Real Time Water Quality Deployment Report

New Found Gold Corp.

NF02YQ0075 & NF02YQ0076

2025-07-24 to 2025-09-02

Government of Newfoundland & Labrador
Department of Environment & Climate Change
Water Resources Management Division

New Found Gold

In 2024, the Water Resources Management Division (WRMD), in partnership with New Found Gold Corp., began establishing a real time water quality and quantity monitoring network in and around the Queensway Project in central Newfoundland. Two new monitoring stations for water quality and quantity were installed on-site in October 2024.

This report will review the water quality data for the following two real-time monitoring stations at New Found Gold, Hermans Pond Brook and Pond 226 Brook, for the duration of 2025-07-24 through to 2025-09-02.

These stations are a part of the Real-Time Water Quality Network. The stations are maintained by the Department of Environment and Climate Change, Water Resources Management Division (WRMD). WRMD staff are responsible for the maintenance and calibration of the water quality instruments deployed at these sites. The data recorded by the real-time water quality stations is available on WRMD's website.

For the purposes of this report, air temperature and total precipitation data were used from the weather station located at the Gander international airport. The data was retrieved from https://climate.weather.gc.ca/

Newfoundland Labrador

Quality Assurance and Quality Control

As part of the Quality Assurance and Quality Control protocol (QA/QC), an assessment of the reliability of data recorded by an instrument is made at the beginning and end of the deployment period. The procedure is based on the approach used by the United States Geological Survey. With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion adhere to this stringent QA/QC protocol. Corrected data can be obtained upon request.

Parameter	Excellent	Good	Fair	Marginal	Poor
pH	≤ ± 0.2 units	≤ ± 0.21 - 0.5 units	≤ ± 0.51 - 0.8 units	≤ ± 0.81 - 1 units	> ± 1 units
Water Temperature	≤ ± 0.2°C	≤ ± 0.21 - 0.5°C	≤ ± 0.51 - 0.8°C	≤ ± 0.81 - 1°C	> ± 1°C
Dissolved oxygen	≤ ± 0.3 mg/L	≤ ± 0.31 -0.5 mg/L	≤ ± 0.51 - 0.8 mg/L	≤ ± 0.81 - 1 mg/L	> ± 1 mg/L
Turbidity	≤ ± 2 turbidity units or ≤ ± 5%, whichever is greater	≤ ± 2.1-5 turbidity units or ≤ ± 5.1-10 %, whichever is greater	≤ ± 5.1-8 turbidity units or ≤ ± 10.1-15 %, whichever is greater	≤ ± 8.1-10 turbidity units or ≤ ± 15.1-20 %, whichever is greater	> ± 10 turbidity units or > ± 20 %, whichever is greater
Specific Conductance	≤ ± 3 µS/cm or ≤ ± 3%, whichever is greater	≤ ± 3.1-10 µS/cm or ≤ ± 3.1-10%, whichever is greater	≤ ± 10 - 15 µS/cm or ≤ ± 10.1-15 %, whichever is greater	≤ ± 15.1 - 20 µS/cm or ≤ ± 15.1-20 %, whichever is greater	> ± 20 µS/cm or > ± 20 %, whichever is greater

At deployment and removal, a QA/QC Sonde is temporarily deployed adjacent to the Field Sonde. Values for temperature, pH, conductivity, dissolved oxygen and turbidity are compared between the two instruments**.** Based on the degree of difference between parameters recorded by the Field Sonde and QA/QC Sonde at deployment and at removal, a qualitative statement is made on the data quality. There are a few circumstances which may cause QA/QC rankings below excellent, including the placement of the QA/QC sonde in relation to the field sonde, the amount of time each sonde was given to stabilize before readings were recorded, and deteriorating performance of one of the sensors.

The temperature sensor on any sonde is the most important. All other parameters can be divided into subgroups of: temperature dependent, temperature compensated, and temperature independent. Due to the temperature sensor's location on the sonde, the entire sonde must be at a constant temperature before the temperature sensor will stabilize. The values may take some time to climb to the appropriate reading; if a reading is taken too soon it may not accurately portray the water body.

Additionally, grab samples are collected during deployment to compare pH, specific conductivity and turbidity values between the field instrument and grab samples. Variability in results may be attributed to differences in the sampling location or depth relative to the sonde's deployment site or insufficient equilibration time for the sonde when initial field data was collected.

Hydrometric Data

Water Resources Management Division hydrometric (stage and flow) data is quality controlled on a less frequent basis than water quality data due to differences in protocols. The hydrometric data shown in this report is provisional and has not undergone quality control checks.

Quality Assurance and Quality Control

Deployment Period Rankings

QAQC Rankings

Station	Parameter	Deployment Rank	Deployment Grab Sample Rank
Hermans Pond Brook	Dissolved Oxygen (mg/l)	Excellent	—
Hermans Pond Brook	pH	Excellent	Fair
Hermans Pond Brook	Specific Conductivity (µS/cm)	Good	Excellent
Hermans Pond Brook	Temperature (°C)	Good	—
Hermans Pond Brook	Turbidity (NTU)	Excellent	Excellent
Pond 226 Brook	Dissolved Oxygen (mg/l)	Excellent	—
Pond 226 Brook	pH	Poor	Poor
Pond 226 Brook	Specific Conductivity (µS/cm)	Excellent	Good
Pond 226 Brook	Temperature (°C)	Excellent	—
Pond 226 Brook	Turbidity (NTU)	Excellent	Excellent

At deployment, all parameters at both stations were rated good or excellent, except for pH at Pond 226 Brook, which received a poor rating due to sensor malfunction. The pH sensor at Pond 226 Brook failed upon deployment and was replaced with a new sensor on August 7th. No removal data was collected for this deployment period.

