Real-Time Water Quality Deployment Report

Voisey's Bay Network

May 27/28 to July 8, 2025

Newfoundland Labrador

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

Contents

Prepared by:
Water Resources Management Division
Department of Environment and Climate Change

Real Time Water Quality Monitoring

Staff with the Department of Environment and Climate Change monitor the real-time web pages regularly.

This deployment report discusses water quality related events occurring at four stations in the Voisey's Bay Network: Reid Brook at Outlet to Reid Pond; Camp Pond Brook below Camp Pond; Tributary to Reid Brook; and Reid Brook below Tributary.

On May 27-28, 2025, ECC staff installed and deployed new real-time water quality monitoring equipment at the four real-time stations in the Voisey's Bay network. This upgrade was necessary to ensure accurate data collection and reporting due to the age of the previous equipment. Instruments were removed by ECC Staff on July 8, 2025 for regular maintenance.

The field instrument at Reid Brook below Tributary experienced extreme sediment buildup almost immediately after deployment. Upon removal, the instrument was barely visible. Data from this site should be considered with caution.

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. This procedure is based on the approach used by the United States Geological Survey.

At deployment and removal, a QA/QC instrument is temporarily deployed adjacent to the field instrument. 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 instrument and QA/QC instrument at deployment and at removal, a qualitative statement is made about the data quality (Table 1).

Table 1: Ranking classifications for deployment and removal

	Rank				
Parameter	**Excellent**	**Good**	**Fair**	**Marginal**	**Poor**
Temperature (oC)	<=+/-0.2	>+/-0.2 to 0.5	>+/-0.5 to 0.8	>+/-0.8 to 1	<+/-1
pH (unit)	<=+/-0.2	>+/-0.2 to 0.5	>+/-0.5 to 0.8	>+/-0.8 to 1	>+/-1
Sp. Conductance (µS/cm)	<=+/-3	>+/-3 to 10	>+/-10 to 15	>+/-15 to 20	>+/-20
Sp. Conductance > 35 µS/cm (%)	<=+/-3	>+/-3 to 10	>+/-10 to 15	>+/-15 to 20	>+/-20
Dissolved Oxygen (mg/l) (% Sat)	<=+/-0.3	>+/-0.3 to 0.5	>+/-0.5 to 0.8	>+/-0.8 to 1	>+/-1
Turbidity <40 NTU (NTU)	<=+/-2	>+/-2 to 5	>+/-5 to 8	>+/-8 to 10	>+/-10
Turbidity > 40 NTU (%)	<=+/-5	>+/-5 to 10	>+/-10 to 15	>+/-15 to 20	>+/-20

It should be noted that the temperature sensor on any instrument is the most important. All other parameters can be broken down into three groups: temperature dependent; temperature compensated; and temperature independent. Because the temperature sensor is not isolated from the rest of the

instrument, the entire instrument must be at the same temperature before the 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.

Deployment and removal comparison rankings for the Voisey's Bay Network stations are summarized in Table 2.

Table 2: Comparison rankings for Voisey's Bay Network stations

Station Voisey's Bay	Date	Action	Comparison Ranking				
			Temperature	pH	Conductivity	Dissolved Oxygen	Turbidity
Reid Brook at Outlet	May 27	Deployment	Excellent	Good	Excellent	Fair	Excellent
	July 8	Removal	Excellent	Good	Excellent	Fair	Excellent
Camp Pond Brook	May 27	Deployment	Excellent	Excellent	Excellent	Good	Good
	July 8	Removal	Excellent	Excellent	Excellent	Good	Excellent
Reid Brook below Tributary	May 28	Deployment	Excellent	Good	Excellent	Excellent	Excellent
	July 8	Removal	Excellent	Excellent	Excellent	Excellent	Excellent
Tributary to Reid Brook	May 27	Deployment	Excellent	Excellent	Excellent	Excellent	Excellent
	July 8	Removal	Excellent	Excellent	Excellent	Good	Excellent

Reid Brook at Outlet of Reid Pond

- At deployment and removal all sensors ranked 'good' or 'excellent' with the exception of dissolved oxygen which ranked 'fair' at both times.

Camp Pond Brook below Camp Pond

- At deployment and removal, all parameters ranked as either 'excellent' or 'good'.

Reid Brook below Tributary

- At deployment and removal, all parameters ranked as either 'excellent' or 'good'.

Tributary to Reid Brook

- At deployment and removal, all parameters ranked as either 'excellent' or 'good'.

It is important to note that, in general, there are several conditions under which a less than ideal QA/QC ranking may be obtained. These include, but are not limited to: placement of the QA/QC sonde in relation to

the field sonde; the amount of time each sonde is given to stabilize before readings are recorded; and deteriorating performance of one or more of the sensors.

Data Interpretation

The following graphs and discussion illustrate significant water quality-related events from May 27 to July 8, 2025 in the Voisey's Bay Real-Time Water Quality Monitoring Network.

With the exception of water quantity data (stage and flow), all data used in the preparation of the graphs and subsequent discussion below adhere to stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

Figure 1: Voisey's Bay Network Station Locations

Reid Brook at Outlet of Reid Pond

Water Temperature

Over the deployment period, water temperature ranged from 1.63°C to 12.62°C, with a median value of 3.57°C (Figure 2). As evidenced in the graph below, air temperature fluctuates to a much greater extent each day compared to water temperature. Air temperature data was obtained from the Voisey's Bay airstrip weather station.

Water temperature was variable over the course of the deployment period, similar to air temperature. This water body takes longer to acclimate to changes in temperature as it has a much larger surface area compared to the brooks at the other RTWQ stations in this network.

Please note the stage data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

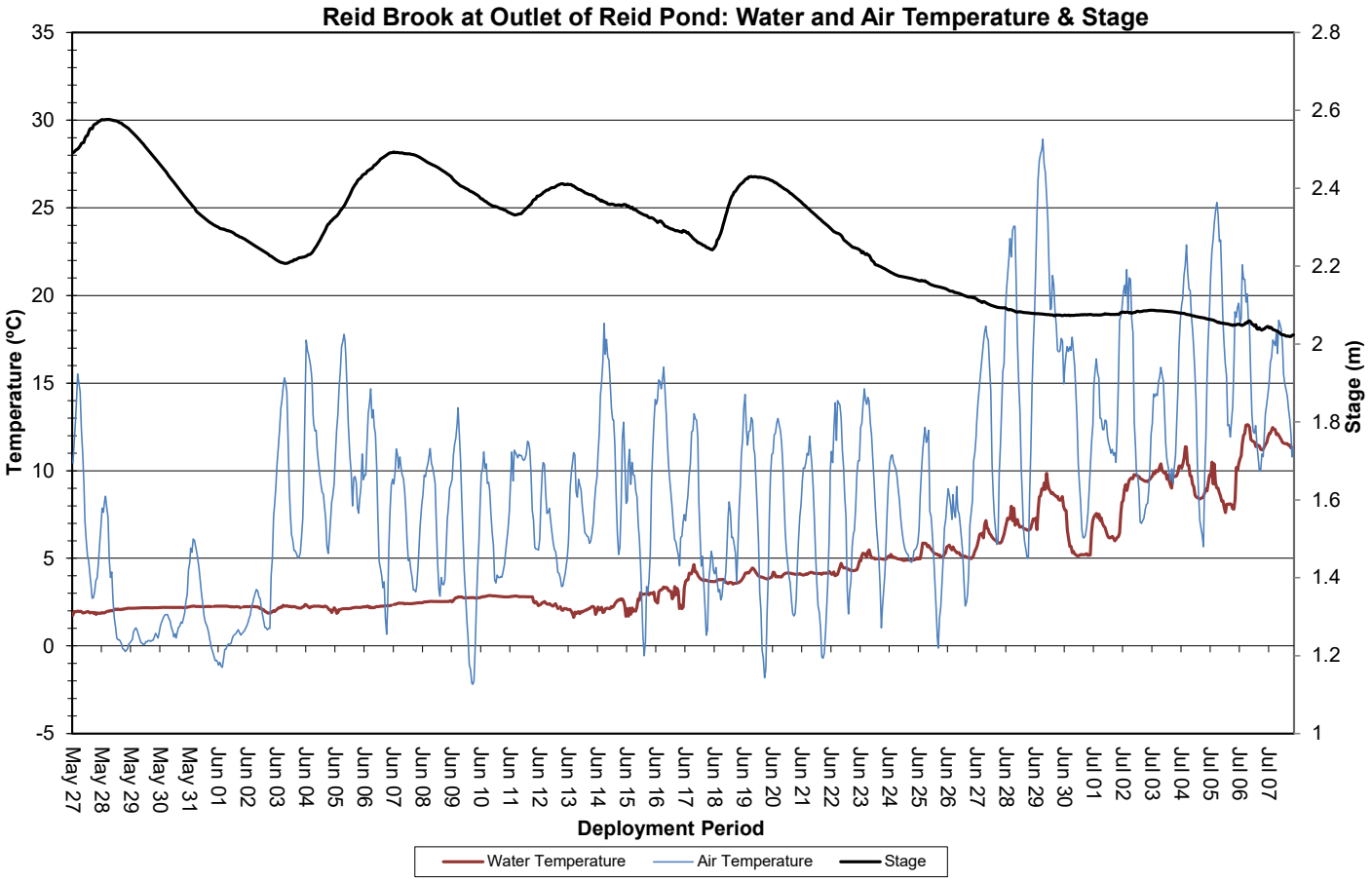

Figure 2: Water and Air Temperature & Stage at Reid Brook at Outlet of Reid Pond

pH

Over the deployment period, pH values ranged from 6.54 pH units to 7.01 pH units, with a median value of 6.74 pH units (Figure 3).

pH levels were within the CCME's Guidelines for the Protection of Aquatic Life for the entirety of the deployment period. The sudden decrease in pH on June 4 coincides with an increase in stage.

Please note the stage data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

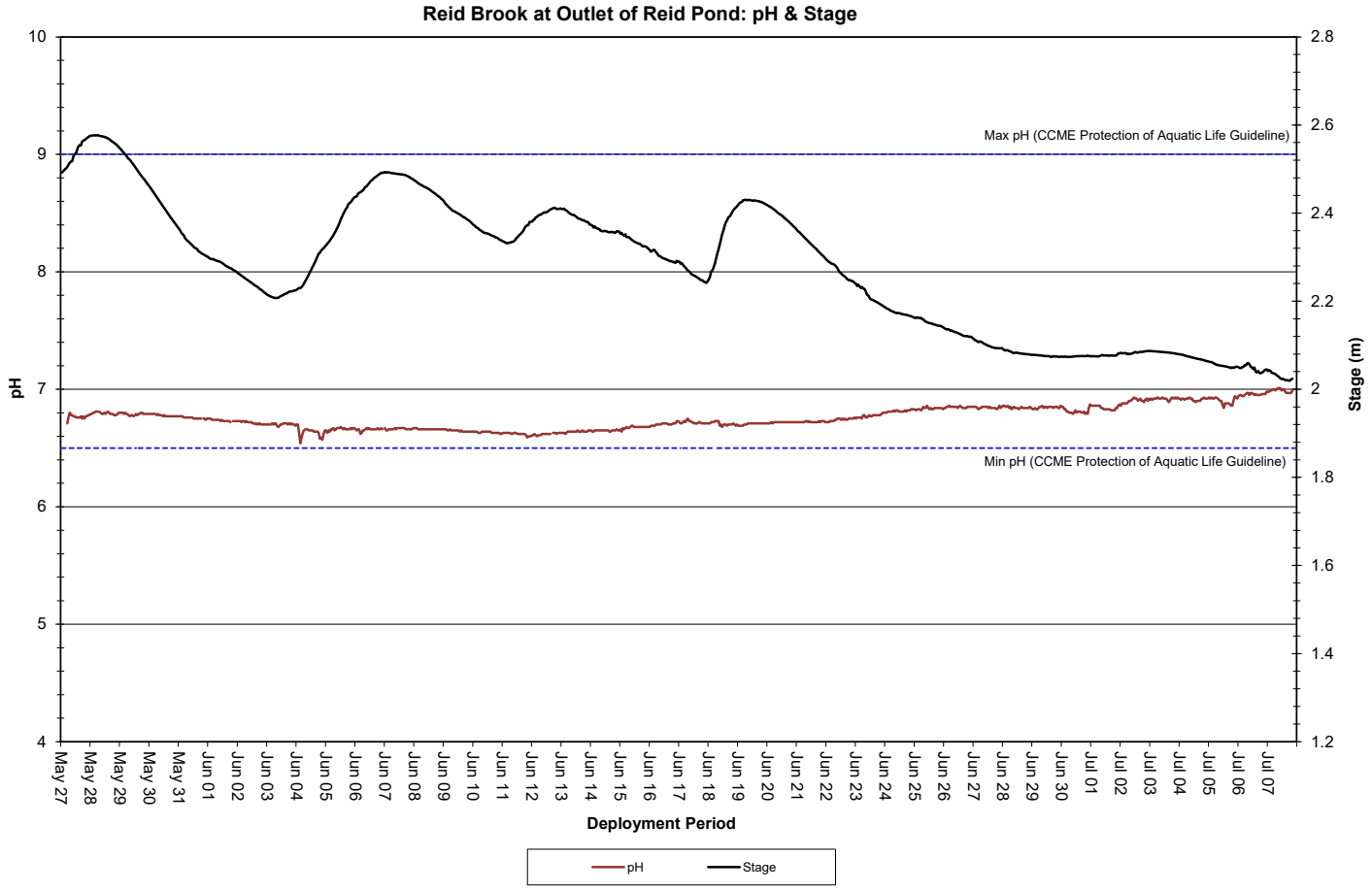

Figure 3: pH & Stage at Reid Brook at Outlet of Reid Pond

Specific Conductivity

Over the deployment period, specific conductivity levels varied minimally, ranging from 13.35µS/cm to 15.2µS/cm, with a median value of 14.21µS/cm. Conductivity at Reid Brook remained somewhat stable across the deployment period. This is to be expected as this water body is pristine in nature and is far removed from any anthropogenic disturbances that could affect water quality.

