

# Real Time Water Quality Deployment Report

## New Found Gold Corp.

### NF02YQ0075 & NF02YQ0076

2025-05-12 to 2025-06-10



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 2025-05-12 through to 2025-06-10.

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/>

# 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	$\leq \pm 0.2$ units	$\leq \pm 0.21$ - 0.5 units	$\leq \pm 0.51$ - 0.8 units	$\leq \pm 0.81$ - 1 units	$> \pm 1$ units
Water Temperature	$\leq \pm 0.2^\circ\text{C}$	$\leq \pm 0.21$ - 0.5°C	$\leq \pm 0.51$ - 0.8°C	$\leq \pm 0.81$ - 1°C	$> \pm 1^\circ\text{C}$
Dissolved oxygen	$\leq \pm 0.3$ mg/L	$\leq \pm 0.31$ - 0.5 mg/L	$\leq \pm 0.51$ - 0.8 mg/L	$\leq \pm 0.81$ - 1 mg/L	$> \pm 1$ mg/L
Turbidity	$\leq \pm 2$ turbidity units or $\leq \pm 5\%$ , whichever is greater	$\leq \pm 2.1$ -5 turbidity units or $\leq \pm 5.1$ -10 %, whichever is greater	$\leq \pm 5.1$ -8 turbidity units or $\leq \pm 10.1$ -15 %, whichever is greater	$\leq \pm 8.1$ -10 turbidity units or $\leq \pm 15.1$ -20 %, whichever is greater	$> \pm 10$ turbidity units or $> \pm 20$ %, whichever is greater
Specific Conductance	$\leq \pm 3$ $\mu\text{S}/\text{cm}$ or $\leq \pm 3\%$ , whichever is greater	$\leq \pm 3.1$ -10 $\mu\text{S}/\text{cm}$ or $\leq \pm 3.1$ -10%, whichever is greater	$\leq \pm 10$ - 15 $\mu\text{S}/\text{cm}$ or $\leq \pm 10.1$ -15 %, whichever is greater	$\leq \pm 15.1$ - 20 $\mu\text{S}/\text{cm}$ or $\leq \pm 15.1$ -20 %, whichever is greater	$> \pm 20$ $\mu\text{S}/\text{cm}$ or $> \pm 20$ %, 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)	Marginal	—
Hermans Pond Brook	pH	Fair	Poor
Hermans Pond Brook	Specific Conductivity (µS/cm)	Excellent	Good
Hermans Pond Brook	Temperature (°C)	Excellent	—
Hermans Pond Brook	Turbidity (NTU)	Excellent	Excellent
Pond 226 Brook	Dissolved Oxygen (mg/l)	Excellent	—
Pond 226 Brook	pH	Good	Marginal
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 as good or excellent, except for pH and dissolved oxygen at Hermans Pond Brook, which received fair and marginal ratings, respectively. The marginal rating for dissolved oxygen may suggest possible sensor degradation, while the fair pH rating likely reflects insufficient time for the sonde to equilibrate with the water prior to the initial reading. No removal comparison data was collected for either station.

Grab sample results at deployment ranged from poor to excellent across parameters at both sites. pH was rated poor at Hermans Pond Brook and marginal at Pond 226, again likely due to the initial measurement being taken before the sonde had fully stabilized in the water.

# Water Temperature (°C)



## Hermans Pond Brook

11.75	11.57
Average	Median
3.92	22.68
Minimum	Maximum

## Pond 226 Brook

13.49	13.30
Average	Median
5.57	24.43
Minimum	Maximum

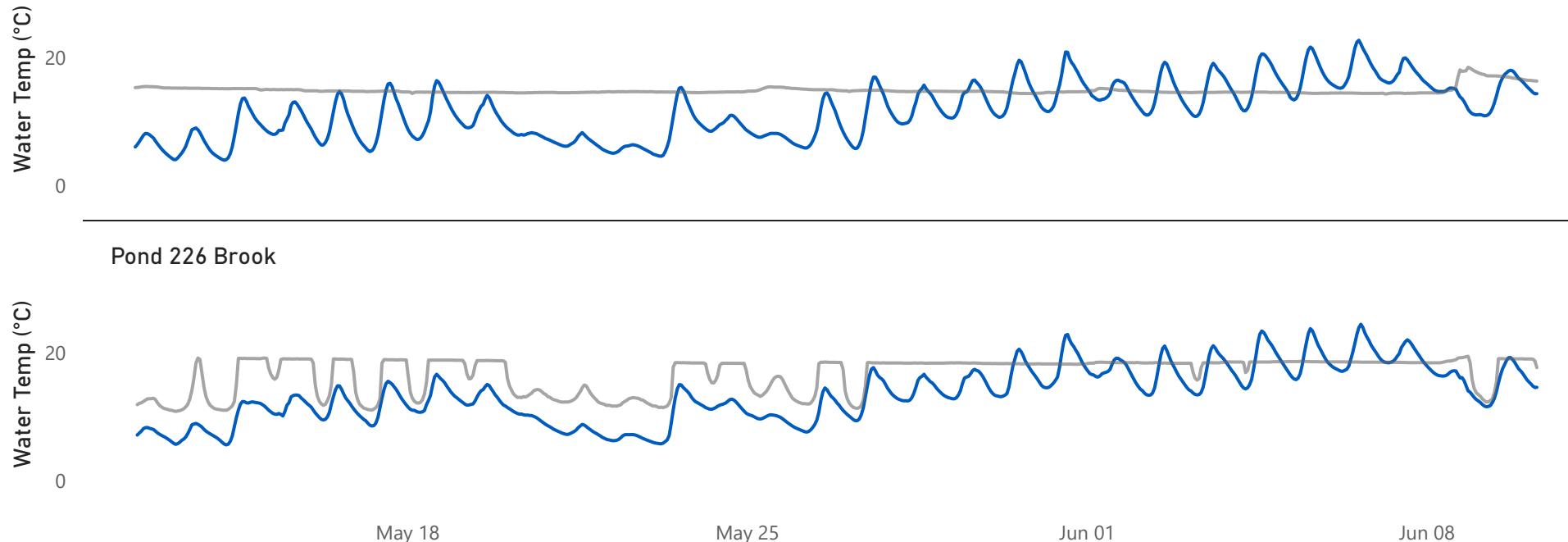
Water temperature plays a crucial role in wildlife health, as many organisms rely on air and water conditions to regulate their body temperatures. Additionally, water temperature affects other key parameters, such as dissolved oxygen levels and specific conductivity.