Grab sample comparisons were rated good or excellent for conductivity and turbidity at both stations. At Pond 226 Brook, pH was rated poor due to the same sensor failure noted above. At Hermans Pond Brook, pH was rated fair, likely due to insufficient time for the field sonde to equilibrate with the water before recording the initial measurement, or slight differences in sampling location between the grab sample and the field sonde.

Water Temperature
(°C)

Water temperature plays a crucial role in wildlife health, as many organisms rely on air and water conditions to regulate their body temperatures. Additionally, water temperature affects other key parameters, such as dissolved oxygen levels and specific conductivity.

Water temperature at Hermans Pond Brook ranged between 8.23°C to 23.70°C, while water temperatures at Pond 226 Brook ranged between 9.68°C to 22.70°C.

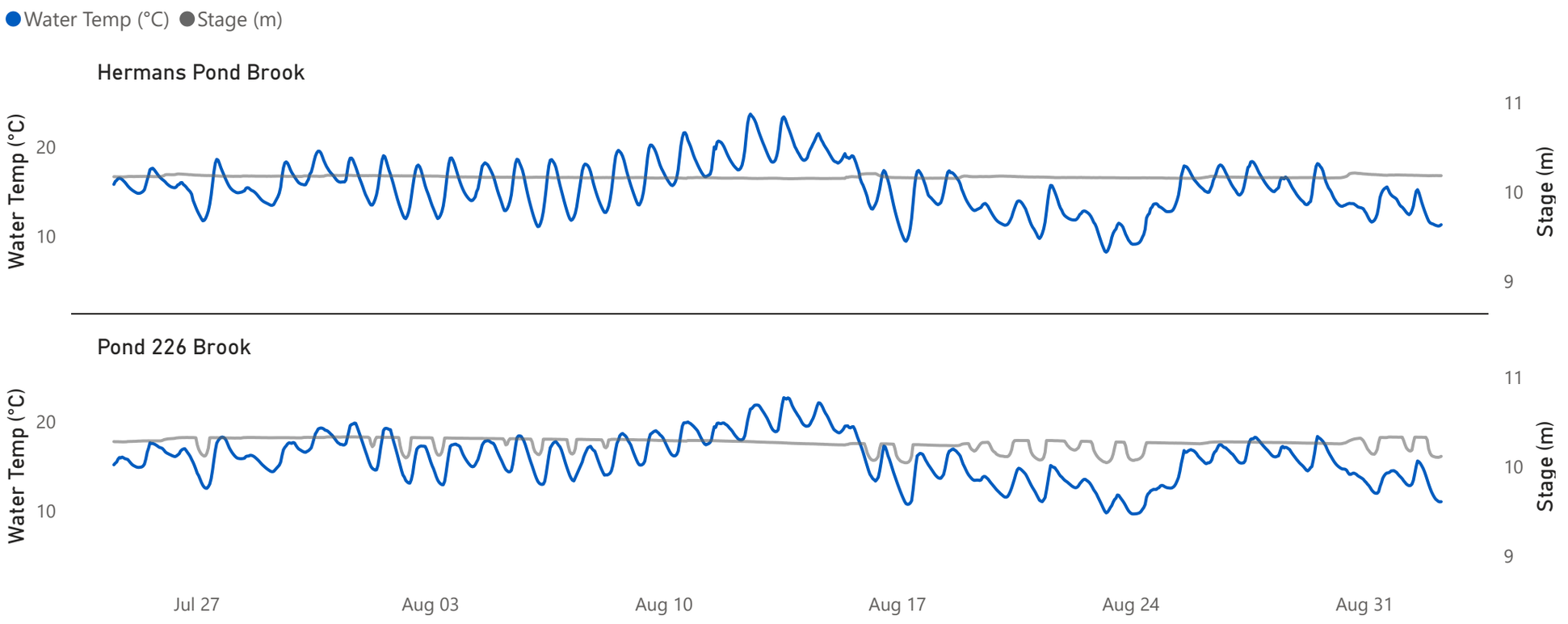
Throughout this deployment period, a natural diurnal pattern was evident, with warmer temperatures during daylight hours and cooler temperatures at night. A slightly decreasing trend was observed at both stations, which would be expected during the seasonal transition from fall to summer.