The relationship between conductivity and stage level is generally inversed. When stage levels decrease, specific conductivity levels increase, as the decreased amount of water in the river system concentrates the solids that are present. Similarly, as stage levels rise, conductivity levels will dip in response. This relationship is not as evident at Reid Brook as it is at other stations in the Voisey's Bay network (Figure 4).

Please note the stage data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

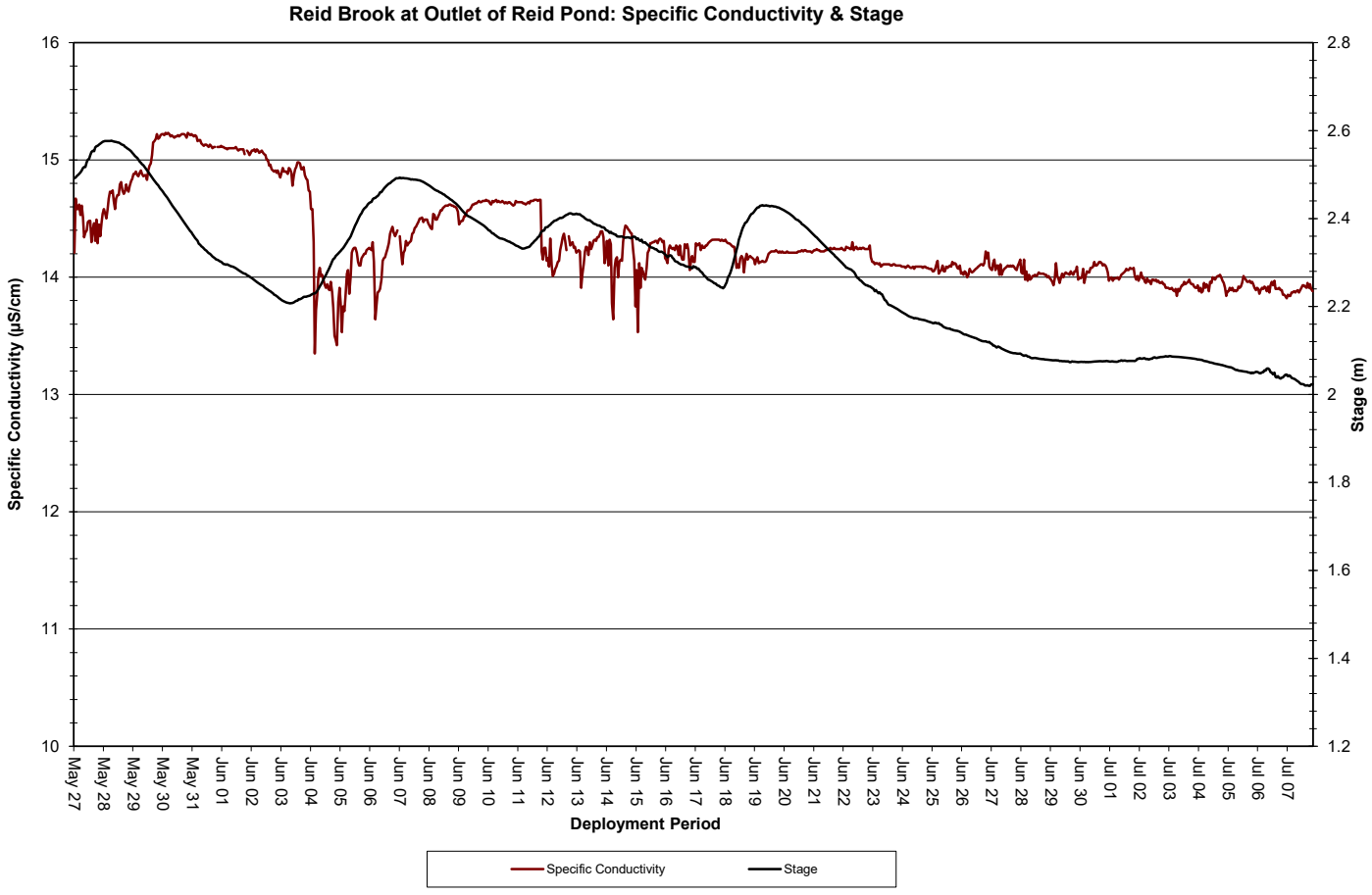

Figure 4: Specific Conductivity & Stage at Reid Brook at Outlet of Reid Pond

Dissolved Oxygen

Over the deployment period, dissolved oxygen concentration levels ranged from 11.72mg/L to 13.88mg/L, with a median value of 13.36mg/L. Percent saturation levels for dissolved oxygen ranged from 92.6% saturation to 117.4% saturation, with a median value of 102.1% saturation (Figure 5).

The water quality instrument measures dissolved oxygen concentration (mg/L) with a dissolved oxygen probe. The instrument then calculates percent saturation (% Sat) taking into account water temperature.

Dissolved oxygen concentration values remained above the CCME's Guidelines for the Protection of Early and Other Life Stages (9.5 mg/L) for the duration of deployment. Dissolved oxygen concentrations began to decrease in early July as water temperatures increased. Dissolved oxygen concentrations are generally lower in water at high temperatures, and vice versa.

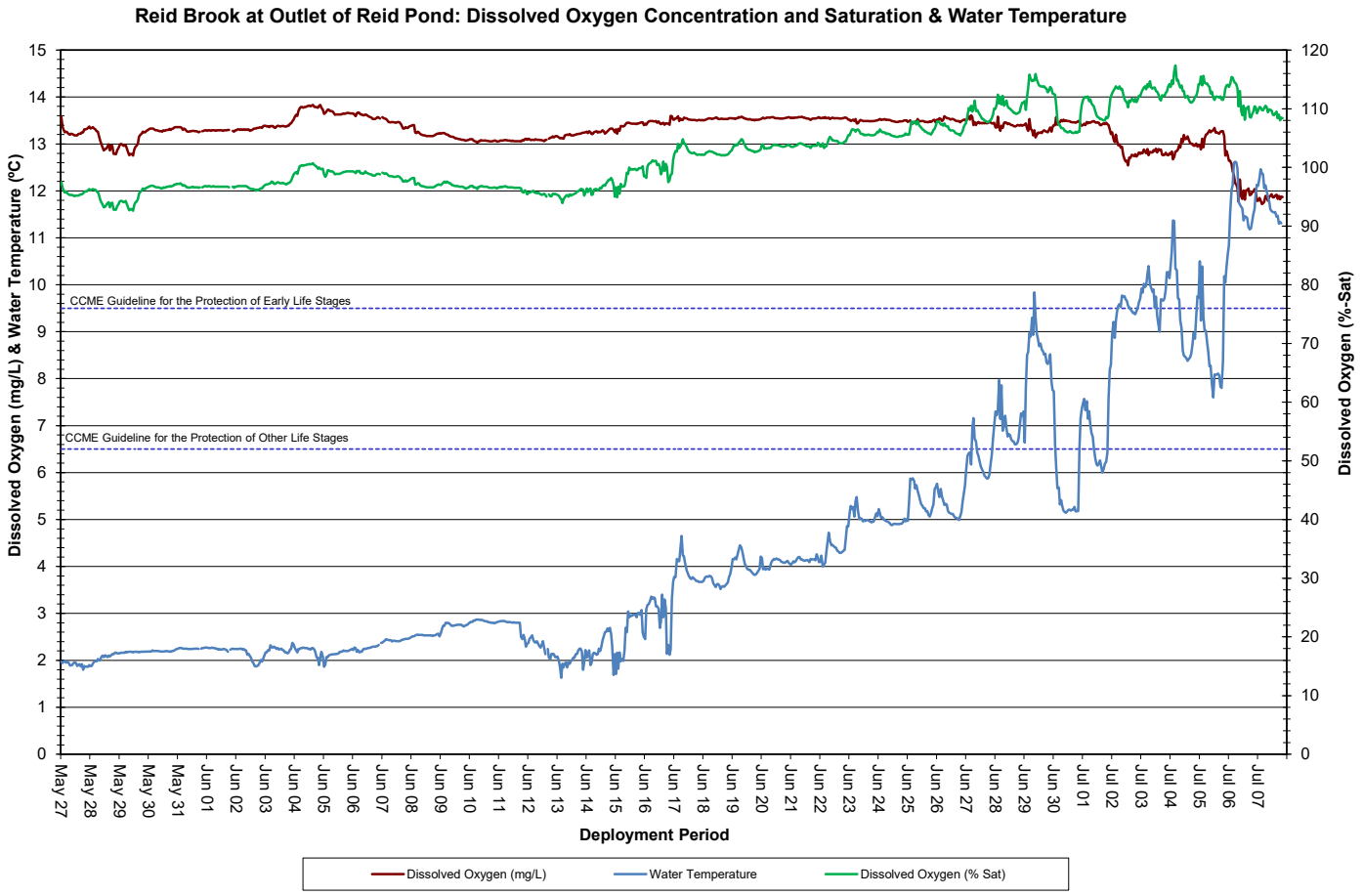

Figure 5: Dissolved Oxygen Concentration and Saturation & Water Temperature at Reid Brook at Outlet of Reid Pond

Turbidity

Over the deployment period, turbidity levels ranged from 1.1NTU to 14.9NTU, with a median value of 1.3NTU (Figure 6). This indicates a very low level of background turbidity at this station during deployment, which is typical of this station. Precipitation data was obtained from the Voisey's Bay Weather Station.

All water bodies have a natural level of turbidity. A significant increase in turbidity is of concern when monitoring water quality. Higher turbidity readings would normally be expected during heavy rainfall or runoff events. Generally, turbidity levels increase for a short period of time and then return to within a baseline range. Turbidity values can also increase when there is a decrease in water level, which causes natural material in the water body to become concentrated.

It is not unusual for this station to see very little variability in turbidity levels, as it is pristine in nature and far removed from anthropogenic influences that may affect water quality.

