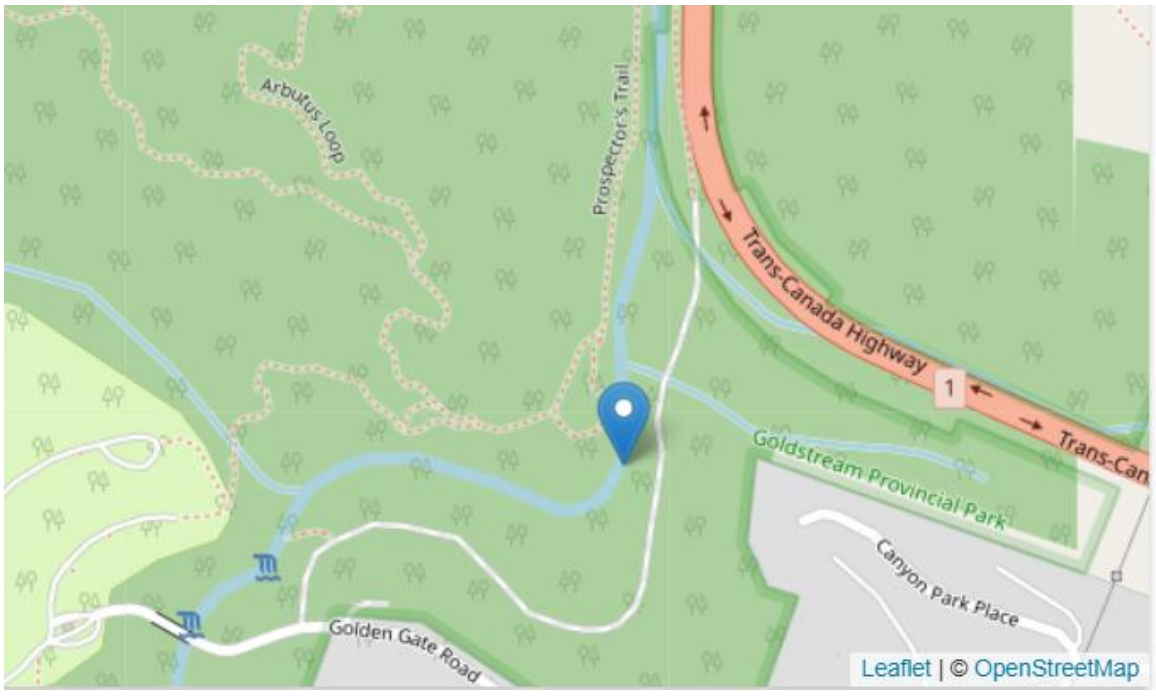


Figure 1: Road map showing approximate GPS Coordinates of sample site

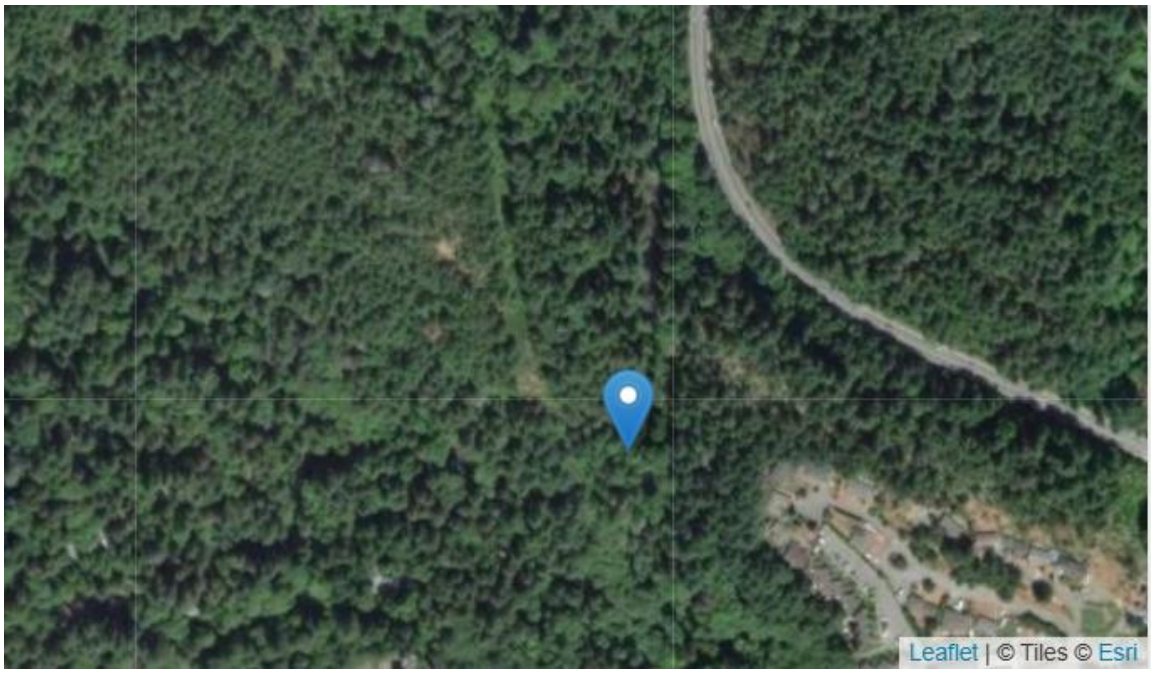


Figure 2: ESRI Satellite view of approximate GPS coordinates for sample site

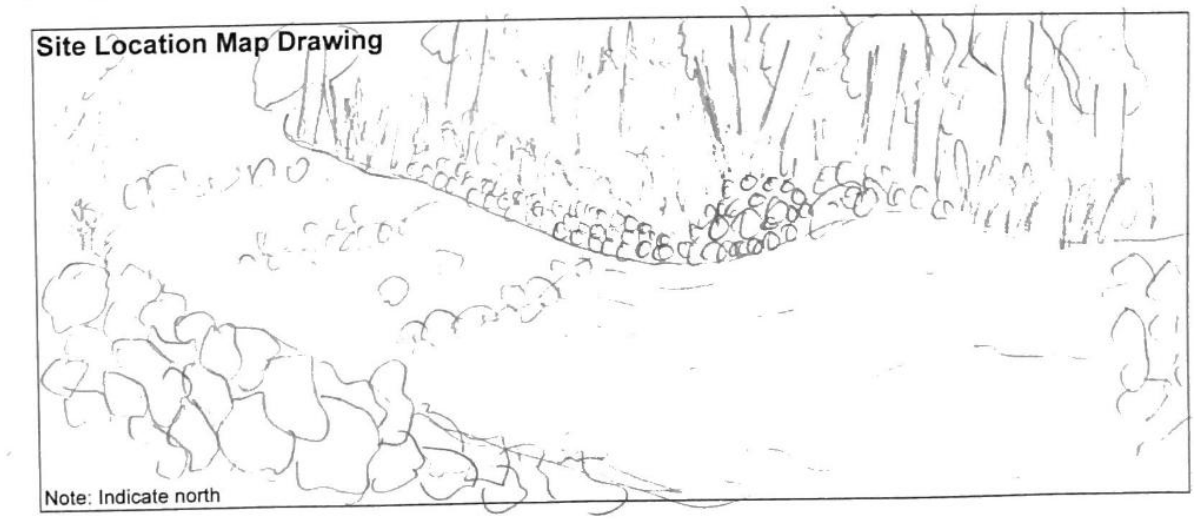


Figure 3: Site location drawing from field notes

Figure 4- 7: Starting from the top left, Cross stream view, view of canopy, upstream view and downstream view

Methods

All methods used come from the Canadian Aquatic Biomonitoring Network Field Manual for Wadable Streams (CABIN, 2012).

Aquatic Habitat Assessment

Following the Canadian Aquatic Biomonitoring Network or CABIN protocol (CABIN 2012) the aquatic habitat was assessed using the standardized methods to sample, connect and document the stream habitat. This includes:

- Noting the type of sediment present in the riffle zone and stream bank
- Using a Kicknet to collect a sample of the benthic invertebrates in the riffle zone
- Noting the reach characteristics like type and abundance of plants in the water, on the stream bank and within the site area (6 time the bankfull distance), canopy coverage and habitat type
- Calculating the channel data by measuring the change in slope using the Rod and level in the field.

See the field manual for a more detailed breakdown on methods

Water Chemistry

Following the CABIN protocol (CABIN, 2012) the water chemistry was collected on site using the YSI and pH prob. The data that was collected with the YSI included the dissolved oxygen concentration, water temperature, and specific condition of the water. Stream Velocity was measured using a wing swoffer at 5 points across the streams wetted width at roughly 1.3m intervals. No lab samples were collected at the sample site for further study.

Benthic Invertebrate Taxonomy

Following the CABIN protocol (CABIN, 2012) a sample of Benthic Invertebrate were collected through the use of a Kicknet in the riffle zone on the stream seen in Figures 4, 6 and 7. The Kicknet was in the water for 3 mins at a typical depth of 18cm. No samples were preserved for future identification in lab. The bucket swirling method was also not used to separate out the benthic invertebrate from the substrate. Taxonomic Identification was done in the field using the Taxonomic Groups Reference Guide (Canadian Gov., 2026).