Hermans Pond Brook

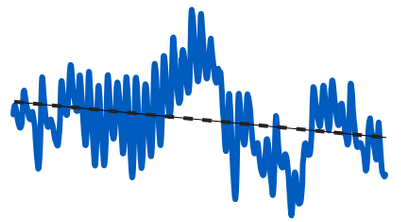
15.43 Average	15.36 Median
8.23 Minimum	23.70 Maximum

Pond 226 Brook

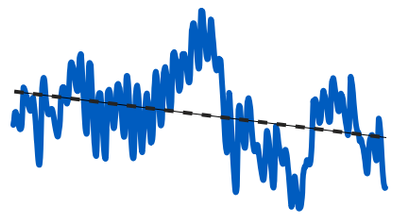
15.86 Average	15.99 Median
9.68 Minimum	22.70 Maximum



Hermans Pond Brook Trendline



Pond 226 Brook Trendline



pH
(pH Units)

Hermans Pond Brook

6.87 Average	6.87 Median
6.63 Minimum	7.10 Maximum

Pond 226 Brook

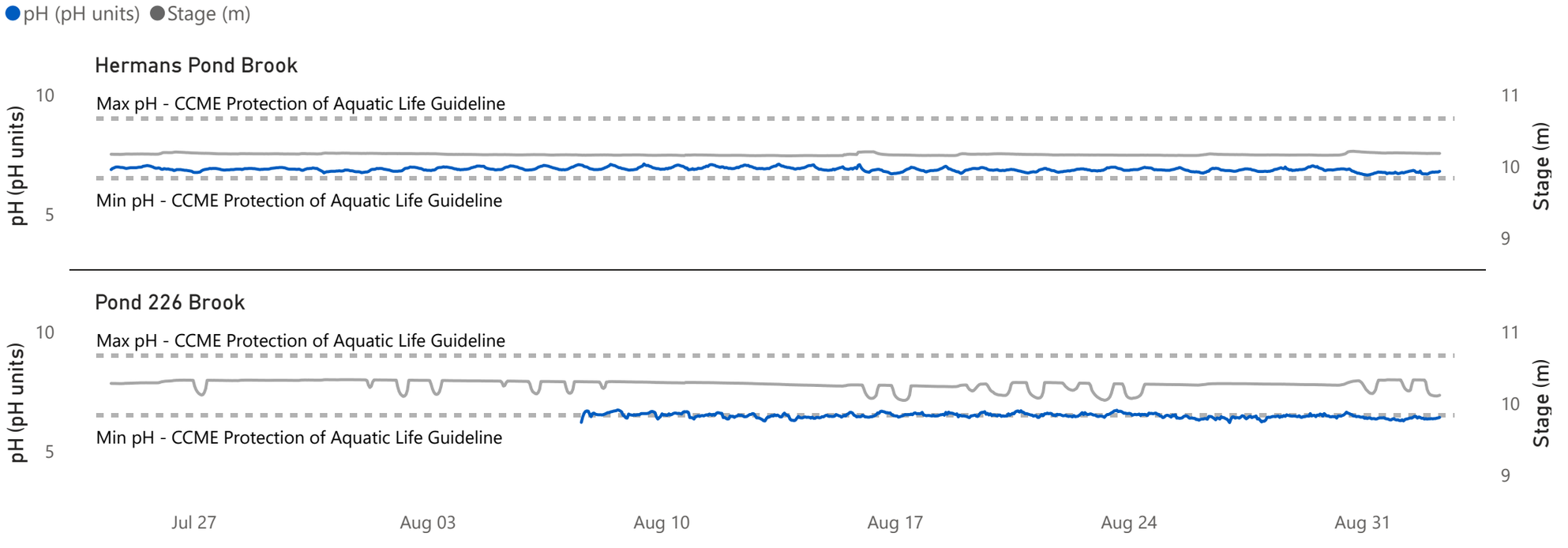
6.48 Average	6.48 Median
6.19 Minimum	6.72 Maximum

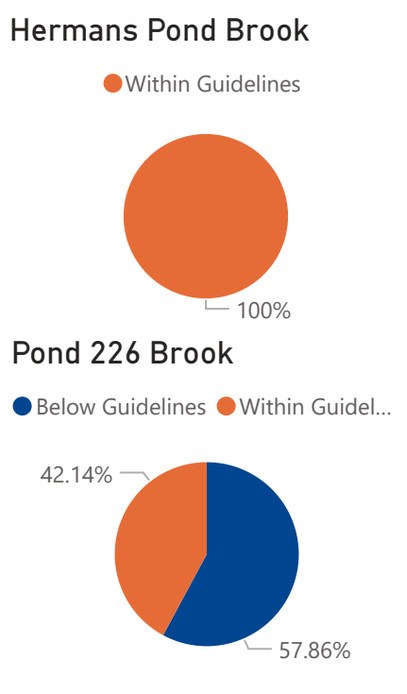
pH relates to the free hydrogen ions in water and it is a measure of acidity in water. According to the Canadian Council of Ministers of the Environment (CCME) Freshwater Aquatic Life Guidelines, the recommended pH range for aquatic health is between 6.5 and 9.0. However, many rivers in Newfoundland and Labrador are naturally more acidic due to the local geology. Water parameter maps can be found on the Water Resources Management website.

pH at Hermans Pond Brook ranged between 6.63 to 7.10 pH units, while pH at Pond 226 Brook ranged between 6.19 to 6.72 pH units. Overall, pH remained stable and consistent at both stations throughout the deployment period. Daily pH fluctuations are typical and are often influenced by temperature variation, precipitation events, and the respiration of aquatic plants. Rainwater, which is naturally lower in pH, can temporarily dilute surface waters and cause short-term decreases in pH, though levels generally return to baseline within a few days to weeks.

pH levels at Hermans Pond Brook remained within the CCME guideline range of 6.5 to 9.0 units throughout the entire deployment period. At Pond 226 Brook, pH fluctuated near the 6.5 guideline throughout the deployment. The naturally lower pH observed at Pond 226 Brook is likely due to localized environmental influences.