Water temperature at Hermans Pond Brook ranged between 3.92°C to 22.68°C, while water temperatures at Pond 226 Brook ranged between 5.57°C to 24.43°C.

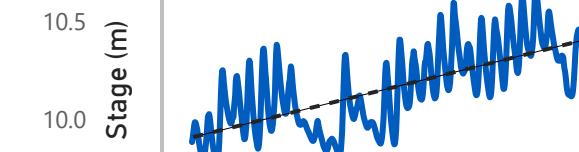
Throughout this deployment period, a natural diurnal pattern was evident, with warmer temperatures during daylight hours and cooler temperatures at night. A increasing trend was observed at both stations, which would be expected during the seasonal transition from Spring to Summer.

● Water Temp (°C) ● Stage (m)

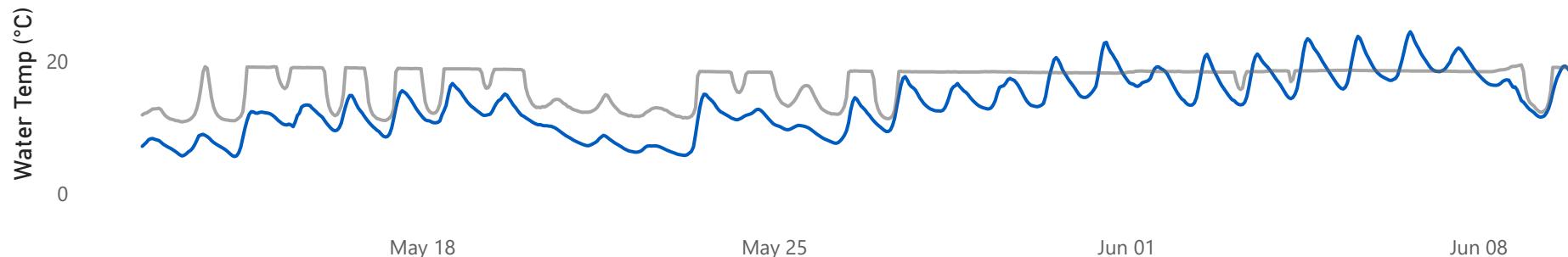
### Hermans Pond Brook



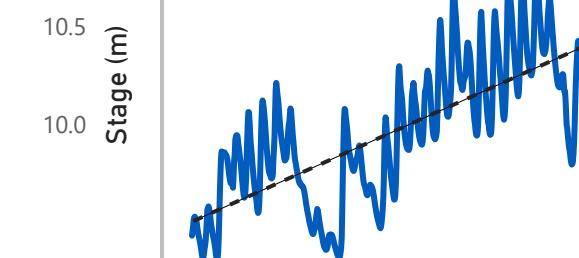
### Hermans Pond Brook Trendline



### Pond 226 Brook



### Pond 226 Brook Trendline



### Hermans Pond Brook

6.89	6.91
Average	Median
6.28	7.08
Minimum	Maximum

### Pond 226 Brook

6.66	6.68
Average	Median
6.04	7.34
Minimum	Maximum

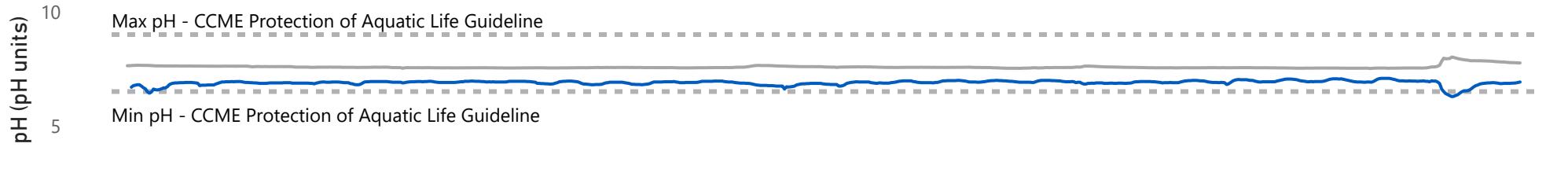
pH relates to the free hydrogen ions in water and it is a measure of acidity in water. According to the [Canadian Council of Ministers of the Environment](#) (CCME) Freshwater Aquatic Life Guidelines, the recommended pH range for aquatic health is between 6.5 and 9.0. However, many rivers in Newfoundland 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 6.28 to 7.08 pH units, while pH at Pond 226 Brook ranged between 6.04 to 7.34 pH units. Overall, pH was generally stable at both stations throughout the deployment period. Daily fluctuations in pH are typical and are often influenced by temperature changes, precipitation and the respiration of aquatic plants. There is a noticeable decrease in pH around June 9th at both stations coinciding with a stage increase, related to a precipitation event. Rainwater, naturally lower in pH, can briefly dilute the water and cause a temporary drop in pH, but levels generally return to normal within a few days to weeks.