Result

Based on the above methods the data that was collected can be used to gain a better understanding of the health of the Goldstream river and would also reflect the health of the Waugh creek water basin system. In the discussion we will relate the finding at the sample site with the health of the specific sample site and applying it broadly to the health of the Waugh Creek water basin.

Primary Site Data

The Aquatic Site Assessment 1 of the Goldstream River is located within the Waugh creek water basin. the stream order of the of the Goldstream River is 3 with a map scale of 1;50,000.

Geographical Description

To get to the sample area for the Aquatic Site Assessment 1, you turn off the Trans-Canada Highway and head towards the Goldstream campsite, park at the upper parking lot, and walk about 100m to the stream, see figure 1 for a map of the approximate sample site. A key feature of water way is that the sample site is 150m upstream from the fishing weir. This does meet the CABIN distance from water distributing features (50 meters upstream from distributing features) so it meets the CABIN guidelines for site selection. The dominant surrounding area is made up of forested areas with is a popular recreation area and leads to salmon spawning areas. Outside of the immediate areas around the sample site the surrounding areas is made up of recreational, residential, commercial, industrial and forested areas, This can be seen in figure 1, where the grey areas represent residential and commercial land use areas, the darker green areas represent the forested park area, and the lighter green represents the Goldstream campsite and recreational areas. The above land used were identified through personal observation of the surrounding and immediate area by the sampling crew.

Location data

The GPS coordinates for the site was 48.46058”N -123.55380”W. This is taken in the DD GSP format with a GPS Datum of WGS84. The elevation was recorded at 58m above sea level.

Site location map

See Figures 1, 2 and 3 for the site location map and site drawing.

Site Photos

See figures 4,5,6, and 7 for the site photos. Figure 4 is the cross-stream view at the sample site. Figure 5 is a ground view of the canopy to show the canopy cover. Figure 6 shows the downstream view from the sample site and Figure 7 shows the upstream view from the sample site.

Reach Data

The Reach date represents the areas that is 6 times the bankfull width surrounding the sample site. This is used to identify and better understand the area surrounding the sample site and what impact that might have on the health of the stream. The extent of the reach area was visually estimated by the field crew before data was collected. The stream habitat that was sampled was a riffle type habitat with a canopy coverage, seen in figure 5, of 51-75% coverage. The stream side vegetation, some of which made up the canopy coverage, included ferns, grasses, shrubs and deciduous trees. The dominant stream side vegetation was recoded as shrubs. Aquatic plant coverage is separated into macrophyte and periphyton coverage. Macrophyte (floating aquatic plants) coverage was recorded as 1-25% coverage, this does not include algae or mosses. The Periphyton (benthic algae that covers the substrate) coverage was recorded as about 1-5 mm in thickness which gave it a score of 3 out of 5.

Benthic Macroinvertebrate Data

The Benthic Macroinvertebrate data was collected by using a Kicknet to collect a sample of the community of benthic macroinvertebrates found in the riffle habitat that was being studied. Table 1 shows the type of Benthic macroinvertebrate that were found and the proportion that they made up in the collected sample.

Table 1: Community of Benthic Macroinvertebrate collected

Macroinvertebrates	Proportion
Plecoptera (stone flies)	60%
Decapoda (cray fish)	3%
Sarcoptiformes (Mites)	30%
Tubifiicida (Aquatic oligochaete worms)	7%

Water chemistry Data

All water chemistry data was collected in the field with the use of YSI meter and pH prob. The data was collected in the early afternoon at 14:30 PDT. See table 2 below for the data collected.

Table 2: Water Chemistry Data

Measurement	Reading
Air temperature	23.3°C
Water Temperature	17°C
pH	7.38
Specific Conductance	52.1 µs/cm
Dissolved Oxygen (DO)	9.6 mg/L
Turbidity	NA

Turbidity was not recorded on the field sheet, nor were any other samples were taken to be further analyzed in the lab.

Channel Data

The channel data was measured in the field, this included measurements of the slope using the rod and level surveying equipment, measurements of the widths and depth of the stream and measurements of the velocity using the head rob technique and the with a swoffer.

Slope

Using the rod and level surveying equipment the slope was found to be 0.025. This is based on the measured distance from the top of the rifle to the bottom of the rifle, which was 26.6m, with a change in height of 0.385m over this distance.

Widths & depth

The width of the stream was measures downstream from the kick area. It had a bankfull width of 11.3m and a wetted stream width of 7.8m across. The difference in height between the bankfull width and wetted stream width was found to be 47.51cm, this difference is called the bankfull-wetted depth.