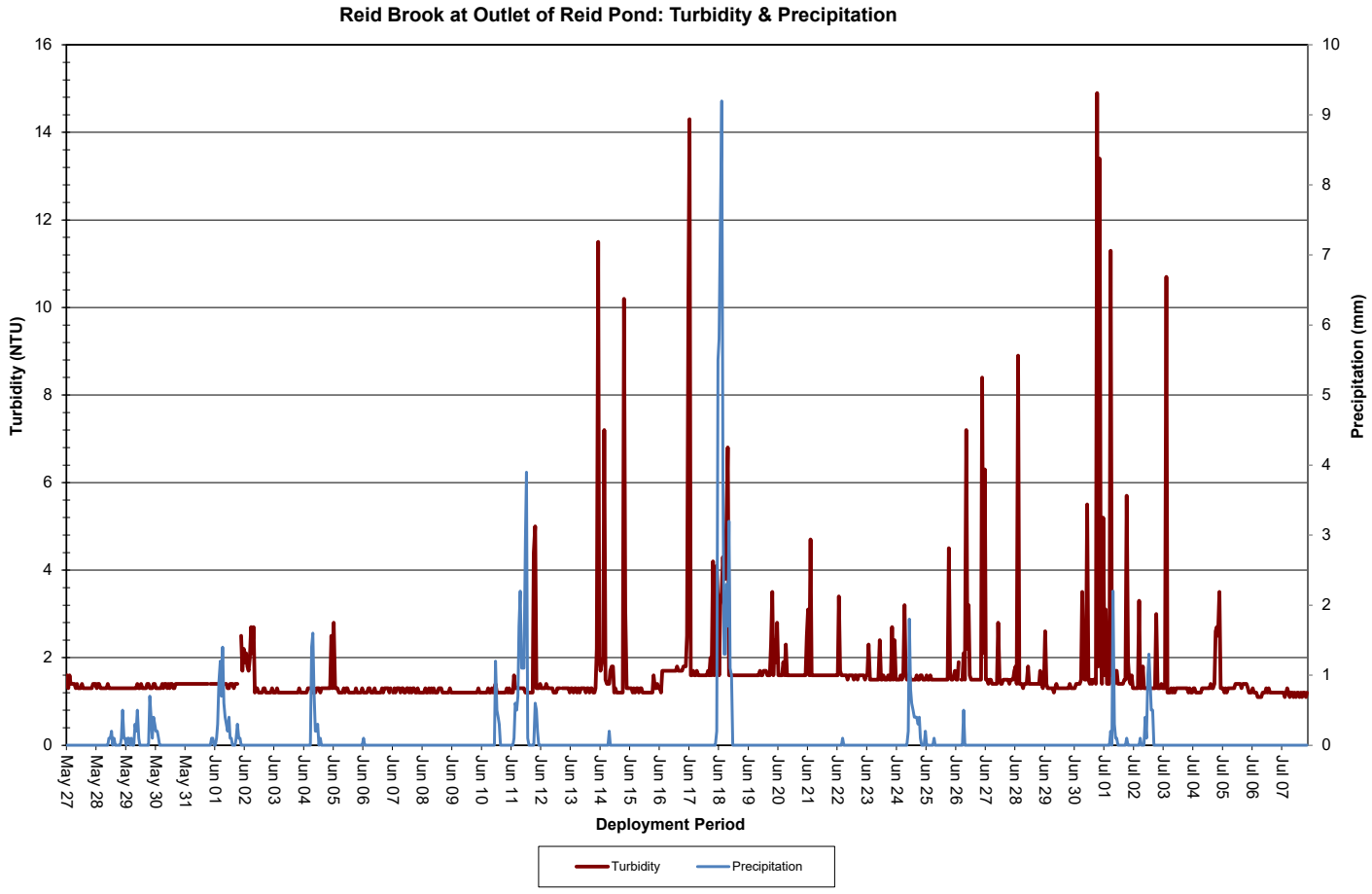

Figure 6: Turbidity & Precipitation at Reid Brook at Outlet of Reid Pond

Stage, Flow & Precipitation

Stage is an important parameter, as it provides an estimate of water level at a station and can explain some of the events that are occurring with other parameters (e.g. specific conductivity, DO, and turbidity). Stage will generally increase during rainfall events (Figure 7) and during any surrounding snow or ice melt; however, direct snowfall will not cause a significant increase in stage.

Over the deployment period, stage values ranged from 2.02m to 2.58m, with a median value of 2.29m. Flow values ranged from 3.71m^3/s to 15m^3/s, with a median value of 7.98m^3/s. Precipitation data was obtained from the Voisey's Bay Weather Station (Figure 7).

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

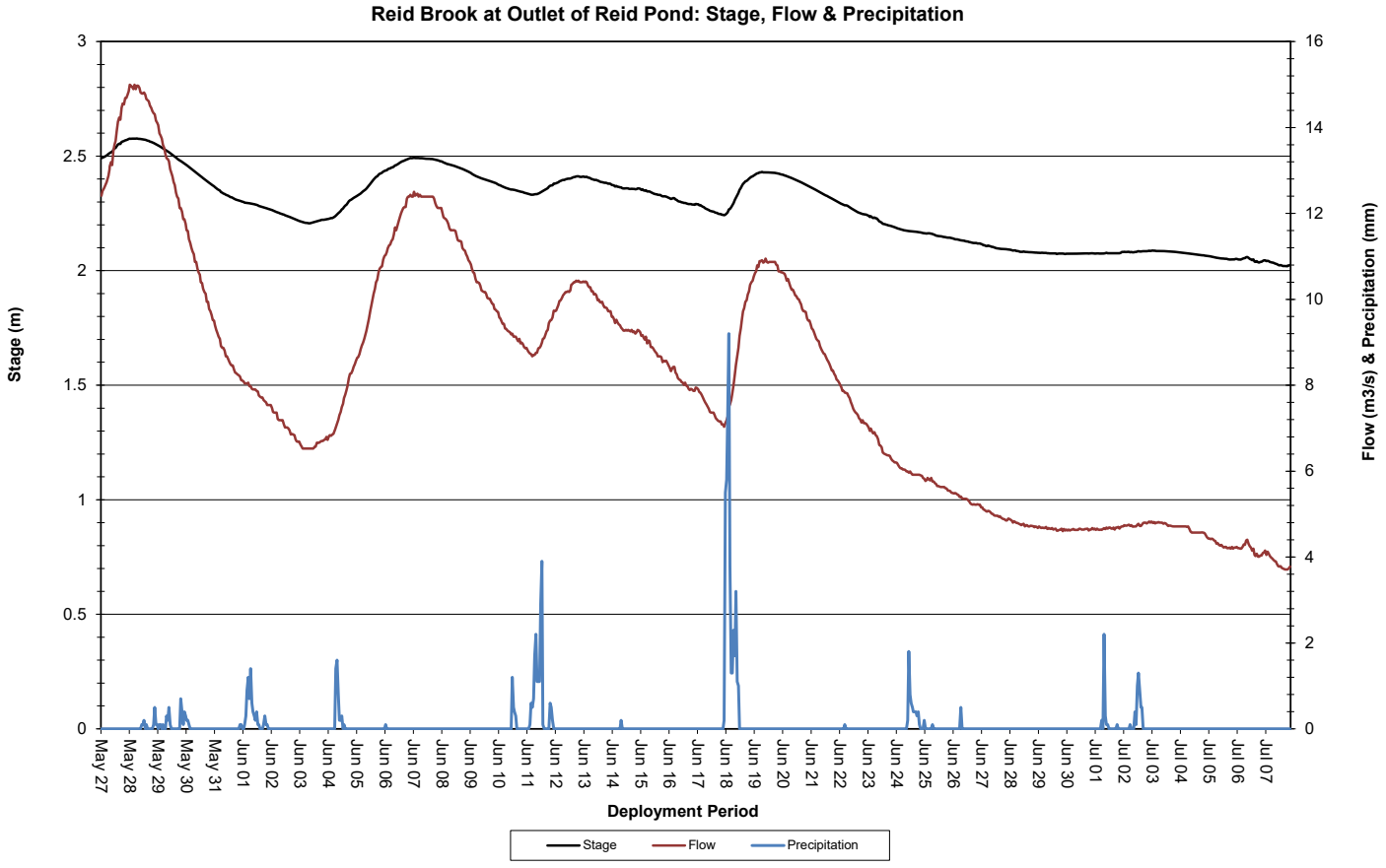

Figure 7: Stage, Flow & Precipitation at Reid Brook at Outlet of Reid Pond

Camp Pond Brook below Camp Pond

Water Temperature

Over the deployment period, water temperature ranged from 2.09°C to 20.52°C, with a median value of 9.66°C (Figure 8).

Water temperature at this station displays diurnal variations. Water temperature showed a steady increase over the course of deployment and correlated closely with air temperatures across the same period (Figure 8). Air temperature data was obtained from the Voisey's Bay Weather Station.

Camp Pond Brook is sensitive to changes in ambient air temperature and fluctuates considerably depending on the weather and time of day. This station typically has the highest water temperatures and greatest fluctuations when compared to the other stations in the network.

Please note the stage data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

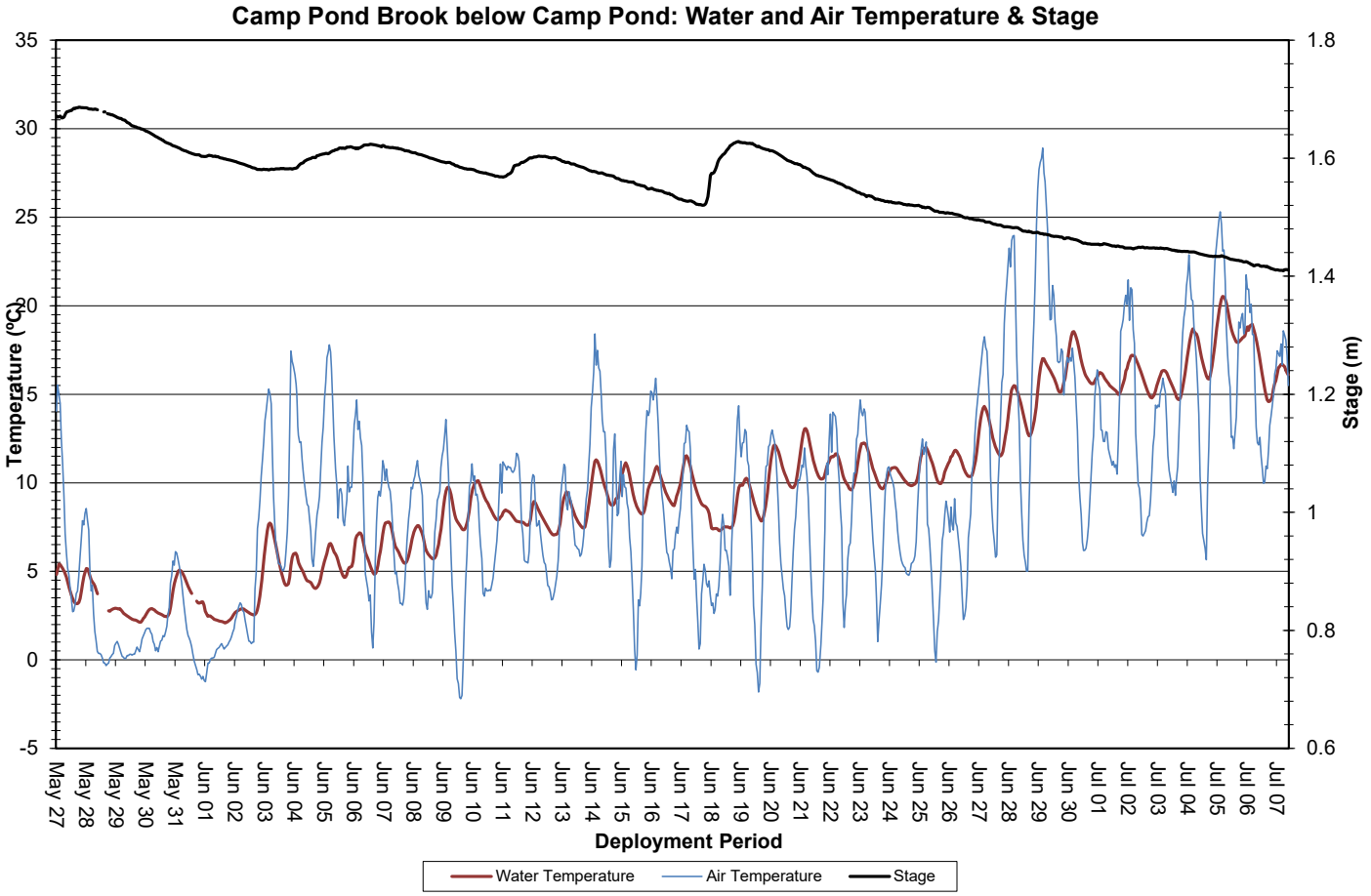

Figure 8: Water and Air Temperature & Stage at Camp Pond Brook below Camp Pond

pH

Over the deployment period, pH values ranged from 6.44 pH units to 6.99 pH units, with a median value of 6.82 pH units (Figure 9).

pH levels were relatively stable over the course of deployment, remaining within the CCME's Guidelines for the Protection of Aquatic Life for the majority of the deployment period.