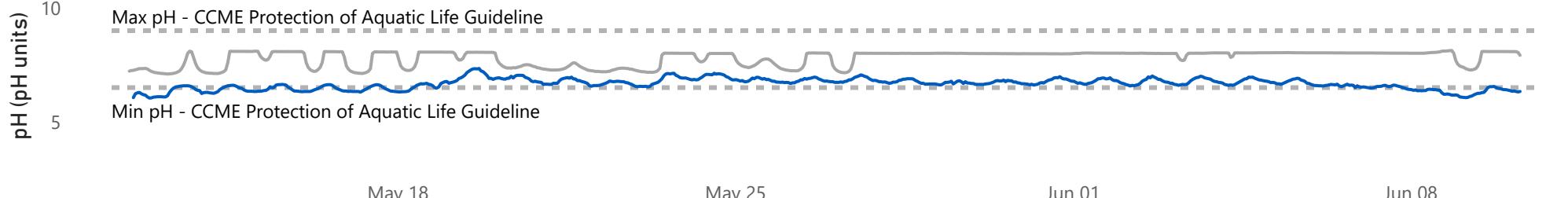
pH levels at Hermans Pond Brook remained within the CCME guidelines of 6.5 to 9.0 pH units for 98.26% of the deployment, with occasional brief dips below the minimum guideline. These dips occurred when stage levels increased during precipitation events, but the pH quickly rose back above 6.5 shortly afterward. At Pond 226 Brook, pH fluctuated around the minimum guideline value of 6.5, though it remained within guideline values for 77.18% of the deployment.

● pH (pH units) ● Stage (m)

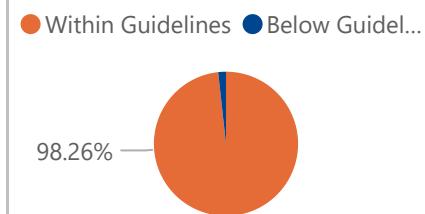
#### Hermans Pond Brook



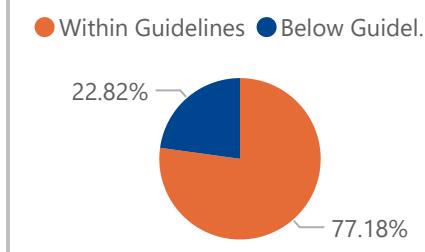
#### Pond 226 Brook



#### Hermans Pond Brook



#### Pond 226 Brook



# Specific Conductivity ( $\mu\text{S}/\text{cm}$ )



## Hermans Pond Brook

76.01	77.00
Average	Median
40.93	92.01
Minimum	Maximum

## Pond 226 Brook

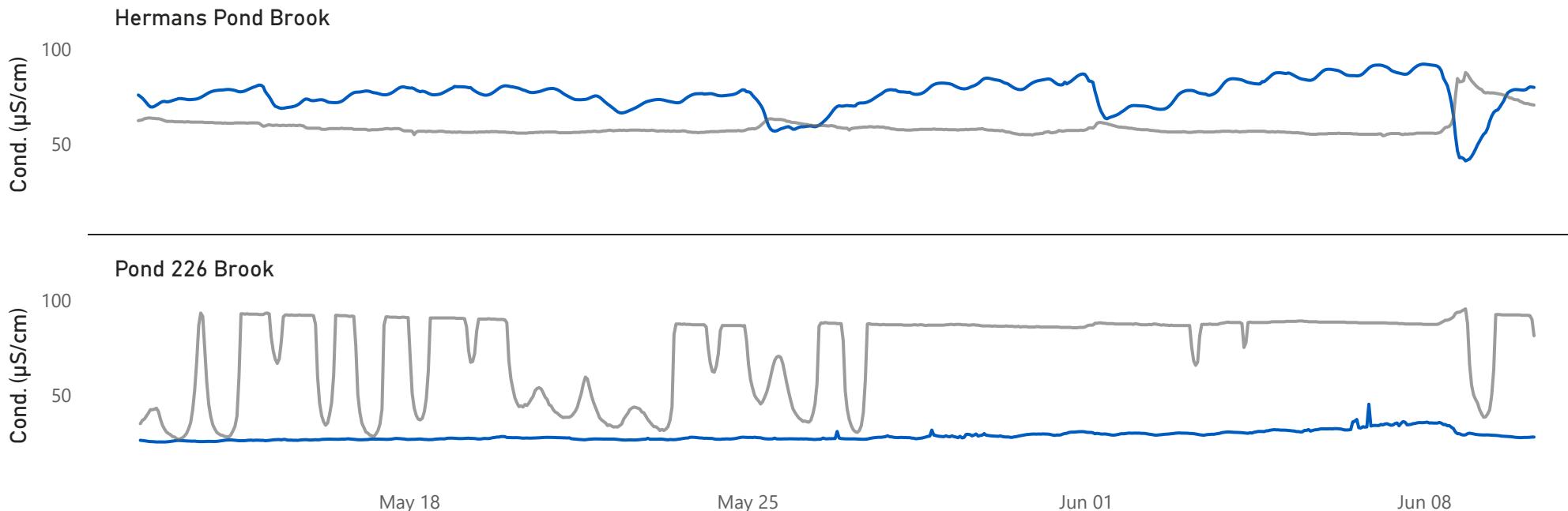
28.30	27.45
Average	Median
25.15	45.10
Minimum	Maximum

Conductivity relates to the ability of an electric charge to pass through a solution. Pure water has low conductance and water with dissolved ions has higher conductance. Specific conductance is corrected to 25°C to allow comparison across variable temperatures. Water parameter maps can be found on the [Water Resources Management website](#). Specific conductivity is often affected by precipitation, as rainwater often has a lower conductivity and can temporarily dilute the water column, resulting in a short-term decrease in conductivity.

