



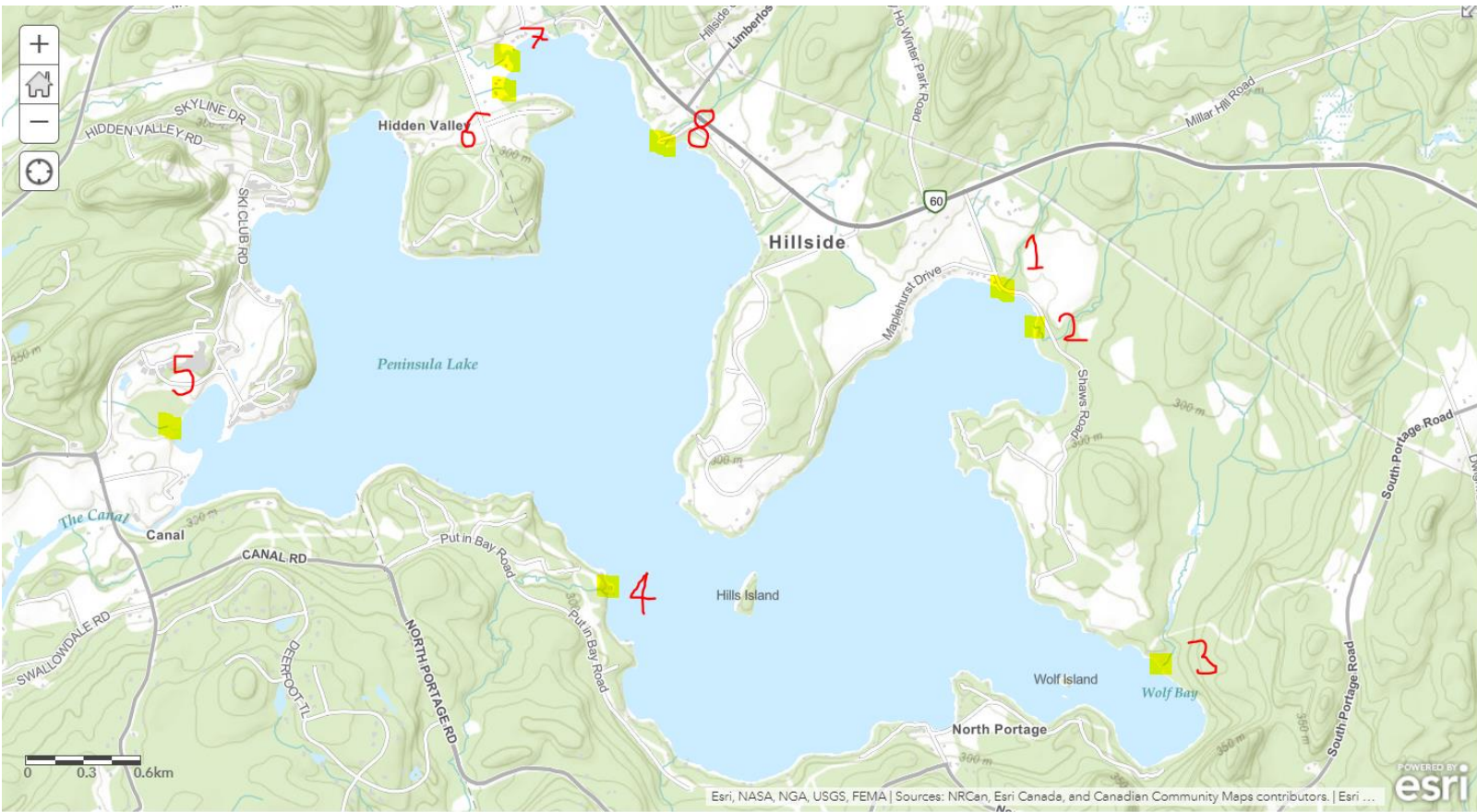
# **2020 Peninsula Lake Stream Data Collection**

**In Accordance with The Peninsula Lake Association**

**Co-op Assignment- Fish and Wildlife Technology**

**Fleming College**

By Cydney Campbell



Each stream location is highlighted in yellow and numbered. This data collection was completed in the first two weeks of October, 2020, so the streams illustrated in this map are streams that are accessible all year. However, in the spring, there are more streams that run off into Peninsula Lake that are not highlighted on this map, those streams will not be included in this data collection.