Velocity & Depth

To find the average velocity, the velocity was measured at 5 different points across the stream at an average depth of 13.61cm. From the data seen in table 3 below it was found that the average velocity of the stream was 0.27 m/s.

Table 3: Velocity data and averages

Data Points	1	2	3	4	5	Average
Distance from shore (m)	1.3	2.6	3.9	5.2	6.5	
Depth (cm)	10.07	10.65	24.75	11.15	11.45	13.61
Velocity Head Rod: Change in depth	0.08	0.07	1.55	0.50	0.35	
Swoffer: rotations in 40 seconds	0.09	0.07	0.15	0.09	0.12	
Velocity (m/s)	0.12	0.11	0.55	0.31	0.26	0.27

Substrate Data

The substrate was classified as being a mix of three substrate size class categories, 6,7, and 8. The substrate size class that were recorded includes small cobble (Category 6) which classifies rock between 6.4 to 12.8 cm in diameter. Categories 7 and 8 are larger, with category 7 ranging in size from 12.8 to 25.6 cm diameter (cobble) and category 8 are classified as boulders that have a diameter larger than 25.6cm.

Discussion

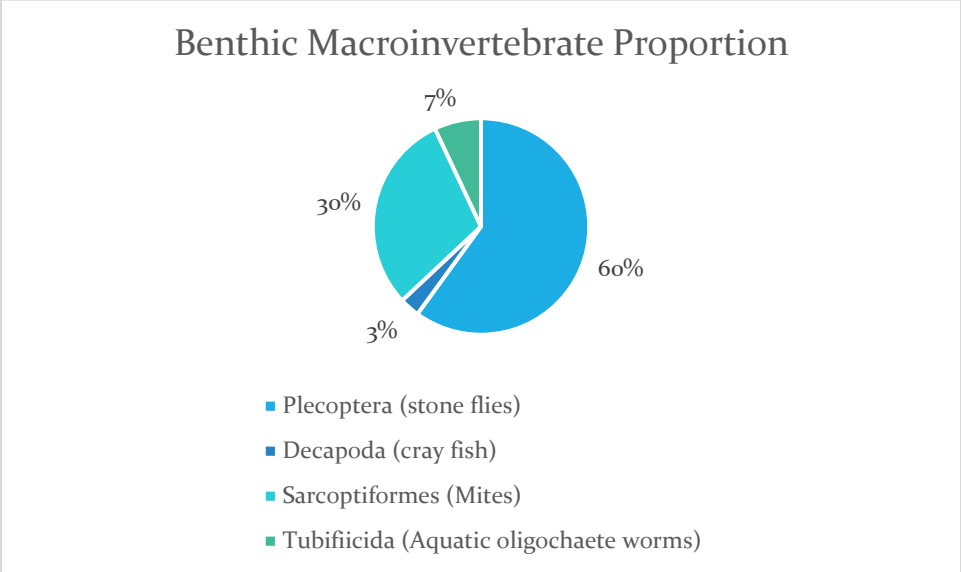
The following this the analysis of the data reported above to determine the water quality and the potential impacts on the health of the water system. This is important to understand as the Goldstream river is salmon spawning river. Salmon are a key to the health of the coastal BC ecosystems as it is an important food source for terrestrial and marine animals, including the resident orca populations that have been struggling due to the drop in salmon stocks. Salmon are also a tradition food of the local first nation groups and popular harvested food source of modern markets. This establish the importance for this river to maintain a high-water quality. Through the CABIN field study we have collected data on the benthic macroinvertebrates, water chemistry and channel characteristics that will aid in determining the health of the Goldstream river.

Benthic Macroinvertebrates

When it comes to analysis of the benthic Macroinvertebrate communities there are a few things that we look at to determine the health of the sample site: richness, abundance and diversity. Richness looks at the total number of unique taxa present, but it can also be used to look at the richness of EPT species (which are sensitive to disturbance) and richness of taxa that can tolerate disturbance. Abundance looks at the total sum of all organism present. Diversity is a more complex calculation that compares the total number of species and their

portion within the community. In the field notes (see appendix B) we were given the proportion of different species where found though kickneting the riffle zone. The proportion can be seen in the pie chart in table 4, this shows the richness found at the sample site. When analysis the richness to see whether or not there has been disturbed we can compare the proportion or richness of pollution sensitive taxa and less sensitive taxa. EPT represents the taxa that is pollution sensitive, and when they are found in abundance then you can assume that the site hasn't been recently disturbed. EPT taxa include Ephemeroptera, Plecoptera, and Trichoptera. At this sample site we found a large proportion of Plecoptera, making up 60% of the collected sample. While this is a positive sign that the sample site hasn't been disturbed, the complete lack on the Ephemeroptera and Trichoptera is a point of concern. The other taxa collected, while not the best indicators of water quality are also not indicators of poor water quality like Hirudinea, Chironomidae and tubifex worms (Elk River report, 2023). The next point on concern is the limited diversity found as only four taxa were collected, this could be a sign of disturbance impacting some macroinvertebrates more then others.