No pH data is available for Pond 226 Brook between July 24 and August 7 due to sensor failure. The malfunctioning sensor was replaced with a new one on August 7.





Specific Conductivity

(µS/cm)

Hermans Pond Brook

81.33 Average	80.21 Median
63.52 Minimum	93.85 Maximum

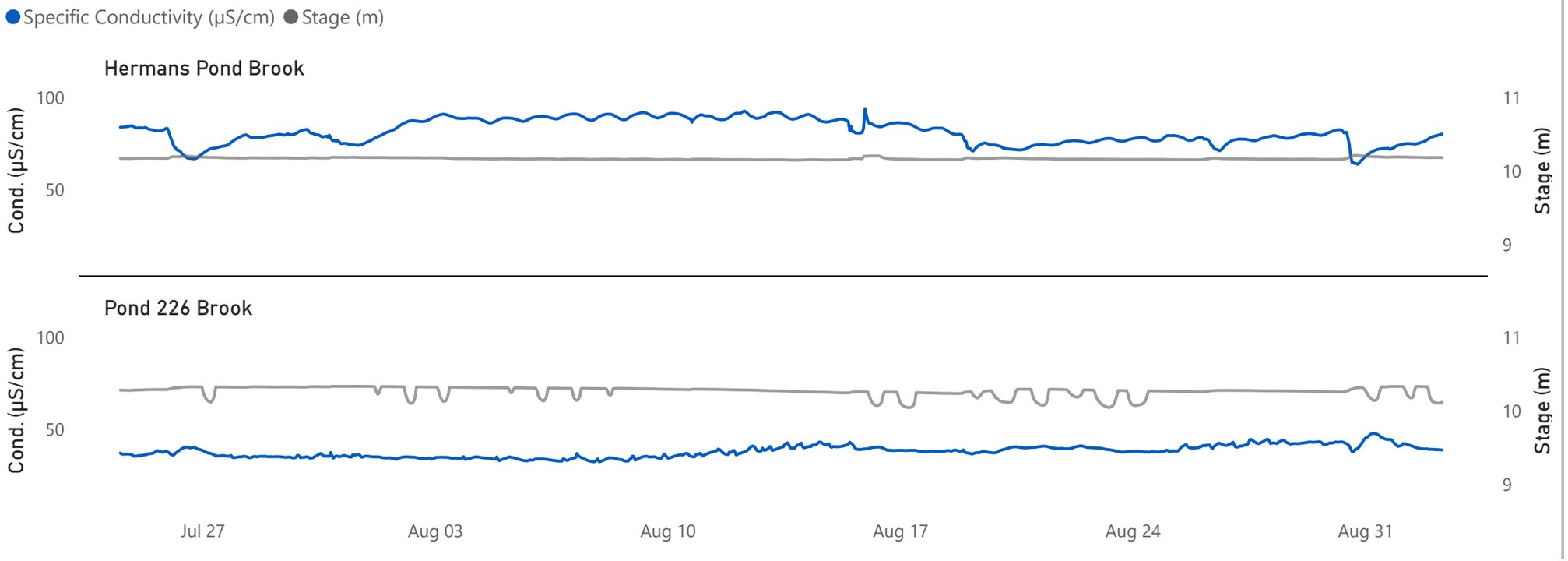
Pond 226 Brook

37.77 Average	37.72 Median
32.16 Minimum	47.58 Maximum

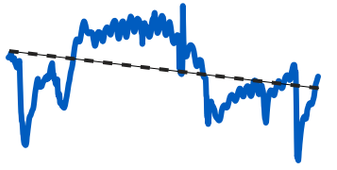
Conductivity measures how well a solution conducts electricity. Pure water has low conductivity, while water containing dissolved ions conducts more easily. Specific conductivity is adjusted to 25°C to allow comparisons across temperatures. Precipitation can influence conductivity: rainwater may temporarily lower it by diluting the water, or increase it if runoff introduces additional dissolved ions.

Specific conductivity at Hermans Pond Brook ranged between 63.52 µS/cm to 93.85 µS/cm, while values at Pond 226 Brook ranged between 32.16 µS/cm and 47.58 µS/cm. Conductivity remained generally stable throughout the deployment period at both stations, with brief dips and spikes coinciding with water elevation increases, likely as a result of precipitation events.

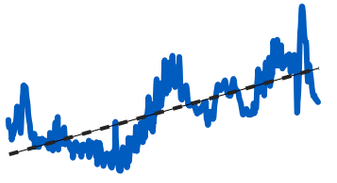
Both stations showed a slight decrease in water elevation over the deployment. However, specific conductivity responded differently at each site. At Pond 226 Brook, conductivity increased as water levels declined, likely due to concentration of dissolved ions as flow and dilution decreased. In contrast, conductivity at Hermans Pond Brook decreased slightly with falling water levels. This suggests that under typical conditions, conductivity in Hermans Pond Brook may be elevated and influenced by surface runoff or groundwater inputs with higher conductivity. As water levels and these inputs decline, conductivity may decrease.