Natural events such as rainfall and snow melt will alter the pH of a brook for a period of time - pH levels will decrease slightly during and after high stage levels. This is a natural process and is evident on June 18th.

Please note the stage data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

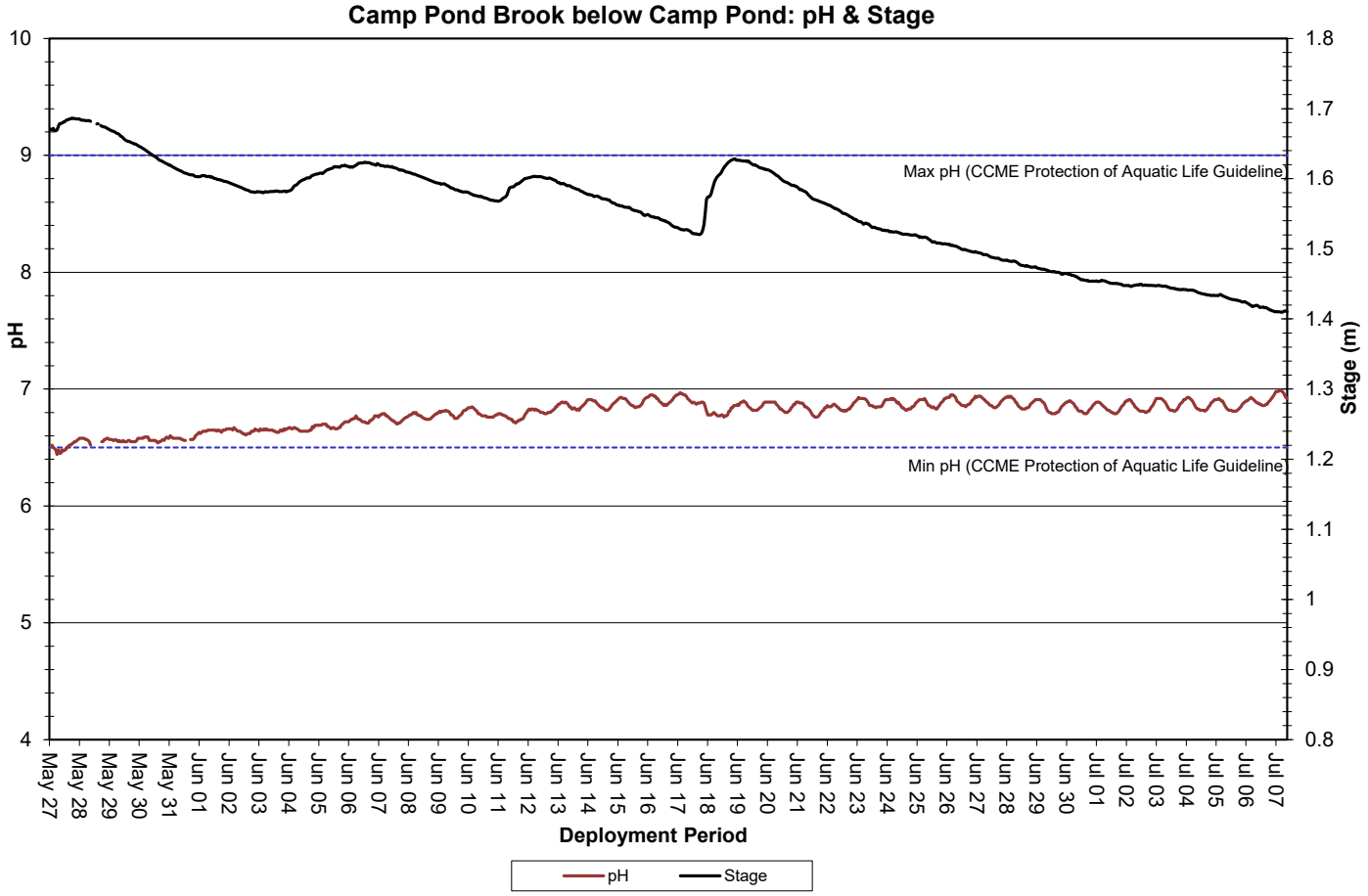

Figure 9: pH & Stage at Camp Pond Brook below Camp Pond

Specific Conductivity

Over the deployment period, specific conductivity ranged from 23.4µS/cm to 52.7µS/cm, with a median value of 36.7µS/cm (Figure 10).

Conductivity levels showed a gradual increase during the deployment period as stage showed a slight decreasing trend. Sudden increases in stage also typically correspond with sudden temporary increases in specific conductivity at this station, which is evident in the graph below (Figure 10). Conductivity levels then decreased as the water column was diluted.

Please note the stage data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

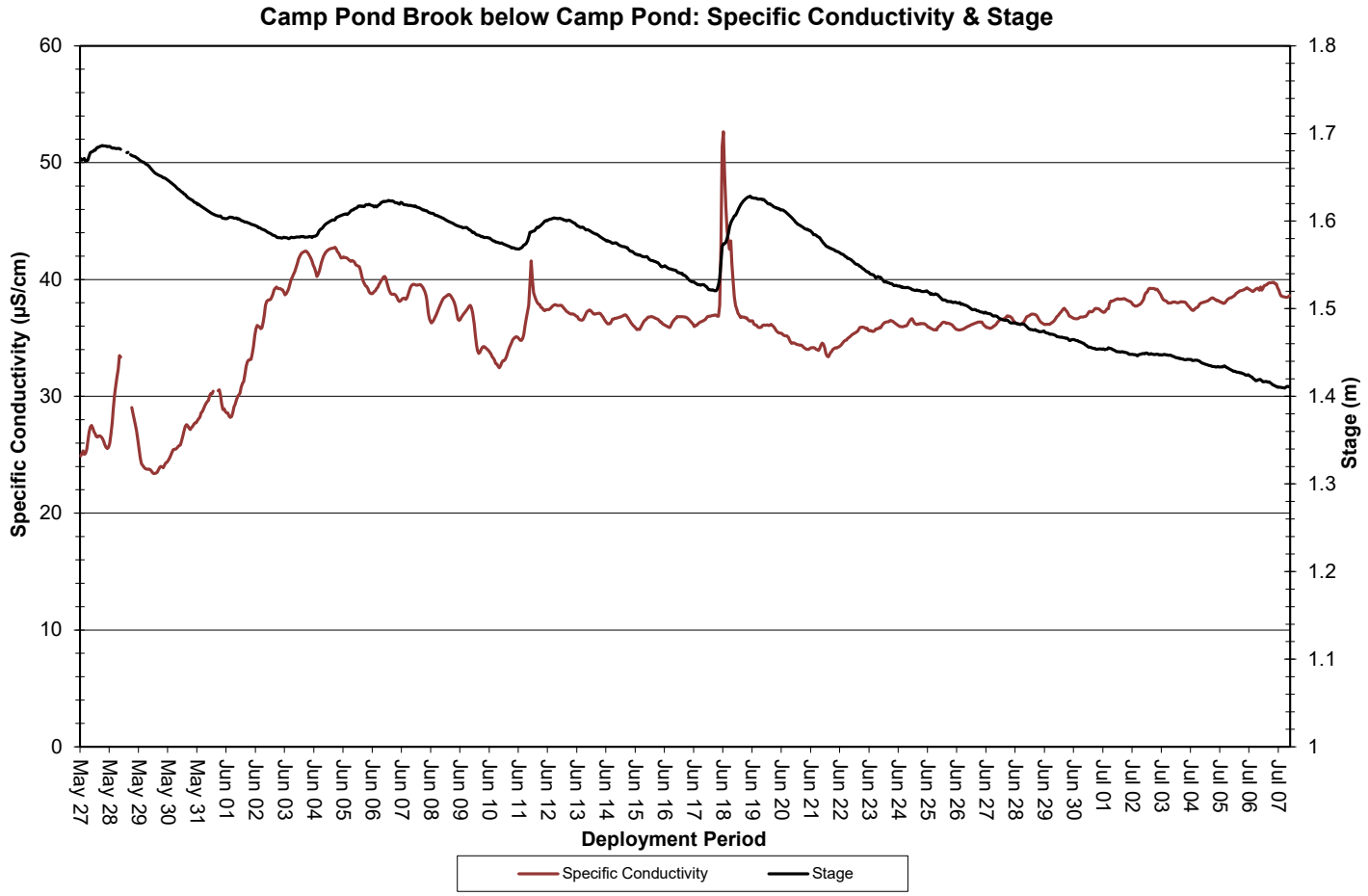

Figure 10: Specific Conductivity & Stage at Camp Pond Brook below Camp Pond

Dissolved Oxygen

Over the deployment period, dissolved oxygen concentration ranged from 8.93mg/L to 12.80mg/L, with a median value of 11.46mg/L. Saturation of dissolved oxygen ranged from 88.4% saturation to 107.3% saturation, with a median value of 98.1% (Figure 11).

Dissolved oxygen concentrations were variable across the deployment period, as water temperatures followed a similar, but opposite, trend. This observation is to be expected as water temperature directly influences the level of dissolved oxygen present in the water column; as water temperatures increase, dissolved oxygen concentrations decrease, and vice versa.

Dissolved oxygen concentrations were below the CCME's Guideline for the Protection of Early Life Stages for the last week of the deployment period. This corresponds to warmer water temperatures and is expected. Dissolved oxygen concentrations remained above the CCME's Guideline for the Protection of Other Life Stages for the duration of deployment (Figure 11).

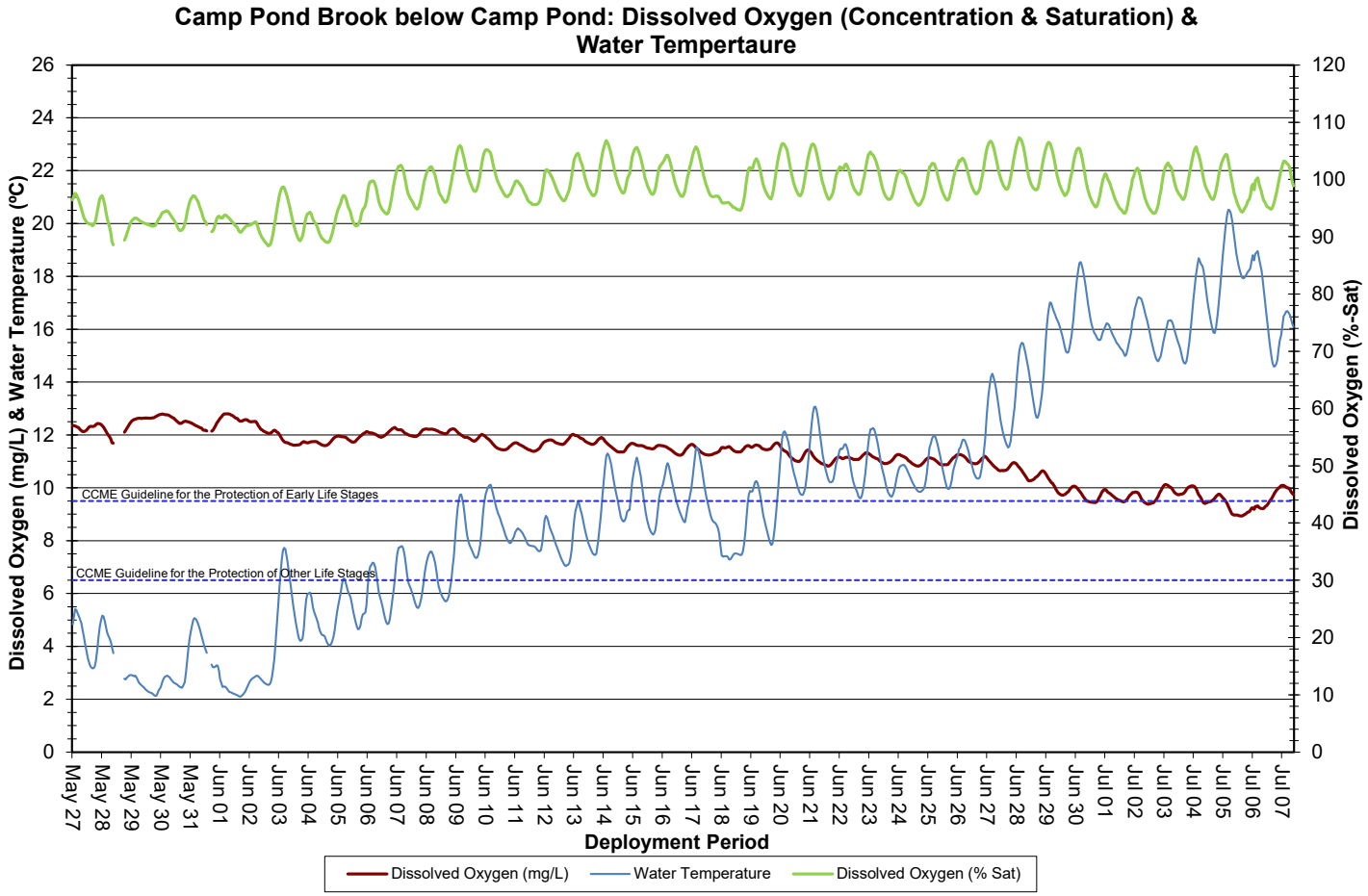

Figure 11: Dissolved Oxygen & Water Temperature at Camp Pond Brook below Camp Pond

Turbidity

Over the deployment period, turbidity ranged from 0.7NTU to 82.6NTU, with a median value of 1.2NTU (Figure 12). A median value of 1.2NTU indicates that there was a very low level of natural background turbidity at this station.