Table 4: Pie chart showing benthic macroinvertebrate proportions



Water chemistry

Water chemistry looks are how the chemical make up of the water can impact the communities that call freshwater systems their home. Different animals will be more or less sensitive to changes in water chemistry. This can water chemistry as useful test to understand the health of body of water and compare it to the diversity and abundance of the communities found at a sample site.

Dissolved Oxygen is very sensitive to the changes in temperature (water and air), concentration of dissolved solids (related to the specific conductance), pH, presence of organic matter and turbulence of the water. Oxygen can be consumed quickly if there is an increase in decomposing organic matter or an increase in biological active, like algae blooms. While some animals have a low need for oxygen, the ideal level is based on the Nation Research Council guidelines from 1975, which are still commonly use, is 7.75 mg/L (DO). Yet the in a more

recent publication the optimum levels range from 5.5 mg/L to 9.5 mg/L depending on life stage and water temperature(DOF). At this sample site the DO levels, at 9.6 mg/L (see Table 2), are above this range and the previous ideal levels. This can mean that the specific conductance, which can show the amount of dissolved salt can be found in water, is not impacting the streams' ability to maintain high oxygen levels. This also reflect the protective properties of a dense canopy that helps maintain a lower water temperature as higher water temperatures can lead to a loss of dissolved oxygen.

The pH is a measure based on concentration of free hydrogen ion in the water. This measurement can highlight how the geology of the watershed is impacting the water quality as well as the influence of pollutants, mineral content and the biological processes that are occurring in the water systems like decomposition, photosynthesis and respiration. Similar to dissolved oxygen there are some animals that are more tolerance to pH level outside of the natural range of pH 6.5-9.0 (CWQG, p 60-61), however some animals are more tolerant to pH levels outside of this range. Fish, depending on species, can tolerate more acid and more alkaline waters. In lower pH water, that are a result of pollution and impact of acid rain, it can impact the reproductive success even in fish that are tolerant low pH (CWQG, p 60-61). Salmonids are sensitive to higher pH level (pH of 9.5 – 10.0), when exposed to these high pH levels for a long period of time it can be lethal (CWQG, p 60-61). The pH at the sample site was 7.38, which well with in the natural range. This would then support health fish population and shouldn't impair reproductive success of fish spawning in the area.

Channel Characteristics

The rock size is ideal for fish spawning and the slop is not so step to prevent the salmon from getting through the riffle to the pools where they can spawn.

Conclusion

While currently the data shows the quality of the water at the sample site is good (high DO level, a neutral pH, high proportions of EPT benthic macroinvertebrates and) the area should be further studies to ensure that these levels are maintained. As this is an important Salmon spawning riving it will be important to ensure that it maintains a high quality spawning area to help the salmon population and all those that depend on the salmon population for food or income.

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Appendix

Appendix A: Field sheet

Field Crew: Holly & Chris Site Code: GOL-01

Sampling Date (DD/MM/YYYY): 11/09/2025

☐ **Occupational Health & Safety: Site Inspection Sheet completed (see page 6)**

PRIMARY SITE DATA

CABIN Study Name: Aquatic Site Assessment I Local Basin Name: Waugh Creek

River/Stream Name: Goldstream River Stream Order: (map scale 1:50,000) 3

Select one: ☐ Test Site ☐ Potential Reference Site

Geographical Description/Notes:
- Turn off towards Goldstream Campsite and park at upper lot, walk ~100m down to water
- Sampled 150m u/s of fishing weir

Surrounding Land Use: (check those present) Information Source: Personal Obs.

☑ Forest ☐ Field/Pasture ☐ Agriculture ☑ Residential/Urban
☐ Logging ☐ Mining ☑ Commercial/Industrial ☑ Other Recreation

Dominant Surrounding Land Use: (check one) Information Source: Personal Obs.