Hermans Pond Brook Trendline



Pond 226 Brook Trendline



Dissolved Oxygen

(mg/L and % Sat)

Newfoundland Labrador

Hermans Pond Brook

8.99 Average	9.05 Median
6.69 Minimum	10.82 Maximum

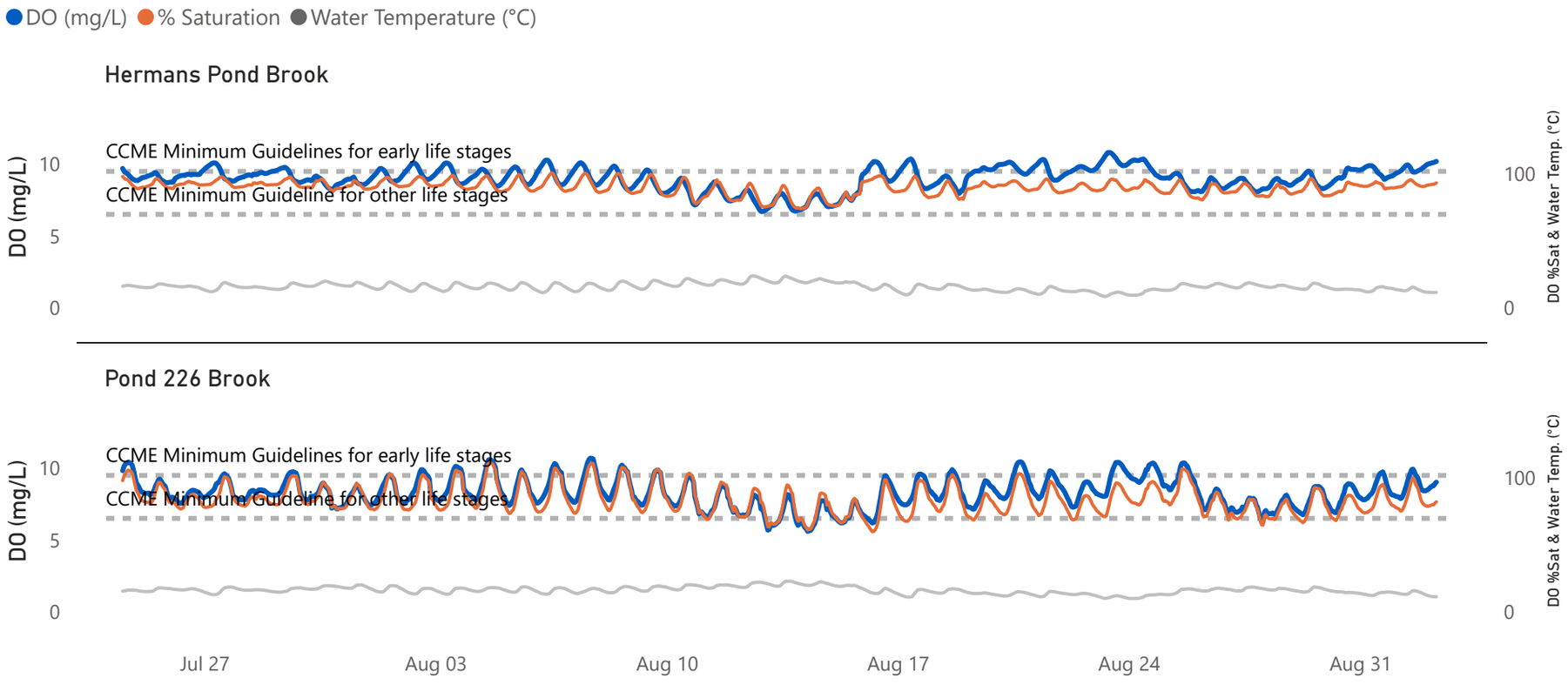
Pond 226 Brook

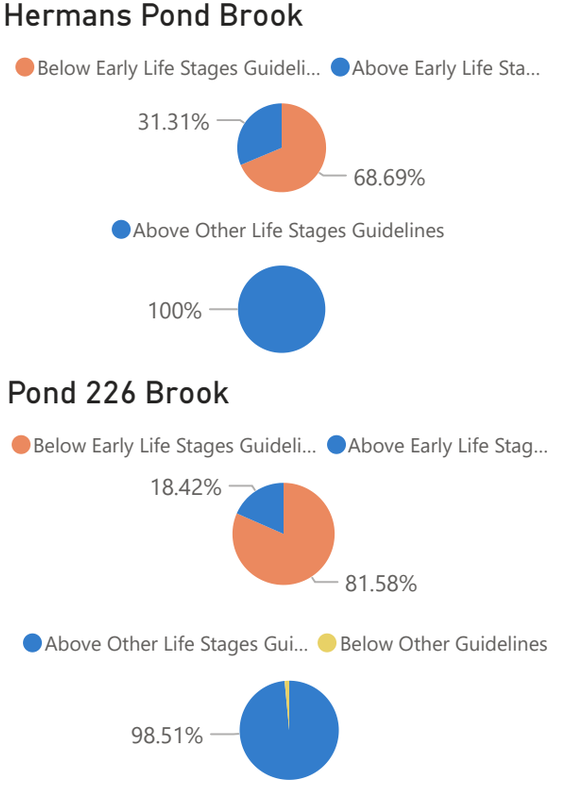
8.29 Average	8.19 Median
5.59 Minimum	10.71 Maximum

Dissolved oxygen (DO) in water is crucial for aquatic life. The CCME Freshwater Aquatic Life Guidelines provide benchmarks to assess waterway health, with the minimum DO guideline being 9.5 mg/L for early life stages in cold water and 6.5 mg/L for other life stages. DO levels are influenced by water temperature, with colder water able to retain higher DO concentrations. This inverse relationship can be observed on the graphs below, as well as daily fluctuations that can be attributed to changes in temperature and respiration of aquatic plants.