Specific conductivity at Hermans Pond Brook ranged between 40.93  $\mu\text{S}/\text{cm}$  to 92.01  $\mu\text{S}/\text{cm}$ . Conductivity fluctuated throughout the deployment period, with slight changes corresponding to stage increases associated with precipitation events. Specific conductivity at Pond 226 Brook ranged between 25.15  $\mu\text{S}/\text{cm}$  and 45.10  $\mu\text{S}/\text{cm}$ , and remained generally low and stable across the deployment period.

A slight overall increasing trend was observed at both stations. This is likely due to reduced precipitation and greater evaporation associated with rising atmospheric temperatures. As air temperatures increase, evaporation intensifies, leading to a concentration of dissolved ions within the water body.

● Specific Conductivity ( $\mu\text{S}/\text{cm}$ ) ● Stage (m)



Hermans Pond Brook  
Trendline

Pond 226 Brook  
Trendline

# Dissolved Oxygen

(mg/L and % Sat)



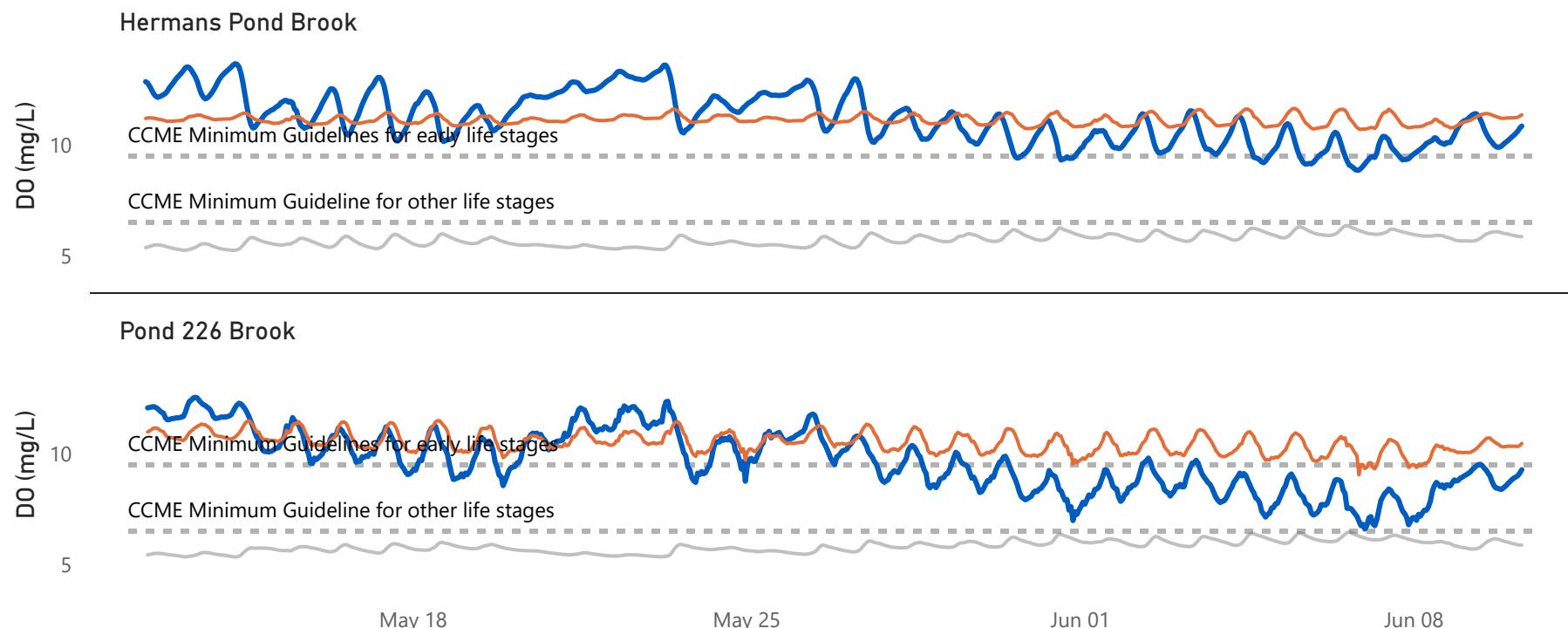
## Hermans Pond Brook

11.20	11.11
Average	Median
8.86	13.68
Minimum	Maximum

## Pond 226 Brook

9.67	9.58
Average	Median
6.60	12.56
Minimum	Maximum

● DO (mg/L) ● % Saturation ● Water Temperature (°C)

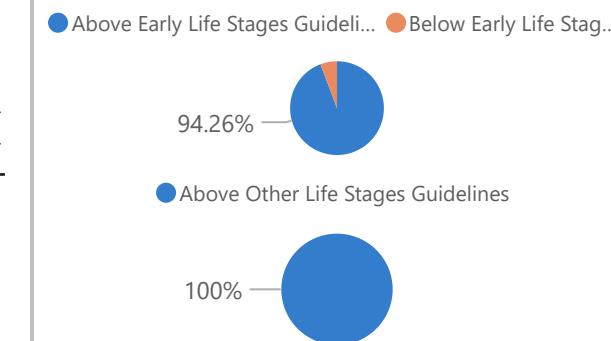


Dissolved oxygen (DO) in water is crucial for aquatic life. The [CCME](#) Freshwater Aquatic Life Guidelines provide benchmarks to assess waterway health, with the minimum DO guideline being 9.5 mg/L for early life stages in cold water and 6.5 mg/L for other life stages. DO levels are influenced by water 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.