**What is Collected**

In this collection a multitude of data will be collected including dominant vegetation species, type of substrate, water depth, width of stream at mouth, debris blocking flow, average depth of stream, the flow rate, and stream velocity. The flow rate will be calculated using the float method and completed at approximately 10 to 20 meters upstream from the mouth of the stream.

## Stream 1:

**Time:** 2:30 pm

**Average Depth at Mouth:** 28.4 cm

**Width at Mouth:** 4.1402 m

**Substrate:** 80% cobble, 10% sand, 5% gravel, 5% muck

**Flow Rate:** 14.4 litres/ second

**Stream Velocity:** 17.27 liters/ second

**Dominant Vegetation:** Sensitive Fern, Aster, Forget-me-not, Spotted Joe-Pye weed, Cattail, Fleabane, Silver maple, Speckled alder, Spruce, Pickerel weed, Milk weed, Cow vetch, Fringed sedge, and various grasses

**Debris:** There were a few large rocks and trees covering the stream; however, the stream was not blocked.



*Photo by Cydney Campbell, 2020*

## Stream 2:

**Time:** 2:00 pm

**Average Depth at Mouth:** 43.2 cm

**Width at Mouth:** 7.24 m

**Substrate:** 75% sand, 10% cobble, 10% organic material, 5% muck

**Flow Rate:** 266.23 litres/ second

**Stream Velocity:** 11.89 liters/ second

**Dominant Vegetation:** Bur reed, Eel grass, Pickerel weed, Yellow pond lily, Goldenrod, Sensitive fern, Aster, Red maple, Spruce, Balsam fir

**Debris:** There is a beaver den on the right bank of the stream and a few logs obstructing access; however, the blockage is very minimal and is not greatly impacting the flow of the stream.

**Wildlife Activity:** Beaver, Blue heron



*Photo by Cydney Campbell, 2020*



### Stream 3:

**Time:** 1:00 pm

**Average Depth at Mouth:** 46.14 cm

**Width at Mouth:** 6.5 m

**Substrate:** 80% clay, 15% muck, and 5% sand

**Flow Rate:** 130.76 liters/ second

**Stream Velocity:** 22.26 liters/ second

**Dominant Vegetation:** Eel grass, Goldenrod, various shrubs and grasses, Silver maple, Eastern white cedar, Balsam fir, Spruce

**Debris:** There were a few logs and trees over the stream but it seemed to have very little effect on the flow rate of the stream.