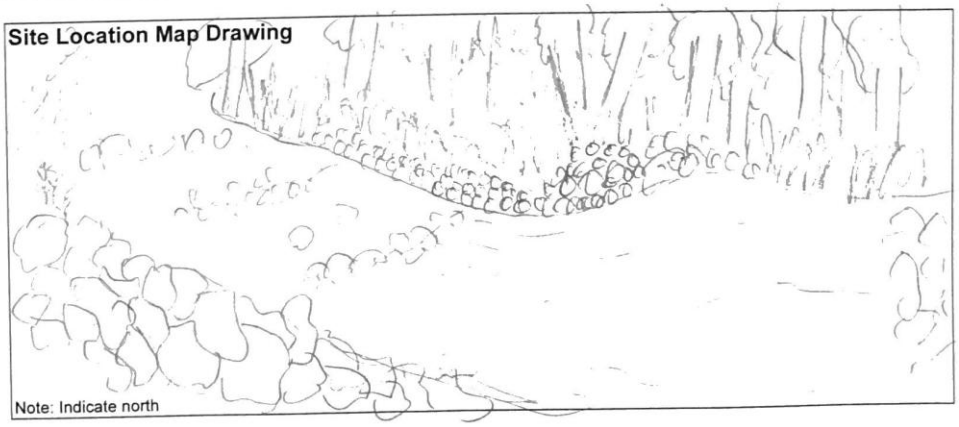
☑ Forest ☐ Field/Pasture ☐ Agriculture ☐ Residential/Urban
☐ Logging ☐ Mining ☐ Commercial/Industrial ☐ Other

Location Data

Latitude: 48.46058° N Longitude: -123.55280 W (DMS or DD)

Elevation: 58m (fasl *or* masl) GPS Datum: ☑ GRS80 (NAD83/WGS84) ☐ Other:

Site Location Map Drawing



Note: Indicate north

Page 1 of 6

Environment and Climate Change Canada / Environnement et Changement climatique Canada — Canada

Field Crew: Holly & Chris Site Code: GOL-01

Sampling Date (DD/MM/YYYY): 11/09/2025

Photos

☒ Field Sheet ☒ Upstream ☒ Downstream ☒ Across Site ☐ Aerial View

☒ Substrate (exposed) ☐ Substrate (aquatic) ☒ Other Canopy cover

REACH DATA *(represents 6 times bankfull width)*

1. Habitat Types: *(check those present)*
   ☑ Riffle ☐ Rapids ☐ Straight run ☐ Pool/Back Eddy
2. Canopy Coverage: *(stand in middle of stream and look up, check one)*
   ☐ 0 % ☐ 1-25 % ☐ 26-50 % ☑ 51-75 % ☐ 76-100 %
3. Macrophyte Coverage: *(not algae or moss, check one)*
   ☐ 0 % ☑ 1-25 % ☐ 26-50 % ☐ 51-75 % ☐ 76-100 %
4. Streamside Vegetation: *(check those present)*
   ☑ ferns/grasses ☑ shrubs ☑ deciduous trees ☐ coniferous trees
5. Dominant Streamside Vegetation: *(check one)*
   ☐ ferns/grasses ☒ shrubs ☐ deciduous trees ☐ coniferous trees
6. Periphyton Coverage on Substrate: *(benthic algae, not moss, check one)*
   - ☐ **1** - Thin layer, no obvious colour (< 0.5 mm thick)
   - ☐ **2** - Yellow-brown to light green colour (0.5-1 mm thick)
   - ☑ **3** - Patches of thicker green to brown algae (1-5 mm thick)
   - ☐ **4** - Numerous large clumps of green to dark brown algae (5-20 mm thick)
   - ☐ **5** - Rocks are mostly obscured by algal mat, extensive green, brown to black algal mass may have long strands (> 20 mm thick)

Note: 1 through 5 represent categories entered into the CABIN database.

BENTHIC MACROINVERTEBRATE DATA

Habitat sampled *(check one)*: ☑ riffle ☐ rapids ☐ straight run

400 µm mesh Kick Net *	
Person sampling	Chris Bruce
Sampling time (i.e. 3 min.)	3 min
No. of sample jars	N/A
Typical depth in kick area (cm)	18cm

* Note: Indicate if a sampling method other than the recommended 400 µm mesh kick net is used.

Preservative used: N/A

Sampled sieved on site using the "Bucket Swirling Method":
☐ YES ☐ NO

If YES, debris collected for QA/QC ☐

Field Crew: Holly & Chris Site Code: GOL-01

Sampling Date (DD/MM/YYYY): 11/09/2025

WATER CHEMISTRY DATA Time: 14:30 (24 hr clock) Time zone: PDT

Air Temp: 23.3 (°C) Water Temp: 17 (°C) pH: 7.38

Specific Conductance: 52.1 (µs/cm) DO: 9.6 (mg/L) Turbidity: _____ (NTU)

Check if water samples were collected for the following analyses:

- ☐ TSS (Total Suspended Solids)
- ☐ Nitrogen (i.e. Total, Nitrate, Nitrite, Dissolved, and/or Ammonia)
- ☐ Phosphorus (Total, Ortho, and/or Dissolved)
- ☐ Major Ions (i.e. Alkalinity, Hardness, Chloride, and/or Sulphate) ☐ Other_____

Note: Determining alkalinity is recommended, as are other analyses, but not required for CABIN assessments.