Variable turbidity levels are commonly observed at this station and are typically attributable to precipitation events and subsequent runoff entering Camp Pond Brook, which is evident in the graph below (Figure 12). Precipitation data was obtained from the Voisey's Bay Weather Station.

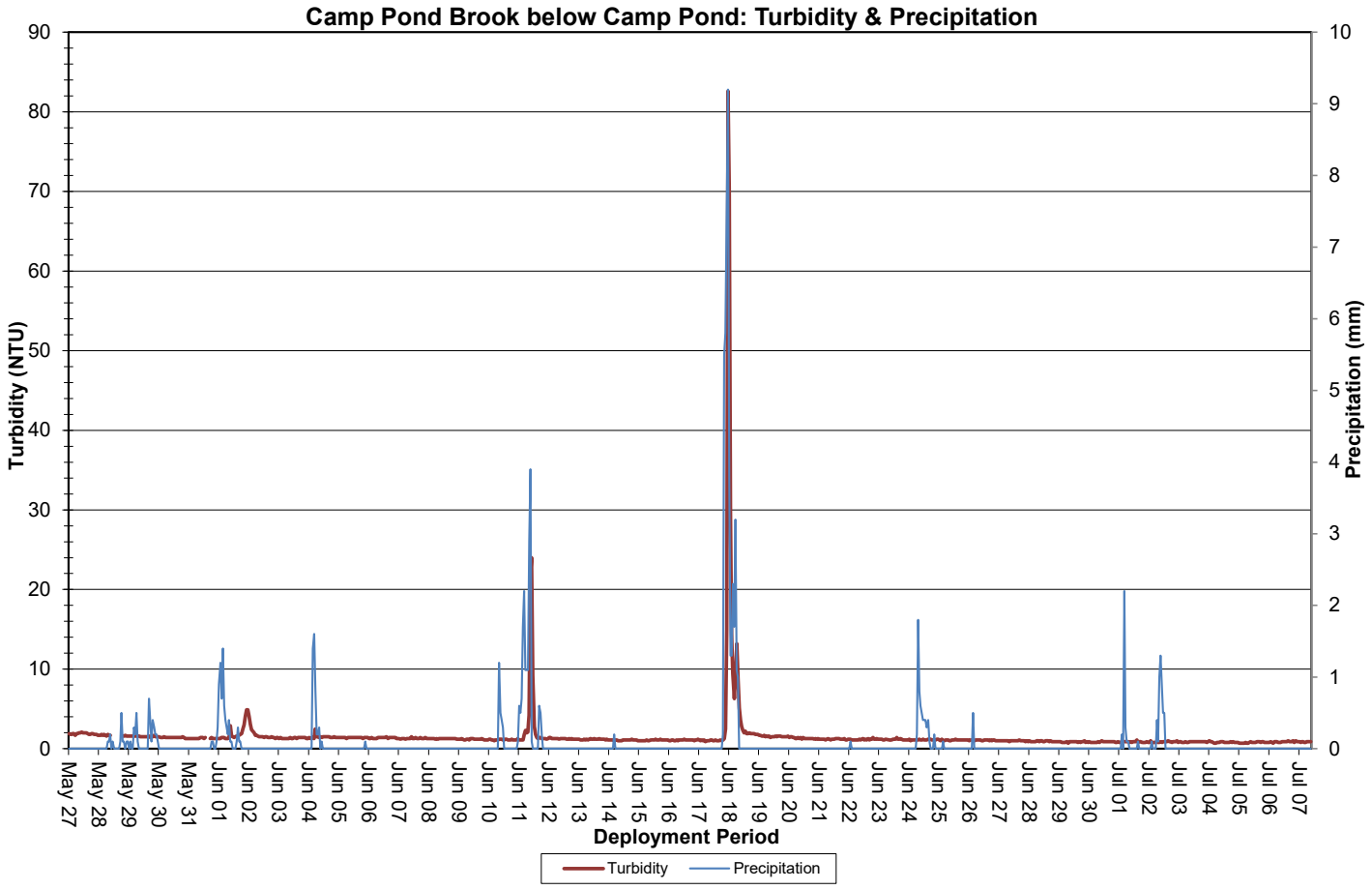

Figure 12: Turbidity & Precipitation at Camp Pond Brook below Camp Pond

Stage, Flow and Precipitation

Over the deployment period, stage values ranged from 1.403m to 1.686m, with a median value of 1.574m. Stream flow values ranged from 0.354m^3/s to 2.710m^3/s, with a median value of 1.445m^3/s. Precipitation data was obtained from the Voisey's Bay Weather Station (Figure 13).

Stage was variable across the deployment period with an overall decreasing trend. Many increases in stage were observed across the deployment period and can be attributed to observed rainfall events, as evidenced in the graph below (Figure 13).

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

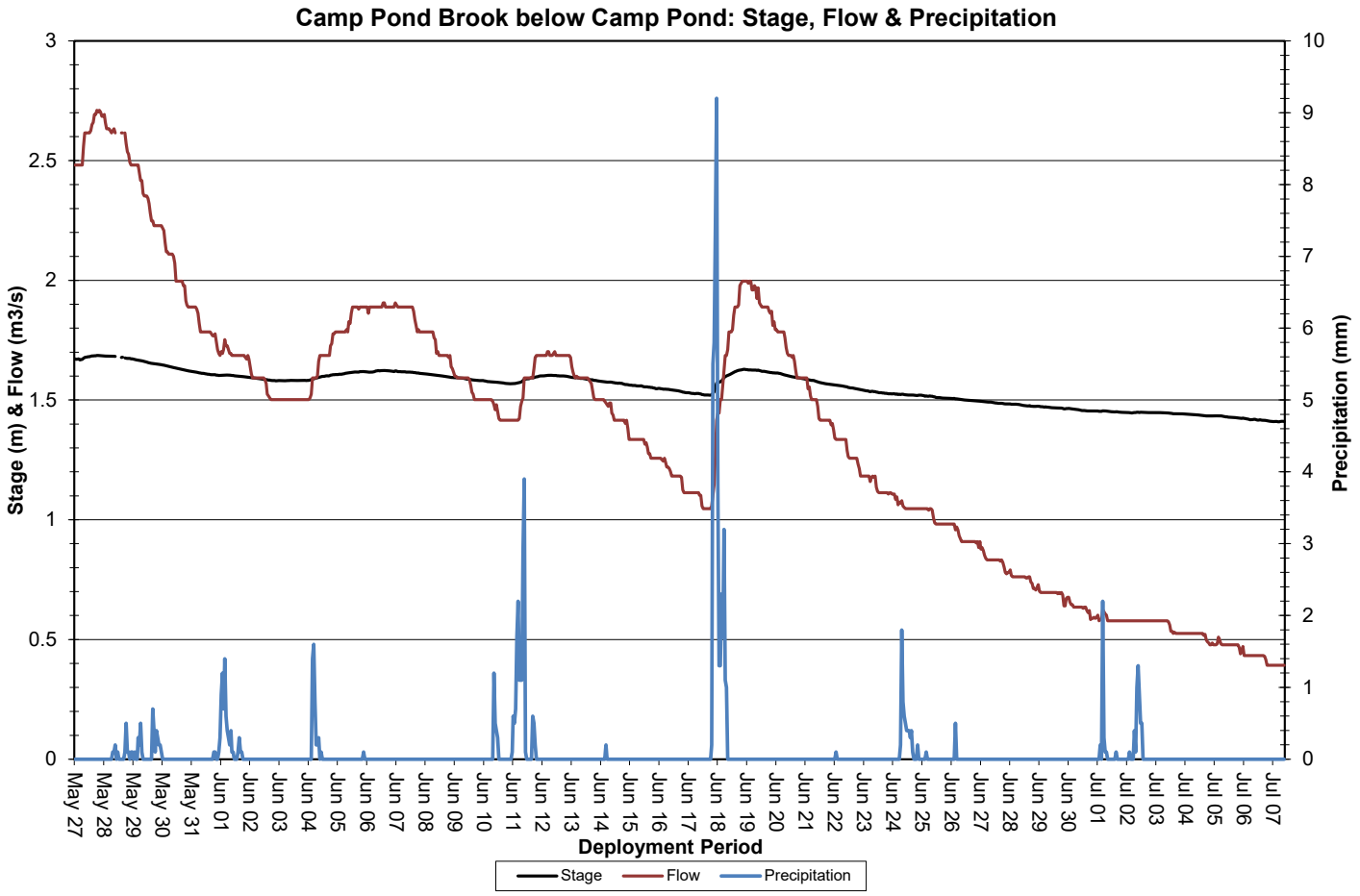

Figure 13: Stage, Flow & Precipitation at Camp Pond Brook below Camp Pond

Reid Brook below Tributary

Water Temperature

Over the deployment period, water temperature ranged from 1.32°C to 14.59°C, with a median value of 6.40°C (Figure 14).

Water temperature at this station displays diurnal variations and showed a gradual increase throughout the deployment period. This is to be expected as air temperatures exhibited a similar trend (Figure 14), rising as Summer approaches. Air temperature data was obtained from the Voisey's Bay Weather Station.

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

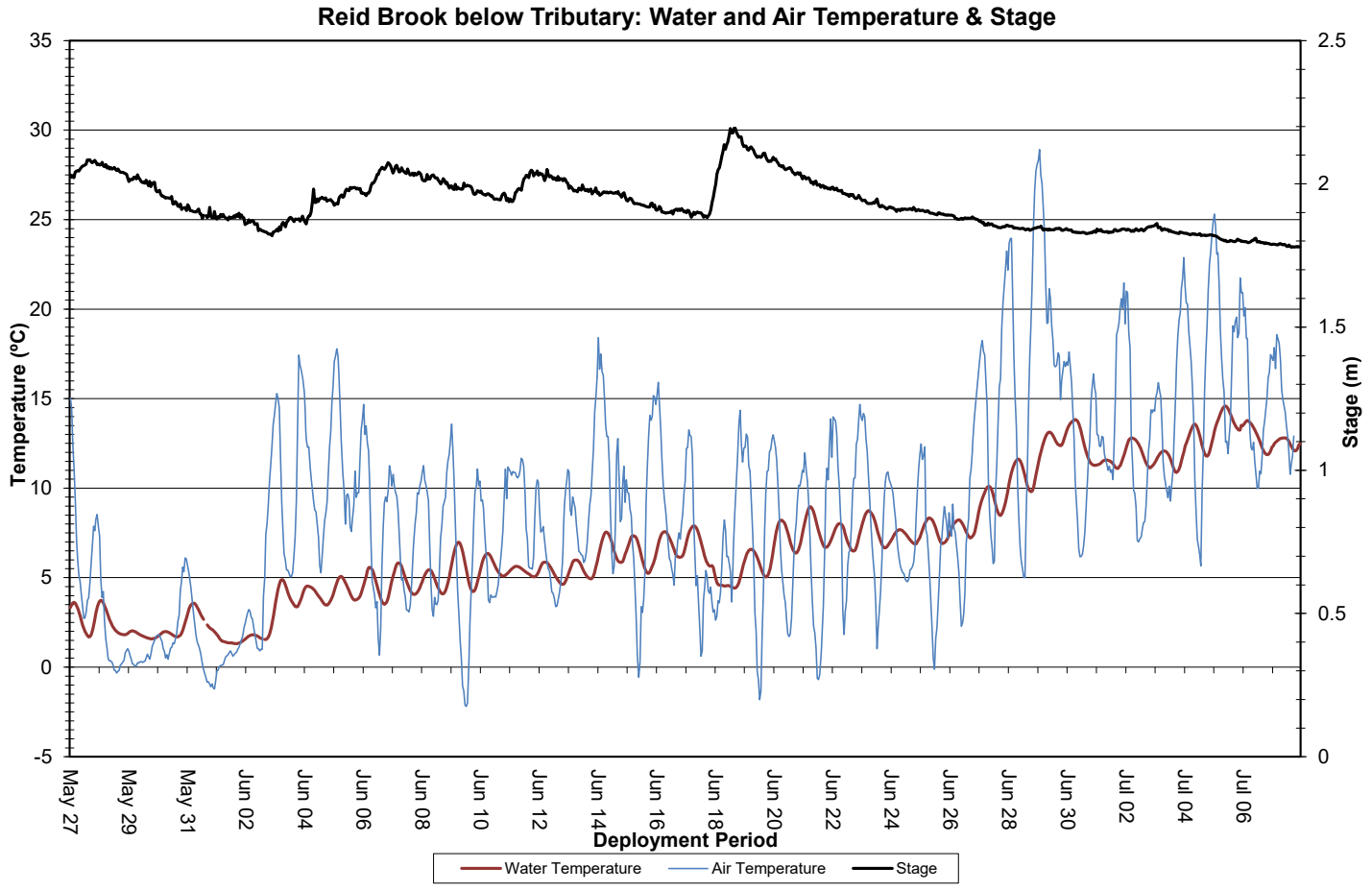

Figure 14: Water and Air Temperature & Stage at Reid Brook below Tributary

pH

Over the deployment period, pH ranged from 5.95 pH units to 6.57 pH units, with a median value of 6.13 (Figure 15).