DO at Hermans Pond Brook ranged between 6.69 mg/L and 10.82 mg/L, while DO at Pond 226 Brook ranged between 5.59 mg/L and 10.71 mg/L. Pond 226 Brook is more susceptible to temporary oxygen depletion as seen in the lower DO concentrations, likely due to environmental factors such as lower canopy cover and higher exposure to temperature effects.

Dissolved oxygen at Hermans Pond Brook stayed consistently above the CCME minimum guideline for other life stages, while Pond 226 Brook experienced brief dips below it. For early life stages, both sites fluctuated near the guideline but were below it for most of the deployment period.





Turbidity
(NTU)

Turbidity, or water cloudiness, often increases during precipitation events when runoff carries silt and debris into the waterbody. Elevated turbidity can block light from reaching aquatic plants, disrupt benthic habitats, and harm fish gills or equipment.

Turbidity at Hermans Pond Brook ranged between 0.01 NTU and 49.62 NTU, while turbidity at Pond 226 Brook ranged between 0.00 NTU and 6.46 NTU. Turbidity tends to spike during stage increases, typically due to precipitation, which can disturb the bottom substrate or increase runoff entering the water. While turbidity levels may rise temporarily, they generally return to background values within a few days. Turbidity at both stations was generally low with similar median values throughout the monitoring period, with occasional sharp spikes at Hermans Pond Brook.

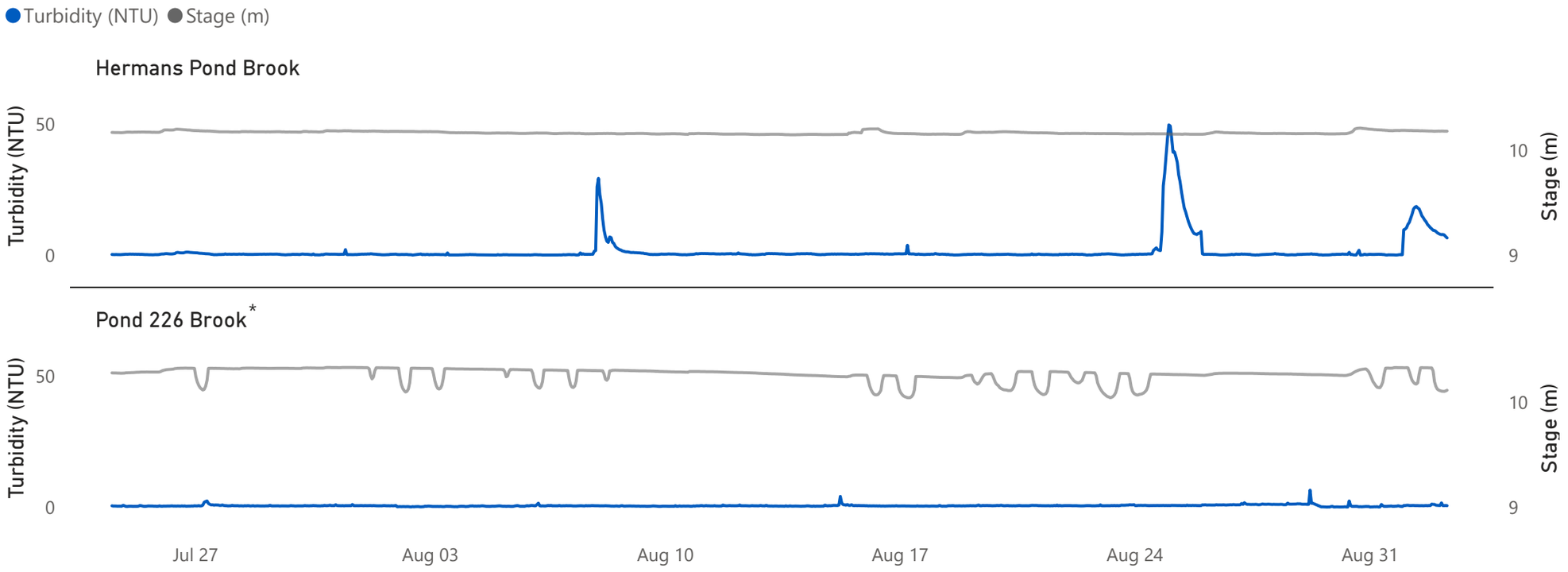
*A small correction factor of +0.46 was applied to the Pond 226 Brook turbidity data due to negative values. Negative turbidity values can appear in water quality data when the measured water is clearer than the instrument's zero calibration standard. This can result from natural water conditions, such as very low suspended solids, or slight instrument drift, and does not indicate the water has 'negative' turbidity in reality. Although the absolute values may not be entirely accurate, the overall trends in the data remain reliable.