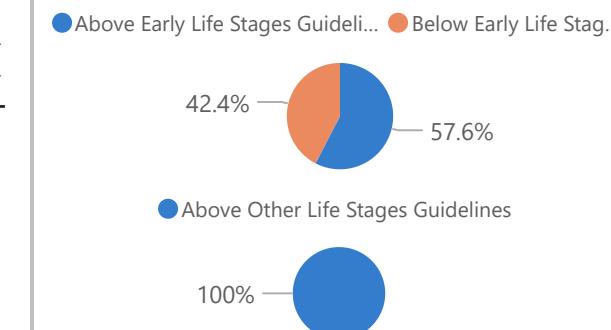
DO at Hermans Pond Brook ranged between 8.86 mg/L and 13.68 mg/L, while DO at Pond 226 Brook ranged between 6.60 mg/L and 12.56 mg/L. DO generally decreased throughout the period, which is expected given the increasing water temperatures.

Values remained above the CCME guideline for the protection of other life stages at both stations throughout the deployment period. At Hermans Pond Brook, values were above the guideline for the protection of early life stages at the start of the deployment but fluctuated around the guideline toward the end. At Pond 226 Brook, values consistently fluctuated around the guideline value.

## Hermans Pond Brook



## Pond 226 Brook



# Turbidity (NTU)



## Hermans Pond Brook

1.28	1.10
Average	Median
0.54	20.80
Minimum	Maximum

## Pond 226 Brook

3.84	3.49
Average	Median
0.75	22.32
Minimum	Maximum

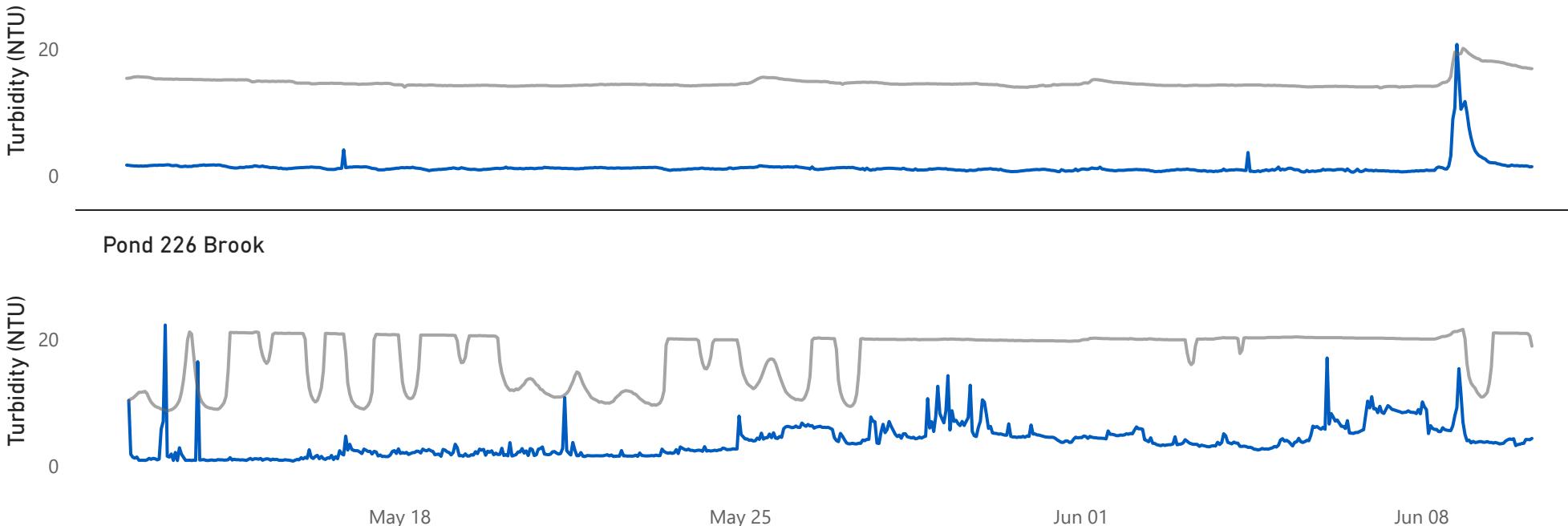
Turbidity, or water cloudiness, often increases during precipitation events when runoff carries silt and debris into the waterbody. Elevated turbidity can block light from reaching aquatic plants, disrupt benthic habitats, and harm fish gills or equipment.

Turbidity at Hermans Pond Brook ranged between 0.54 NTU and 20.80 NTU, while turbidity at Pond 226 Brook ranged between 0.75 NTU and 22.32 NTU. Turbidity at both stations remained relatively low and stable throughout the deployment period, although there was slightly more fluctuation observed at Pond 226 Brook.