pH remained below the CCME's Guidelines for the Protection of Aquatic Life for the majority of the deployment period.

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

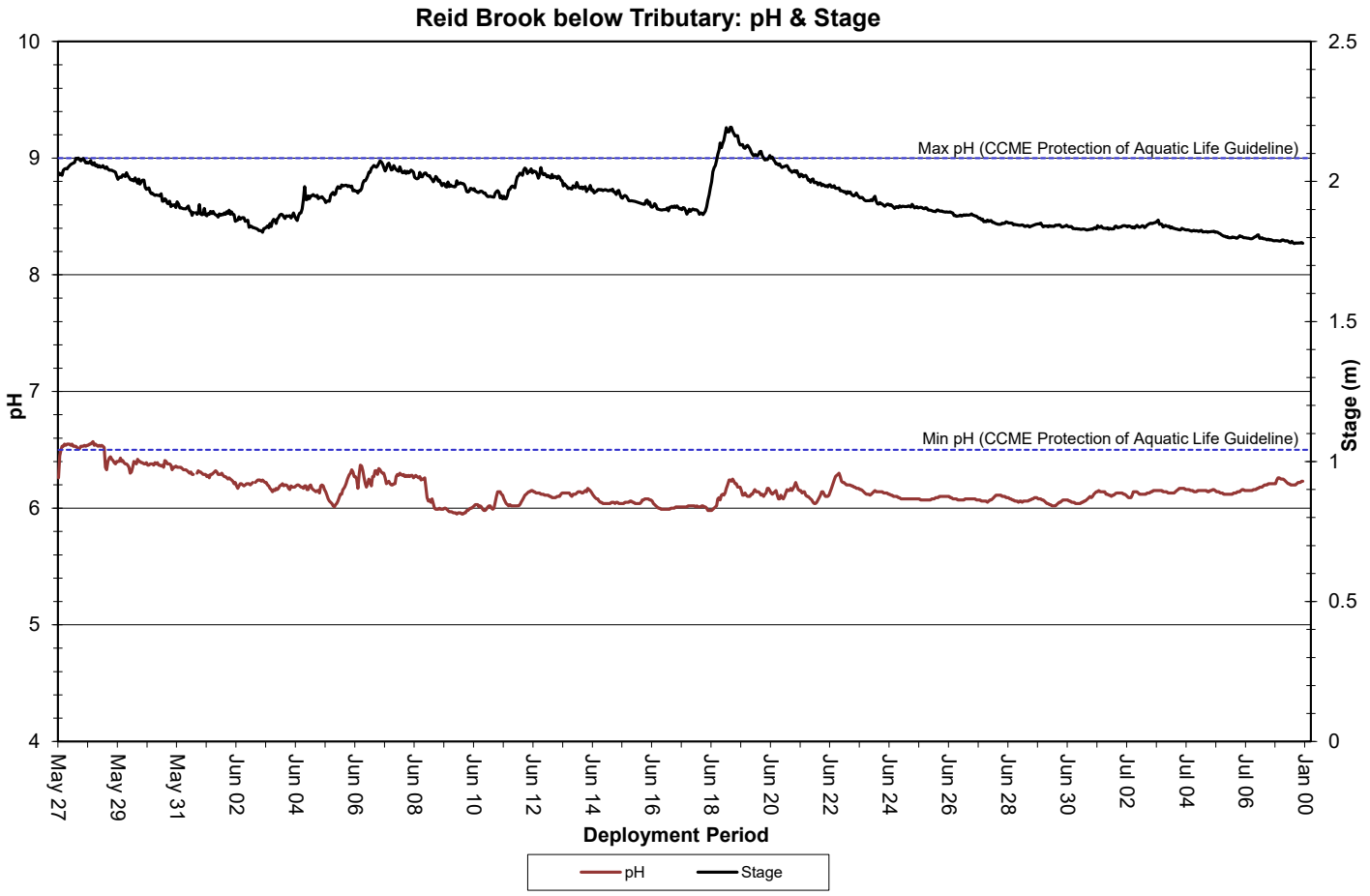

Figure 15: pH & Stage at Reid Brook below Tributary

Specific Conductivity

Over the deployment period, specific conductivity ranged from 10.25µS/cm to 44.73µS/cm, with a median value of 22.15µS/cm (Figure 16).

Specific conductivity was variable and showed an increasing trend over the course of the deployment period. Specific conductivity and stage generally exhibit an inverse relationship: as one parameter increases, the other decreases. This relationship is somewhat evident in the graph below (Figure 16).

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

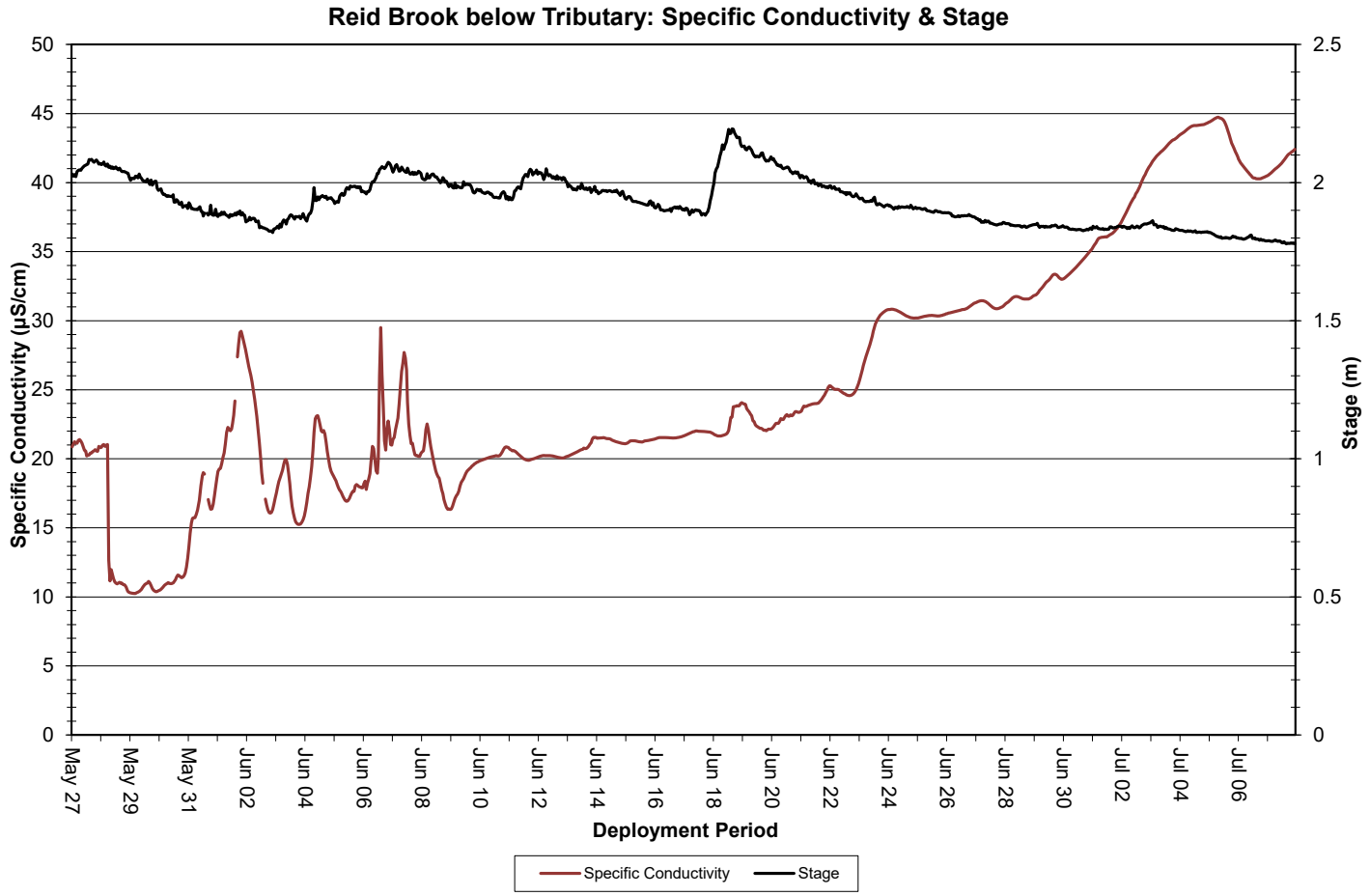

Figure 16: Specific Conductivity & Stage at Reid Brook below Tributary

Dissolved Oxygen

Over the deployment period, dissolved oxygen concentration ranged from 0.01mg/L to 13.78mg/L, with a median value of 0.09mg/L. The saturation of dissolved oxygen ranged from 0% saturation to 99.6% saturation, with a median value of 0.8% (Figure 17).

Dissolved oxygen concentrations dropped to zero on several occasions. This can indicate either a broken sensor or the instrument and sensor are buried. Upon removal, the instrument was found to be completely buried in sand, thus the zero values are inaccurate. Before burial, the majority of values were above the CCME's Guideline for the Protection of Early Life Stages.