**Wildlife Activity:** Blue Heron



## Stream 4:

**Time:** 1:30 pm

**Average Depth at Mouth:** 20.3 cm

**Width at Mouth:** 3.3 m

**Substrate:** 35% organic material, 30% cobble, 20% gravel, 10% sand, and 5% muck

**Flow Rate:** 119.431 liters/ second

**Stream Velocity:** 16.537 liters/ second

**Dominant Vegetation:** Ferns, grasses, Eastern White cedar, White Pine, Spruce

**Debris:** Multiple rocks and logs were present; however, they did not impede on stream flow

**Note:** Flowrate was measured closer to the mouth of the stream because of the steeper incline and faster flow rate.



*Photo by Cydney Campbell, 2020*



## Stream 5:

**Time:** 10:00 am

**Average Depth at Mouth:** 27.9 cm

**Width at Mouth:** 6.5 m

**Substrate:** 70% muck, 20 % organic material, 10% sand

**Flow Rate:** 174.66 liters/ second

**Stream Velocity:** 2.395 liters/ second

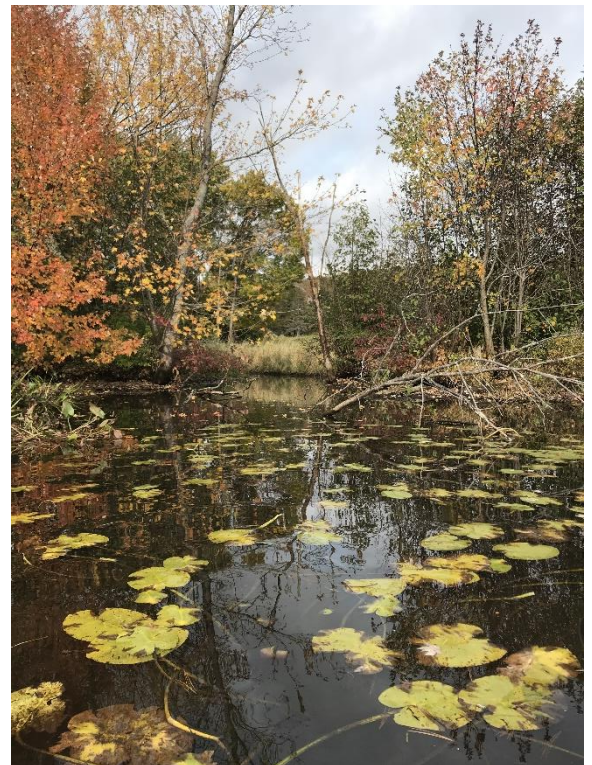
**Dominant Vegetation:** Red maple, Pickerel weed, Speckled alder, Royal fern, Eurasian milfoil, Yellow water lily, various grasses, Bur reed

**Debris:** There were a few fallen trees and some thick vegetation.

**Wildlife activity:** Gadwall



*Photo by Cydney Campbell, 2020*



*Photo by Cydney Campbell, 2020*



## Stream 6

**Time:** 12:00 pm

**Average Depth at Mouth:** 32.7 cm

**Width at Mouth:** 2.616 m

**Substrate:** 80% silt, 20% organic material

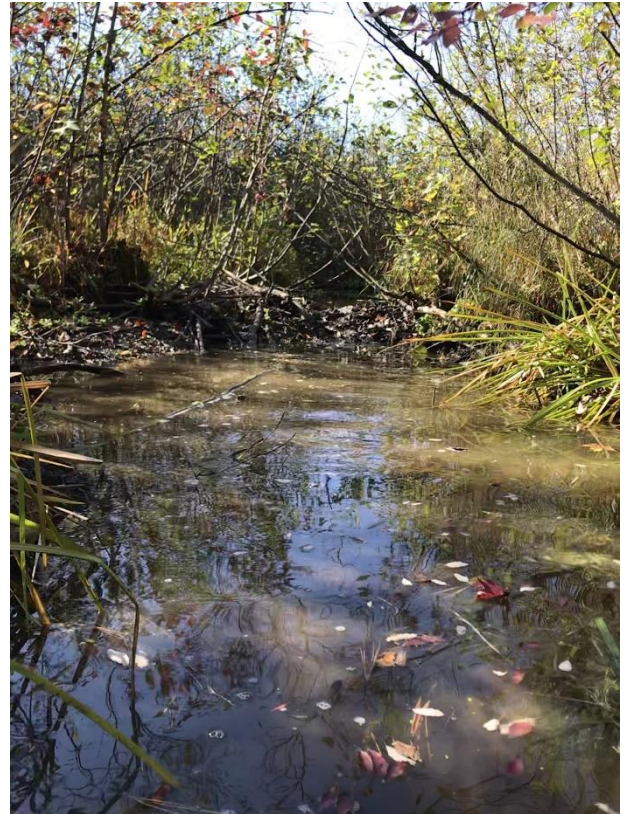
**Flow Rate:** N/A

**Stream Velocity:** N/A

**Dominant Vegetation:** Red maple, Bur reed, various grasses, Duckweed, various sedges, Speckled alder, Hop sedge, Sensitive fern, Horsetail, Elm, Yellow water lily

**Debris:** There were a few logs and branches covering the stream, but the most prominent obstructions were the multiple beaver dams blocking the stream. The beaver dams attributed to an unmeasurable flowrate.