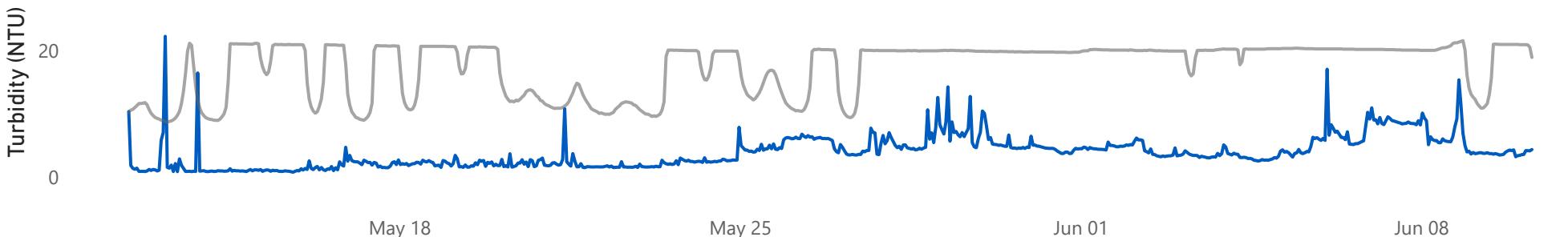
Turbidity tends to spike during stage increases, typically due to precipitation, which can disturb the bottom substrate or increase runoff entering the water. While turbidity levels may rise temporarily, they generally return to background values within a few days.

● Turbidity (NTU) ● Stage (m)

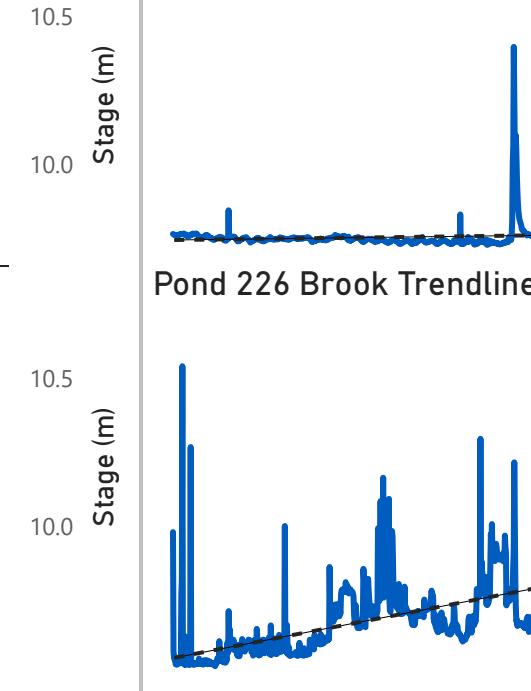
### Hermans Pond Brook



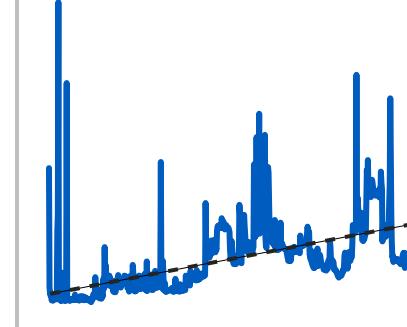
### Pond 226 Brook



### Hermans Pond Brook Trendline



### Pond 226 Brook Trendline



# Stage (m)



## Hermans Pond Brook

10.19	10.19
Average	Median
10.17	10.34
Minimum	Maximum

## Pond 226 Brook

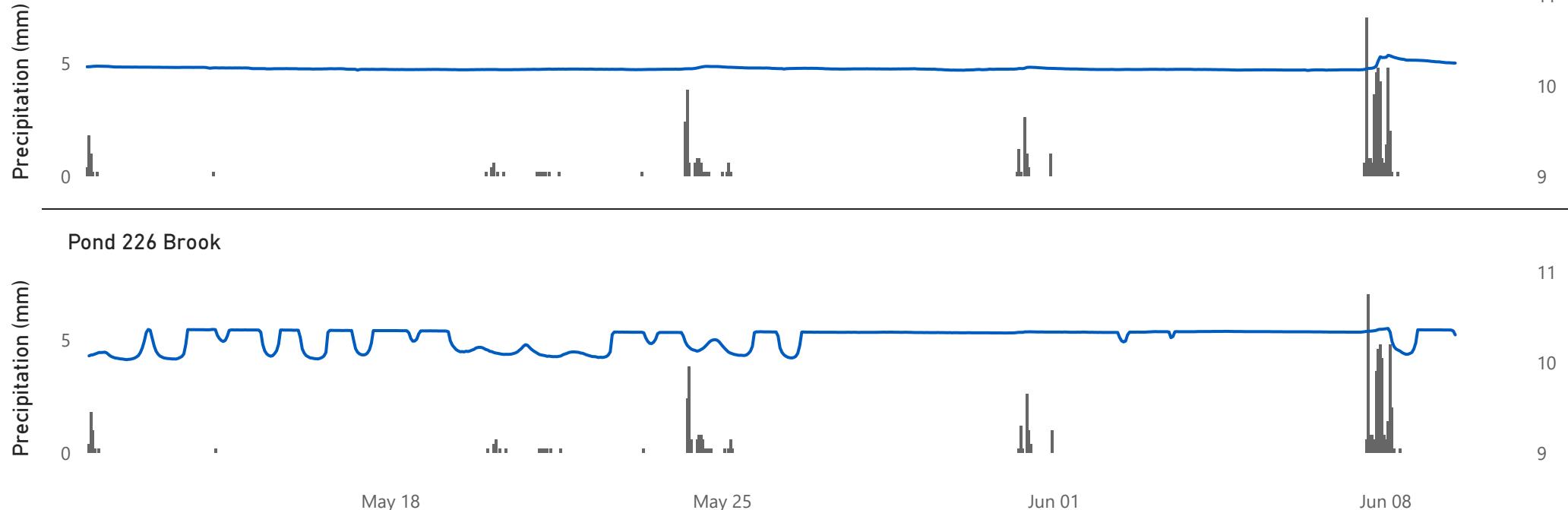
10.27	10.33
Average	Median
10.03	10.38
Minimum	Maximum

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.