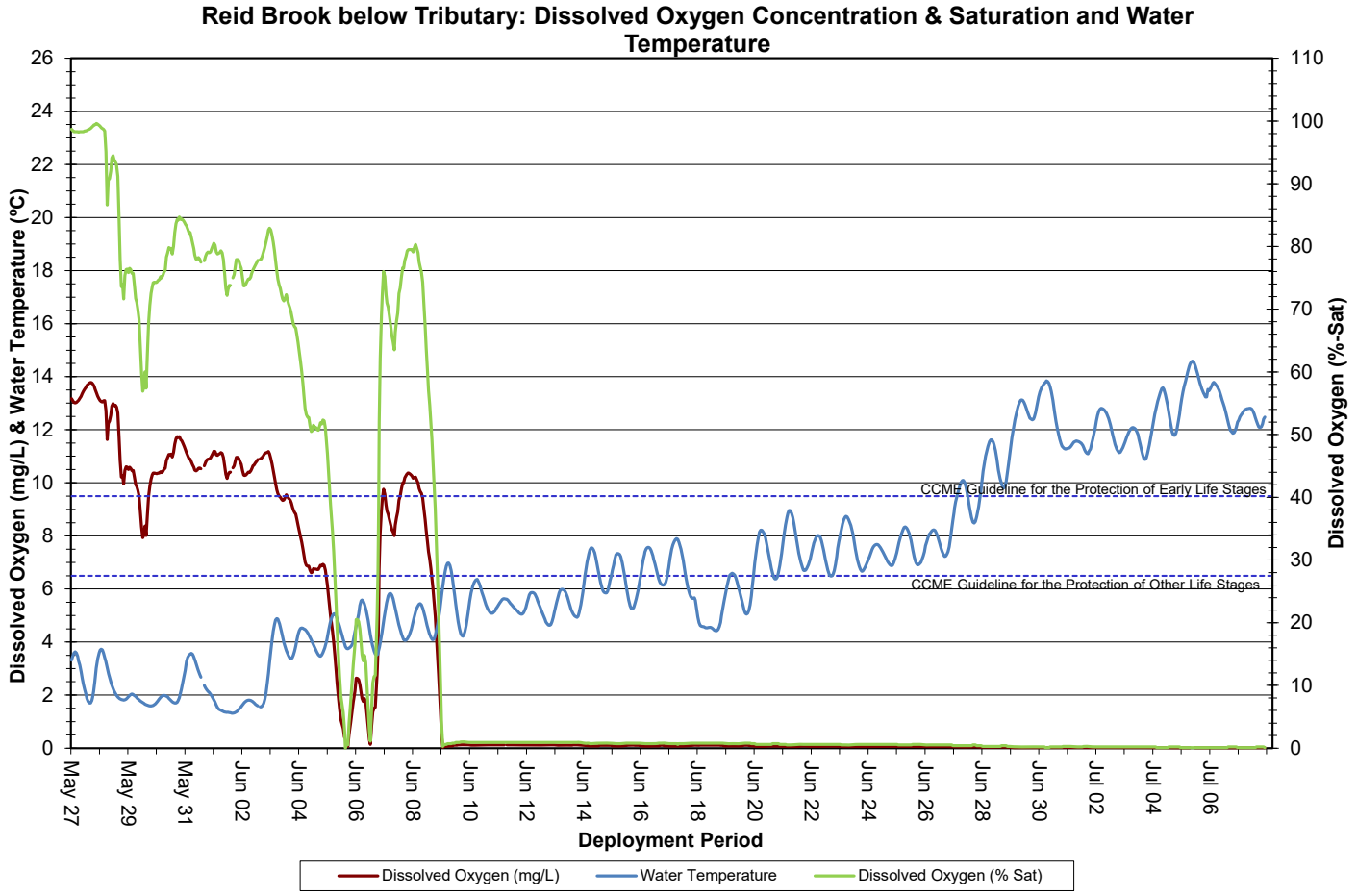

Figure 17: Dissolved Oxygen & Water Temperature at Reid Brook below Tributary

Turbidity

Over the deployment period, turbidity ranged from 3.3NTU to 372.1NTU, with a median value of 254.1NTU (Figure 18). It is evident from the values and Figure 18 that the turbidity sensor was likely buried in sand very quickly after deployment as values climbed quickly and remained elevated. The instrument was found to be completely buried upon removal for maintenance.

Precipitation data was obtained from the Voisey's Bay Weather Station.

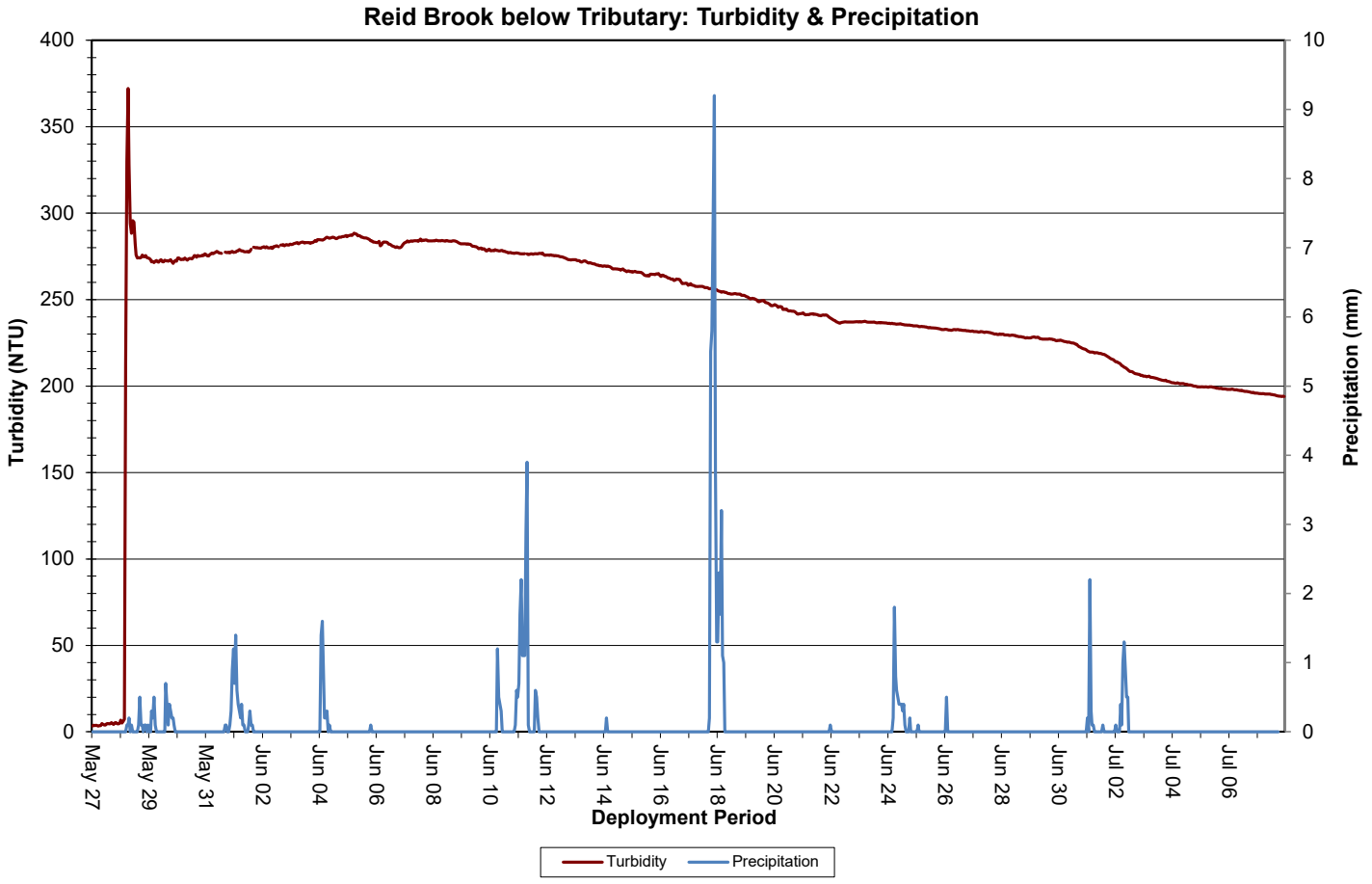

Figure 18: Turbidity & Precipitation at Reid Brook below Tributary

Stage and Flow

Over the deployment period, stage values ranged from 1.778m to 2.194m, with a median value of 1.924m. Stream flow values ranged from 10.58m^3/s to 35.32m^3/s, with a median value of 17.550m^3/s. Precipitation data was obtained from the Voisey's Bay Weather Station (Figure 19).

Stage and flow were variable, but generally stable, across the deployment period. Increases in both stage and flow were attributable to observed rainfall events (Figure 19).

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

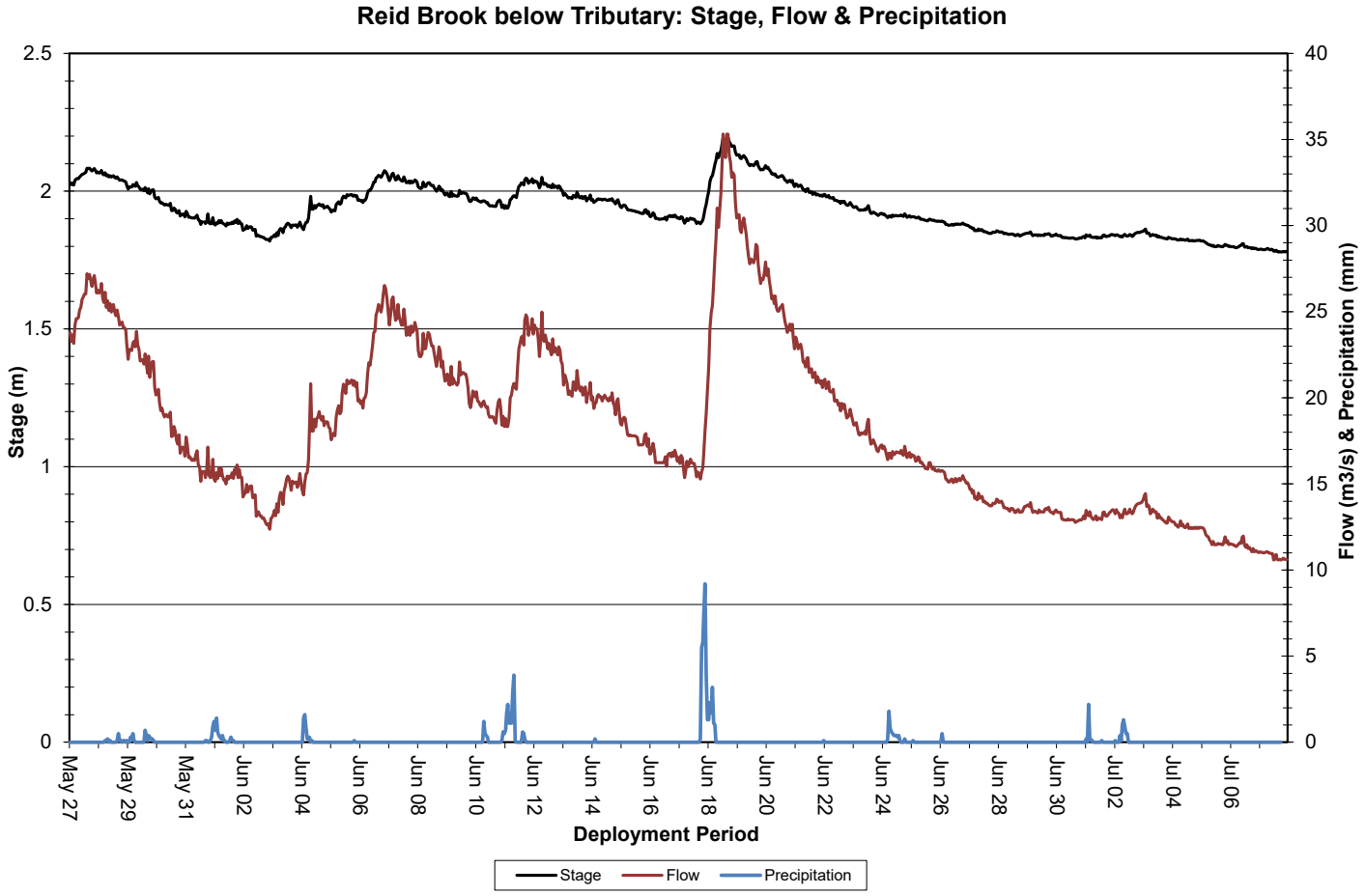

Figure 19: Stage, Flow & Precipitation at Reid Brook below Tributary

Tributary to Reid Brook

Water Temperature

Over the deployment period, water temperature ranged from 1.06°C to 15.98°C, with a median value of 7.22°C (Figure 20). Streams and brooks are sensitive to changes in the ambient air temperature, thus water temperature will fluctuate considerably depending on the weather and the time of day. Air temperature fluctuates to a greater extent compared to water temperature. Air temperature data was obtained from the Voisey's Bay Weather Station.

Water temperature data displays a natural diurnal pattern. Water temperatures were variable but generally increasing over the course of deployment and correlated closely with ambient air temperatures.