CHANNEL DATA

Slope - Indicate how slope was measured: (check one)

☐ **Calculated from map**

Scale: _____ (Note: small scale map recommended if field measurement is not possible - i.e. 1:20,000).

contour interval (vertical distance) _____ (m),

distance between contour intervals (horizontal distance) _____ (m)

slope = vertical distance/horizontal distance =_____

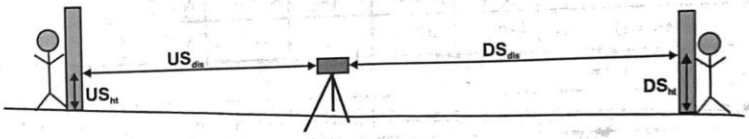
OR

☒ **Measured in field**

Circle device used and fill out table according to device:

(a) Survey Equipment b. Hand Level & Measuring Tape

Measurements	Upstream (U/S)	Downstream(D/S)	Calculation
[a]Top Hairline (T)	1.780	2.180	
[a]Mid Hairline (ht) OR [b]Height of rod	1.730	2.115	
[a]Bottom Hairline (B)	1.670	2.024	
[b]Distance (dis) OR [a]T-B x 100	11.000 [a]US_{dis}=T-B	15.600 [a]DS_{dis}=T-B	$US_{dis}+DS_{dis}$= 26.600
Change in height (Δht)			$DS_{ht}-US_{ht}$= 0.385
Slope (Δht/total dis)			0.025



Field Crew: Holly & Chris Site Code: GOL-01

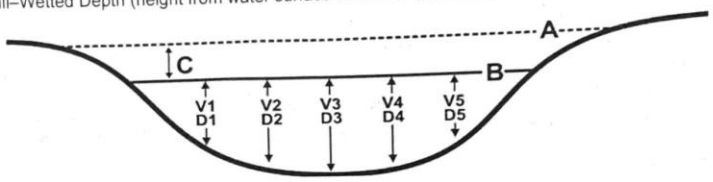
Sampling Date (DD/MM/YYYY): 11/09/2025

Widths and Depth

Location at site: ds of Kick area (Indicate where in sample reach, ex. d/s of kick area)

A - Bankfull Width: 11.3 (m) B - Wetted Stream Width: 7.8 (m)

C - Bankfull–Wetted Depth (height from water surface to Bankfull): 47.51 (cm)



Note:
Wetted widths > 5 m, measure a minimum of 5-6 equidistant locations.
Wetted widths < 5 m, measure 3-4 equidistant locations.

Velocity and Depth

Check appropriate velocity measuring device and fill out the appropriate section in chart below. Distance from shore and depth are required regardless of method:

☑ **Velocity Head Rod (or ruler)**: Velocity Equation (m/s) = √ [2(ΔD/100) * 9.81]

☑ **Rotary meters**: Gurley/Price/Mini-Price/Propeller (Refer to specific meter conversion chart for calculation)

☐ **Direct velocity measurements**: ☐ Marsh-McBirney ☐ Sontek or ☐ Other_____

	1	2	3	4	5	6	AVG
Distance from Shore (m)	1.3	2.6	3.9	5.2	6.5		
Depth (**D**) (cm)	10.07	10.65	24.75	11.15	11.45		13.61
Velocity Head Rod (ruler)							
Flowing water Depth (D_1) (cm)	10.07	10.65	24.75	11.15	11.45		
Depth of Stagnation (D_2) (cm)	10.15	10.72	26.30	11.65	11.80		
Change in depth ($\Delta D=D_2-D_1$) (cm)	0.08	0.07	1.55	.50	.35		
Rotary meter							
Revolutions	0.09	0.07	0.15	0.09	0.12		0
Time (minimum 40 seconds)	40	40	40	40	40		
Direct Measurement or calculation							
Velocity (**V**) (m/s)	0.12	0.11	0.55	0.31	0.26		0.27

Field Crew: Holly & Chris Site Code: GOL - 01

Sampling Date (DD/MM/YYYY): 11/09/2025

SUBSTRATE DATA

1. 100 Pebble Count & Substrate Embeddedness

- Measure the intermediate axis (100 rocks) and embeddedness (10 rocks) of substrate in the stream bed.
- Indicate **B** for bedrock, **S** for sand/silt/clay (particles < 0.2 cm) and **O** for organic material.
- Embededness categories (**E**):
  - Completely embedded = 1
  - 75% embedded = ¾
  - 50% embedded= ½
  - 25% embedded = ¼
  - Unembedded = 0

2. Surrounding/Interstitial Material

Circle the substrate size category for the surrounding material.