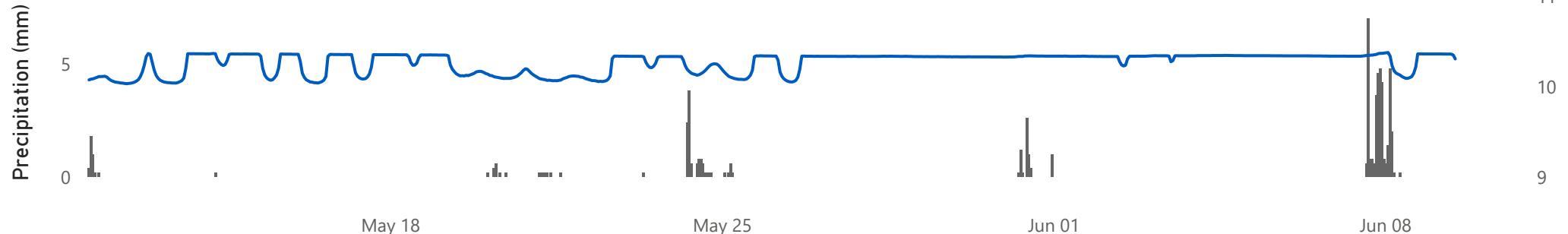
Stage ranged between 10.17 to 10.34 at Hermans Pond Brook, and ranged between 10.03 to 10.38 at Pond 226 Brook. At Hermans Pond Brook, stage remained generally stable throughout the deployment period, with a slight increase on June 9th corresponding to a precipitation event. At Pond 226 Brook, stage showed slightly more fluctuation but was still relatively stable overall.

● Precipitation (mm) ● Stage (m)