**Notes:** Noticeably foul odour at stream site.



*Photo by Cydney Campbell, 2020*



*Photo by Cydney Campbell, 2020*

## Stream 7:

**Time:** 2 pm

**Average Depth at Mouth:** 81.3 cm

**Width at Mouth:** 8.59 m

**Substrate:** 50% silt/sand, 40% muck, 10% organic material

**Flow Rate:** 710 liters/ second

**Stream Velocity:** 9.47 liters/ second

**Dominant Vegetation:** Yellow water lily, Eel grass, various grasses, Spruce, Eastern white cedar, White pine

**Debris:** There was no debris blocking the flow of this stream.

**Wildlife Activity:** Blue Heron, Mallard



*Photo by Cydney Campbell, 2020*



*Photo by Cydney Campbell, 2020*



## Stream 8:

**Time:** 2:50 pm

**Average Depth:** 81.3 cm

**Width:** 2.235 m

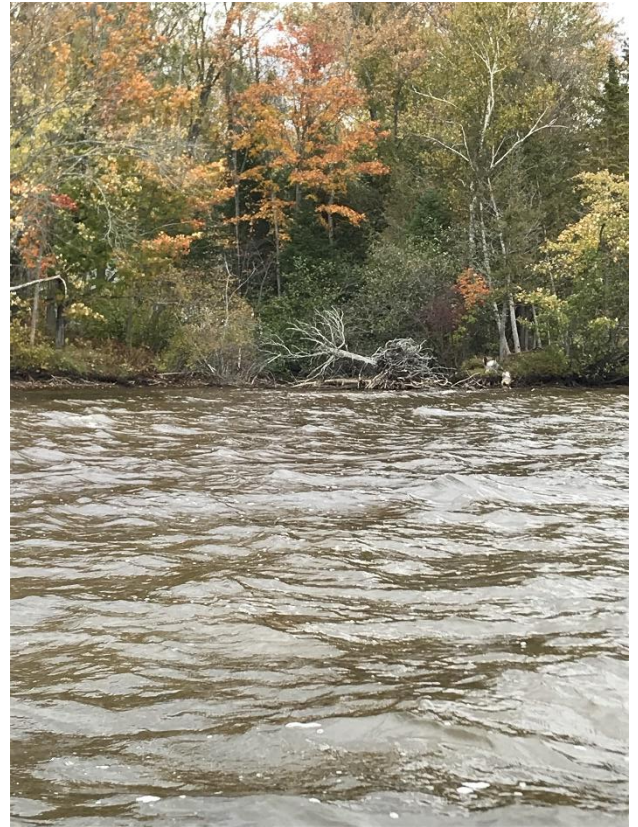
**Substrate:** 40% muck, 30% organic material, 30% sand

**Flow Rate:** 533.99 liters/ second

**Stream Velocity:** 27.31 liters/ seconds

**Dominant Vegetation:** Various ferns and grasses, Red maple, Elm, White birch, Eastern white cedar

**Debris:** There were a few fallen trees and logs obstructing the stream; however, they did not impede on the stream flow.



## Flow Rate and Velocity Conclusion:

Overall, stream #7 had the highest flow rate at 710 liters per second. However, it had a significantly lower velocity than most of the other streams. The velocity of stream 7 may be slow but the stream is very wide and deep which allows for a much larger overall flow rate.

The opposite can be seen in stream 1, the velocity is at 17.27 liters per second but the overall flow rate is only at 14.4 liters per second. This is because the stream is very shallow and narrow, so even though the water is moving fast, the overall flow rate is less.

Stream #	Flow Rate	Velocity
1	14.4 liters/sec	17.27 liters/sec
2	266.23 liters/sec	11.89 liters/sec
3	130.76 liters/sec	22.26 liters/sec
4	119.431 liters/sec	16.537 liters/sec
5	174.66 liters/sec	2.395 liters/sec
6	N/A	N/A
7	710 liters/sec	9.47 liters/sec
8	533.99 liters/sec	27.31 liters/sec

Stream 6 was seemingly still standing, so much so that macrophytes such as Duckweed, that prefer still water, was present. The stillness of the water could be explained by the series of beaver dams obstructing the flow of the stream.