Substrate Size Class	Category
Organic Cover	0
< 0.1 cm (fine sand, silt or clay)	1
0.1-0.2 cm (coarse sand)	2
0.2-1.6 cm (gravel)	3
1.6-3.2 cm (small pebble)	4
3.2-6.4 cm (large pebble)	5
6.4-12.8 cm (small cobble)	(6)
12.8-25.6 cm (cobble)	(7)
> 25.6 cm (boulder)	(8)
Bedrock	9

	Diameter (cm)	E		Diameter (cm)	E		Diameter (cm)	E		Diameter (cm)	E
1			26			51			76		
2			27			52			77		
3			28			53			78		
4			29			54			79		
5			30			55			80		
6			31			56			81		
7			32			57			82		
8			33			58			83		
9			34			59			84		
10			35			60			85		
11			36			61			86		
12			37			62			87		
13			38			63			88		
14			39			64			89		
15			40			65			90		
16			41			66			91		
17			42			67			92		
18			43			68			93		
19			44			69			94		
20			45			70			95		
21			46			71			96		
22			47			72			97		
23			48			73			98		
24			49			74			99		
25			50			75			100		

Note: The Wolman D50 (i.e. median diameter), Wolman Dg (i.e. geometric mean diameter) and the % composition of the substrate classes will be calculated automatically in the CABIN database using the 100 pebble data. All 100 pebbles must be measured in order for the CABIN database tool to perform substrate calculations.

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Canada

Field Crew: Holly & Chris Site Code: GOL - 01

Sampling Date (DD/MM/YYYY): 11/09/2025

SITE INSPECTION

Site Inspected by: _____

Communication Information

☐ Itinerary left with contact person (include contact numbers)

Contact Person: _____ Time checked-in: _____

Form of communication: ☐ radio ☑ cell ☐ satellite ☐ hotel/pay phone ☐ SPOT

Phone number: ( ) _____

Vehicle Safety

☑ Safety equipment (first aid, fire extinguisher, blanket, emergency kit in vehicle)

☑ Equipment and chemicals safely secured for transport

☑ Vehicle parked in safe location; pylons, hazard light, reflective vests if necessary

Notes:

Shore & Wading Safety

☐ Wading Task Hazard Analysis read by all field staff

☐ Wading Safe Work Procedures read by all field staff

☐ Instream hazards identified (i.e. log jams, deep pools, slippery rocks)

☐ PFD worn

☑ Appropriate footwear, waders, wading belt

☐ Belay used

Notes:

CABIN Field Sheet April 2023

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Canada

Appendix B: Field Notes

Date: Thurs. Sept. 11, 2025

Crew:

Location: Waugh Creek, Goldstream (48.46058°N, -123.55280W), BC

Site Code: GOL 01

Objectives/ Goals:
- Conduct a Cabin Stream Assessment as per "Cabin Field manual for wadeable streams" (2012)
- Collect & ID Macroinvertebrates using
  - ☑ 'Kicknet' MT
  - ☑ - Measure stream velocity MT
  - Use YSI to find water temp., Dissolved Oxygen (DO), and specific conductance
  - Find slope of study site using level & rod
  - Measure stream velocity using Swoffer
  - Find pH of Stream

Rite in the Rain.

Mactoinvertebrates (est.):
Plecoptera (STONE FLIES) – 60%
Decapoda (crayFish) – 3%.
Sarcoptiformes (Mites) – 30%.
Tubificida (Aquatic oligochaete Worms) – 7%.

Debrief: We arrived at the site at around 10am as a class and had a debrief of the site and safety concerns before walking down to the study site. Chris & I teamed up with Jackson & Lindsay to share equiptment. We went ~150m U/S of the fishing weir. We started out choosing our section of the riffle we would sample, then estimated the bankfull width to visulize and assess our reach from the shore. Next, we practised kicknetting & ID-ing macroinvertebrates. After lunch we measured velocity using the 1m ruler and the swoffer. Then we measured the stope of the study site using a level & rod.

Debrief Cont'd...: Next we used the YSI to measure DO, Specific conductance & water temp & used pH probes to measure pH. By that time, it was time to pack up & go home. We gathered with the rest of the class, took inventory of gear, loaded up and went home.

Rite in the Rain.