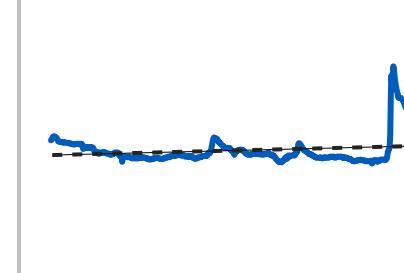
### Hermans Pond Brook



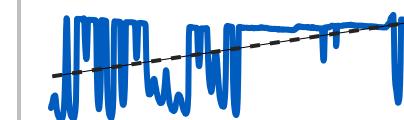
### Pond 226 Brook



### Hermans Pond Brook Trendline



### Pond 226 Brook Trendline

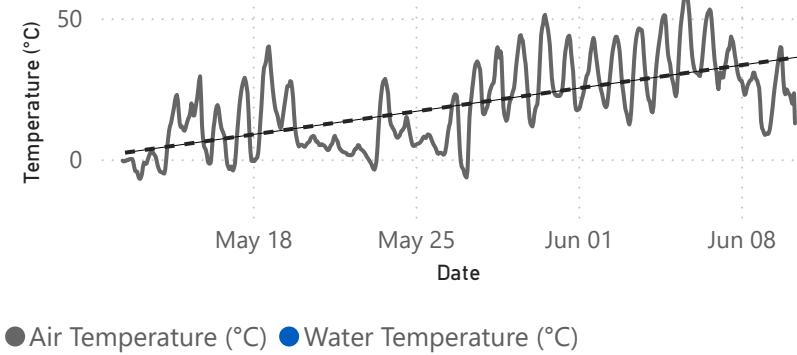


# Meteorological and Hydrometric Data

## Gander Airport CS MET Station Data



Air Temperature Recorded at Gander Airport CS MET Station



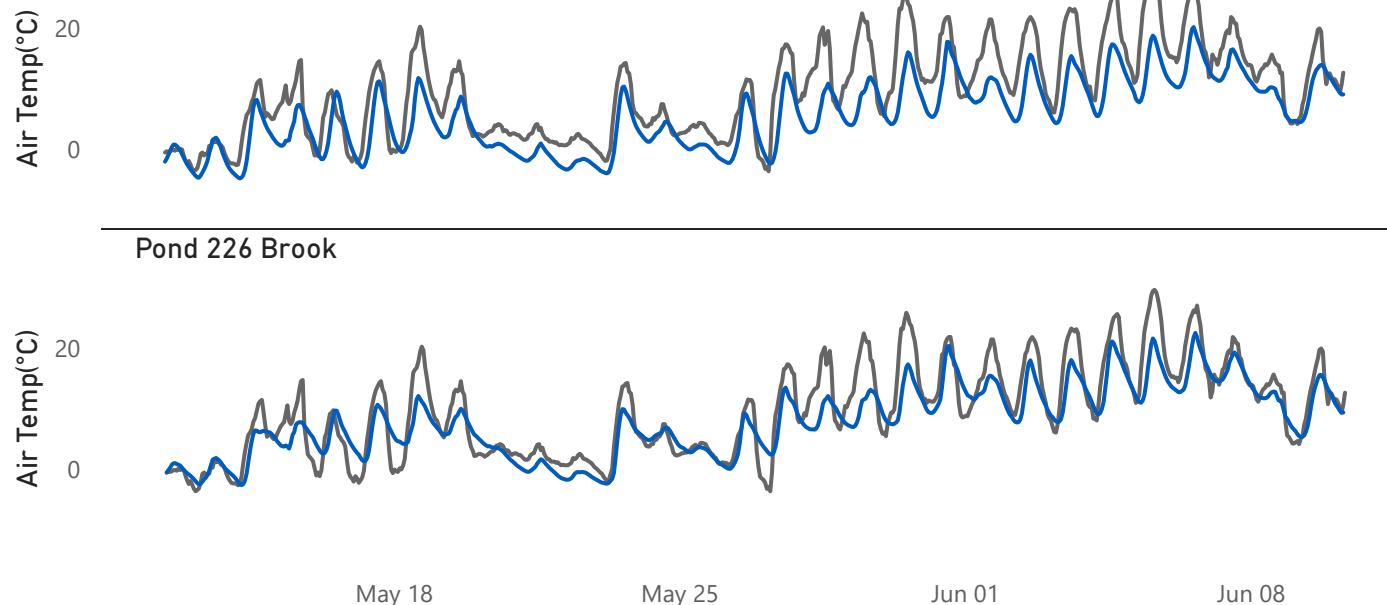
Air Temperature Statistics

**9.64**  
Average (°C)  
**-3.60**  
Minimum (°C)  
**9.40**  
Median (°C)  
**29.70**  
Maximum (°C)

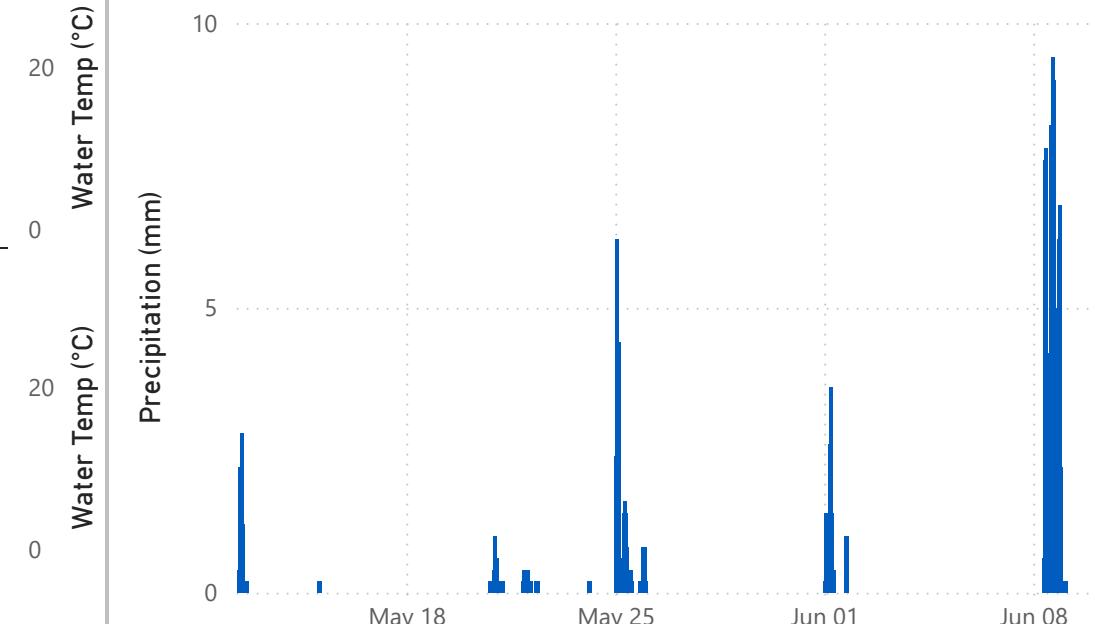
Precipitation Statistics

**0.09**  
Average (mm/hr)  
**0.00**  
Minimum (mm/hr)  
**0.00**  
Median (mm/hr)  
**7.00**  
Maximum (mm/hr)

Hermans Pond Brook



Precipitation Recorded at Gander Airport CS MET Station



# Hermans Pond Brook RTWQ Station

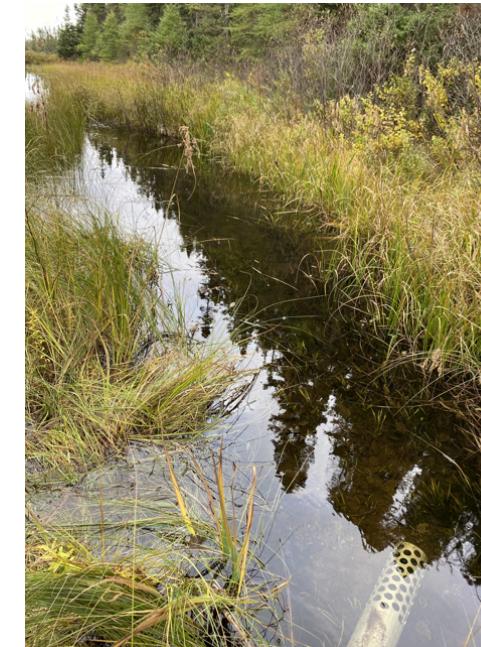
## NF02YQ0075



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.