Hermans Pond Brook

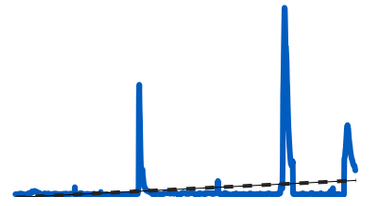
1.68 Average	0.30 Median
0.01 Minimum	49.62 Maximum

Pond 226 Brook *

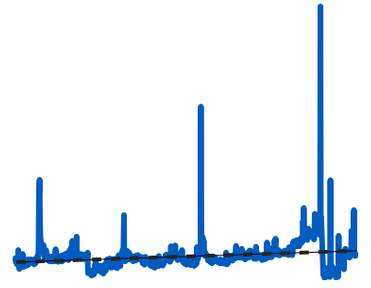
0.52 Average	0.47 Median
0.00 Minimum	6.46 Maximum



Hermans Pond Brook Trendline



Pond 226 Brook Trendline



Stage
(m)

Newfoundland Labrador

Hermans Pond Brook

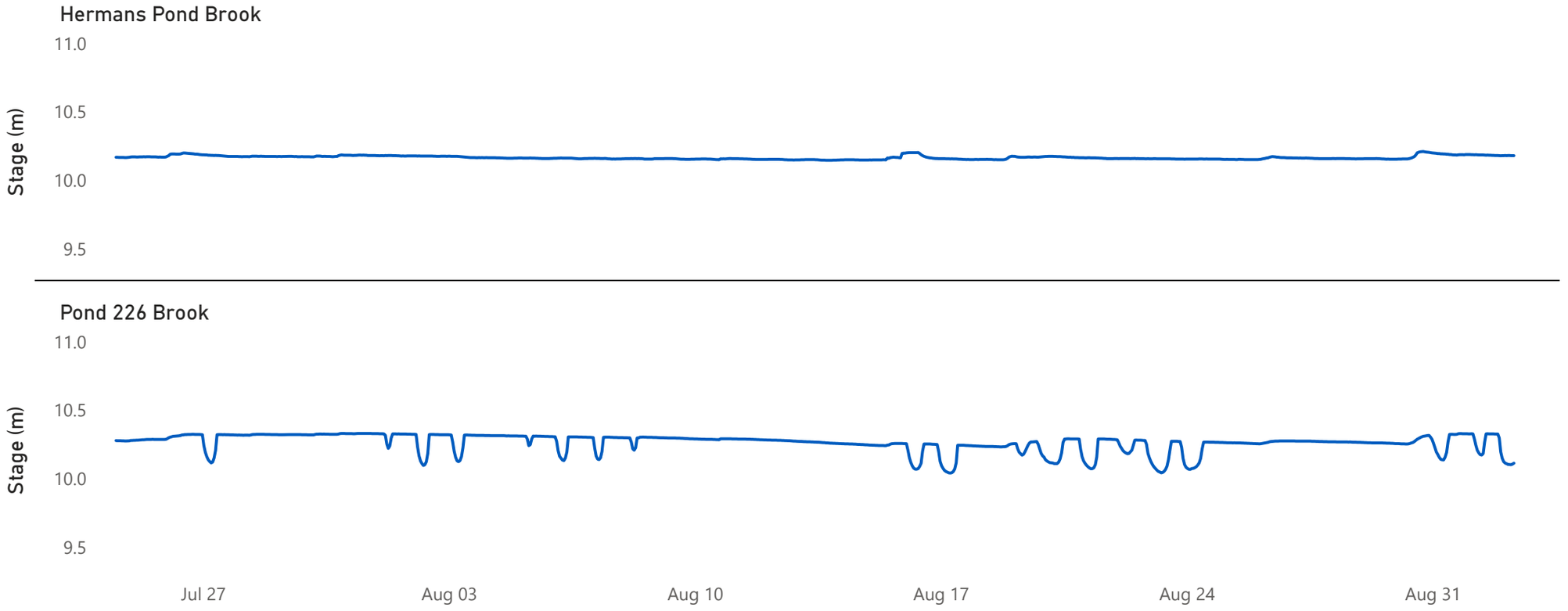
10.17 Average	10.16 Median
10.15 Minimum	10.21 Maximum

Pond 226 Brook

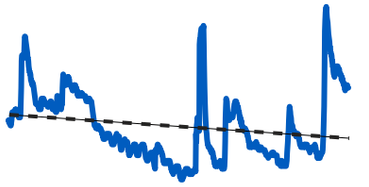
10.26 Average	10.28 Median
10.04 Minimum	10.33 Maximum

Stage provides an estimate of the water level at a monitoring station and plays a vital role in analyzing trends in water quality data, particularly for parameters such as specific conductivity, pH, and turbidity. Stage generally rises during precipitation events as rainwater and runoff enter the water column. By monitoring stage alongside precipitation events, we can better interpret our data, distinguish whether a stage increase is caused by rainfall or potential industrial activities, and assess its impact on water quality. Precipitation data was retrieved from the Gander, NL Airport CS meteorological (MET) station.

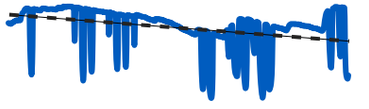
Stage ranged between 10.15m to 10.21m at Hermans Pond Brook, and ranged between 10.04m to 10.33m at Pond 226 Brook. Stage remained generally stable throughout the deployment period at both stations, with some minor dips and spikes. An overall decreasing trend was observed at both stations, likely due to reduced precipitation.



Hermans Pond Brook Trendline



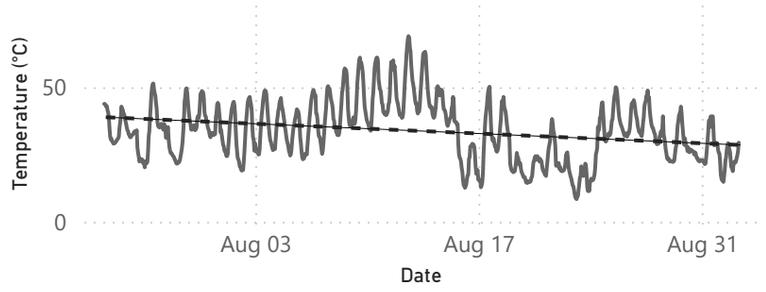
Pond 226 Brook Trendline



Meteorological and Hydrometric Data

Gander Airport CS MET Station Data

Air Temperature Recorded at Gander Airport CS MET Station

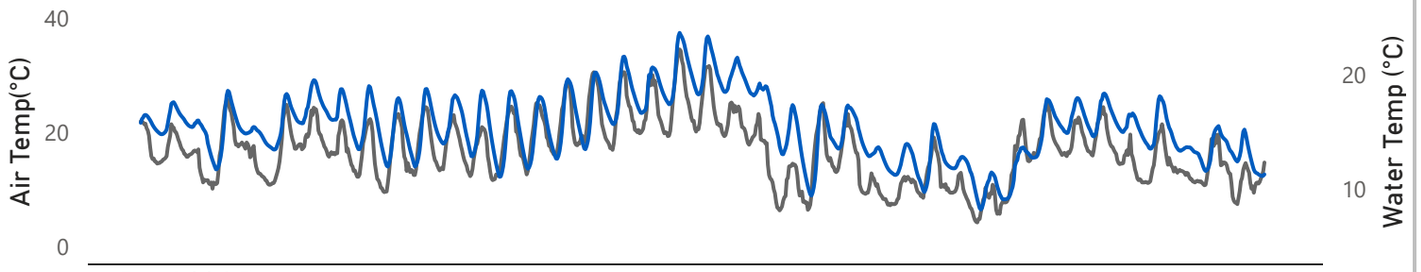


Air Temperature Statistics

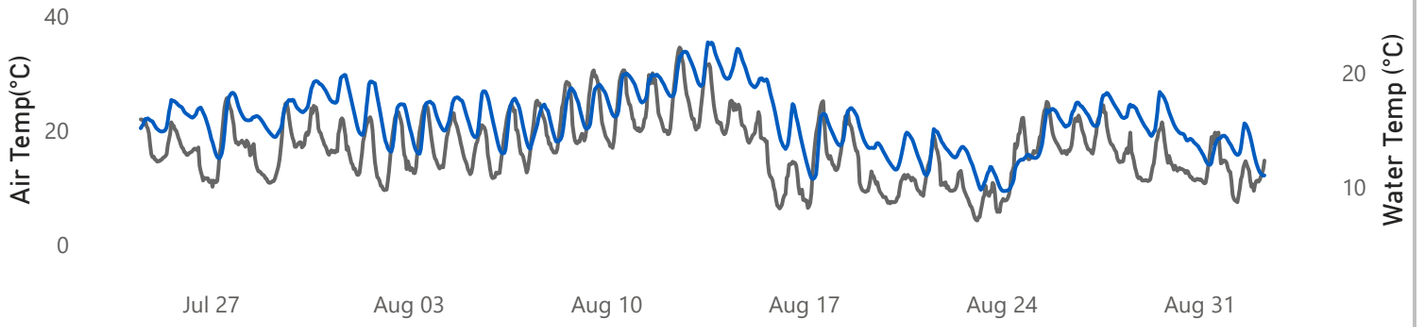
16.85 Average (°C)	16.70 Median (°C)
4.20 Minimum (°C)	34.50 Maximum (°C)

Air Temperature (°C) Water Temperature (°C)

Hermans Pond Brook



Pond 226 Brook



Precipitation Statistics

There was no precipitation data available from this weather station during the deployment period time frame.

Precipitation Recorded at Gander Airport CS MET Station

Hermans Pond Brook RTWQ Station

NF02YQ0075




Hermans Pond Brook is a small, narrow stream that flows from Herman Pond North and Herman Pond South. The real-time station is situated about 1.5 km downstream of Herman Pond North, with the hut located roughly 4 meters from the access road. The instrument is placed around 10 meters upstream of a bridge, and both the instrument and hydrometric plate are deployed at a depth of approximately 0.5 meters in the center of the brook. The streambed consists of cobbles and small rocks where the instrument is positioned, though it transitions to a softer, muddier bottom slightly upstream.

Pond 226 Brook RTWQ Station

NF02YQ0076

Pond 226 Brook is a small stream, with the real-time station positioned about 0.75 km downstream of Pond 226 and 0.15 km upstream from a small pool. The streambed consists of cobbles in certain areas but is mostly soft and muddy, with tall grass growing along both sides of the stream. The instrument and hydrometric plate are deployed in the center of the brook at a depth of approximately 0.75 meters. The hut is located roughly 25 meters inland from the stream.