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

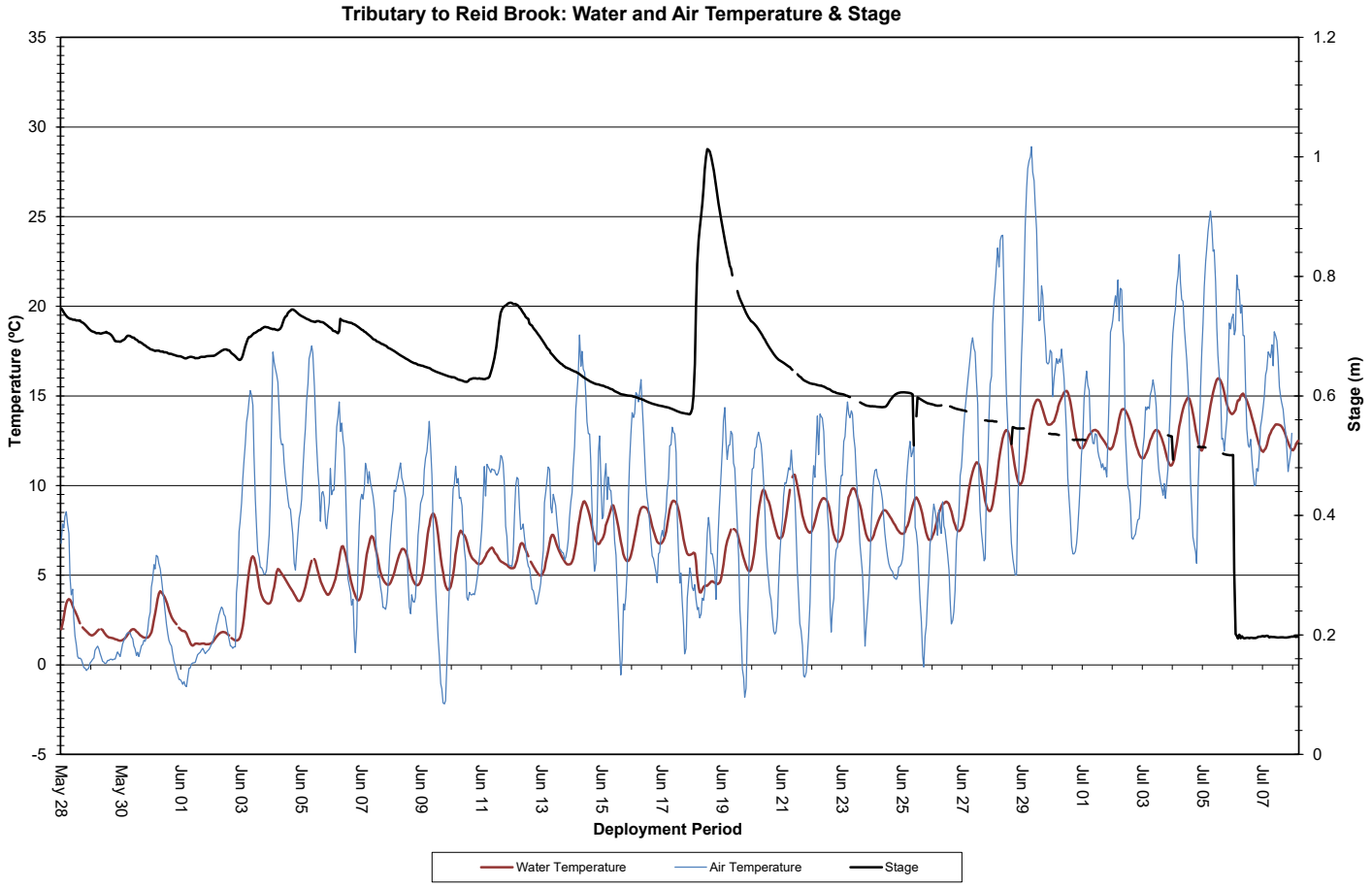

Figure 20: Water and Air Temperature & Stage at Tributary to Reid Brook

pH

Over the deployment period, pH ranged from 5.85 pH units to 6.86 pH units, with a median value of 6.48 (Figure 21).

pH values were within the CCME's Guidelines for the Protection of Aquatic Life for the majority of the second half of deployment but below for the first portion. pH was influenced greatly this deployment by stage increases, dropping as stage rose before slowly rebounding to background levels.

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

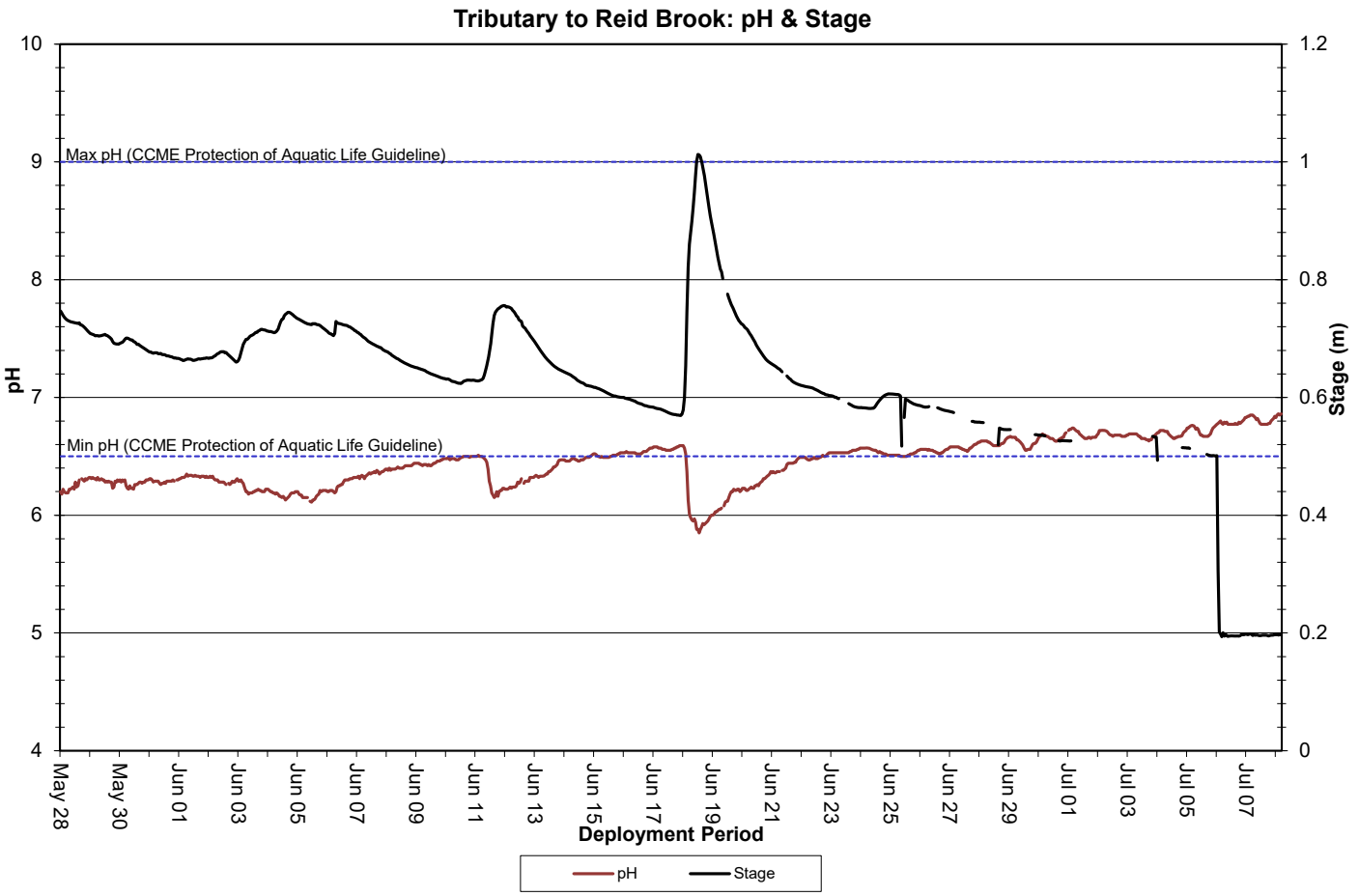

Figure 21: pH & Stage at Tributary to Reid Brook

Specific Conductivity

Over the deployment period, specific conductivity ranged from 21.3µS/cm to 39.5µS/cm, with a median value of 30.2µS/cm (Figure 22).

Specific conductivity and stage generally exhibit an inverse relationship: as one parameter increases, the other decreases. This relationship is clearly evident in the graph below. Overall, conductivity was increasing throughout the deployment, corresponding to decreasing stage levels.

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

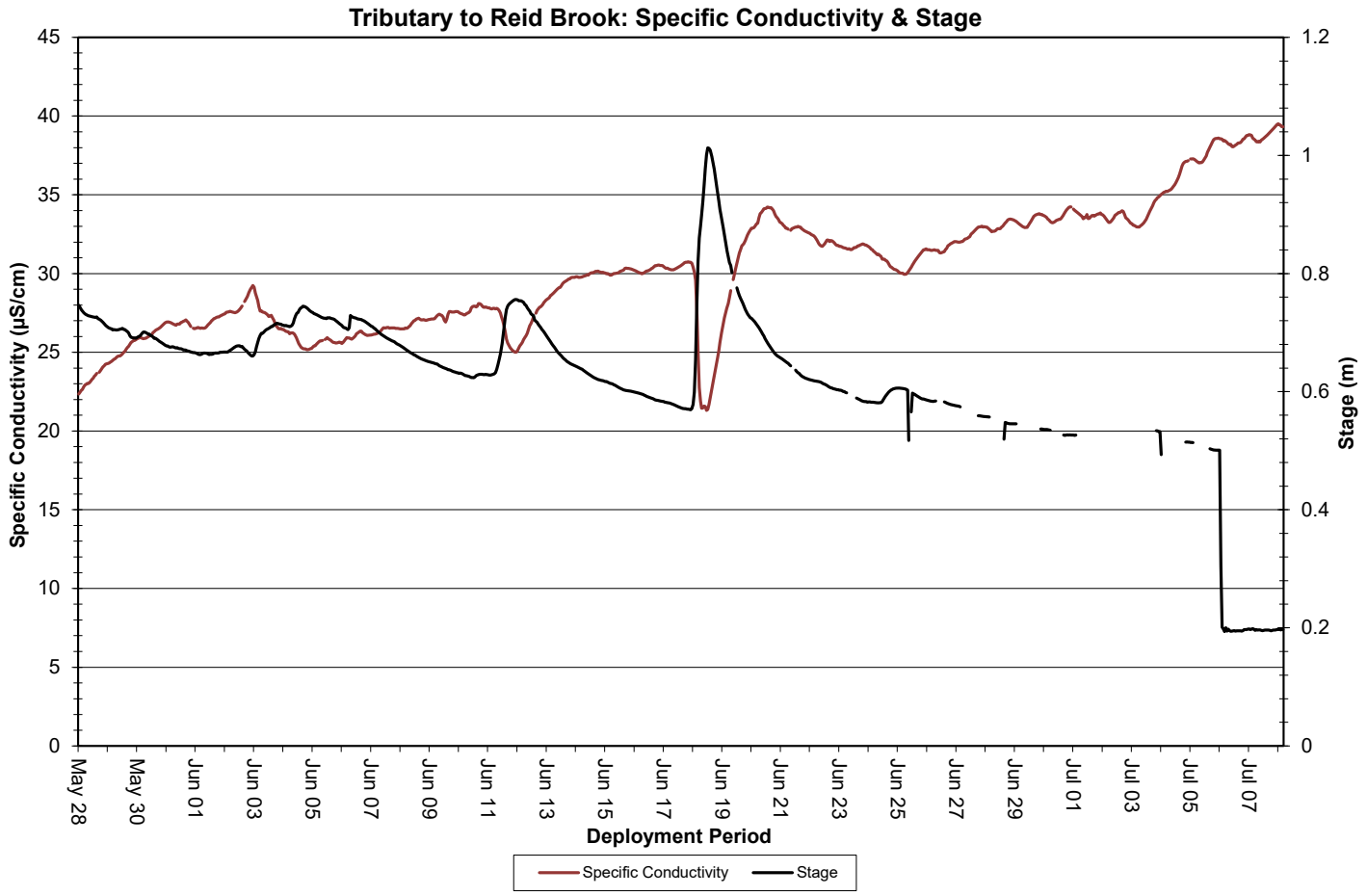

Figure 22: Specific Conductivity & Stage at Tributary to Reid Brook

Dissolved Oxygen

Over the deployment period, dissolved oxygen concentration ranged from 9.78mg/L to 13.93mg/L, with a median value of 12.06mg/L. The saturation of dissolved oxygen ranged from 96.5% saturation to 102.5% saturation, with a median value of 99.7% (Figure 23).

Dissolved oxygen levels remained above the CCME's Guidelines for the Protection of early and other life stages throughout the deployment period as water temperatures remained cool.

Dissolved oxygen concentration displays a diurnal pattern. During nightfall, dissolved oxygen levels are higher as cooler temperatures allow for more DO to be stored in the water column. During the day, dissolved oxygen levels are lower. This is a result of warmer water temperatures and photosynthesis by aquatic plants, which decrease dissolved oxygen levels in the water column.

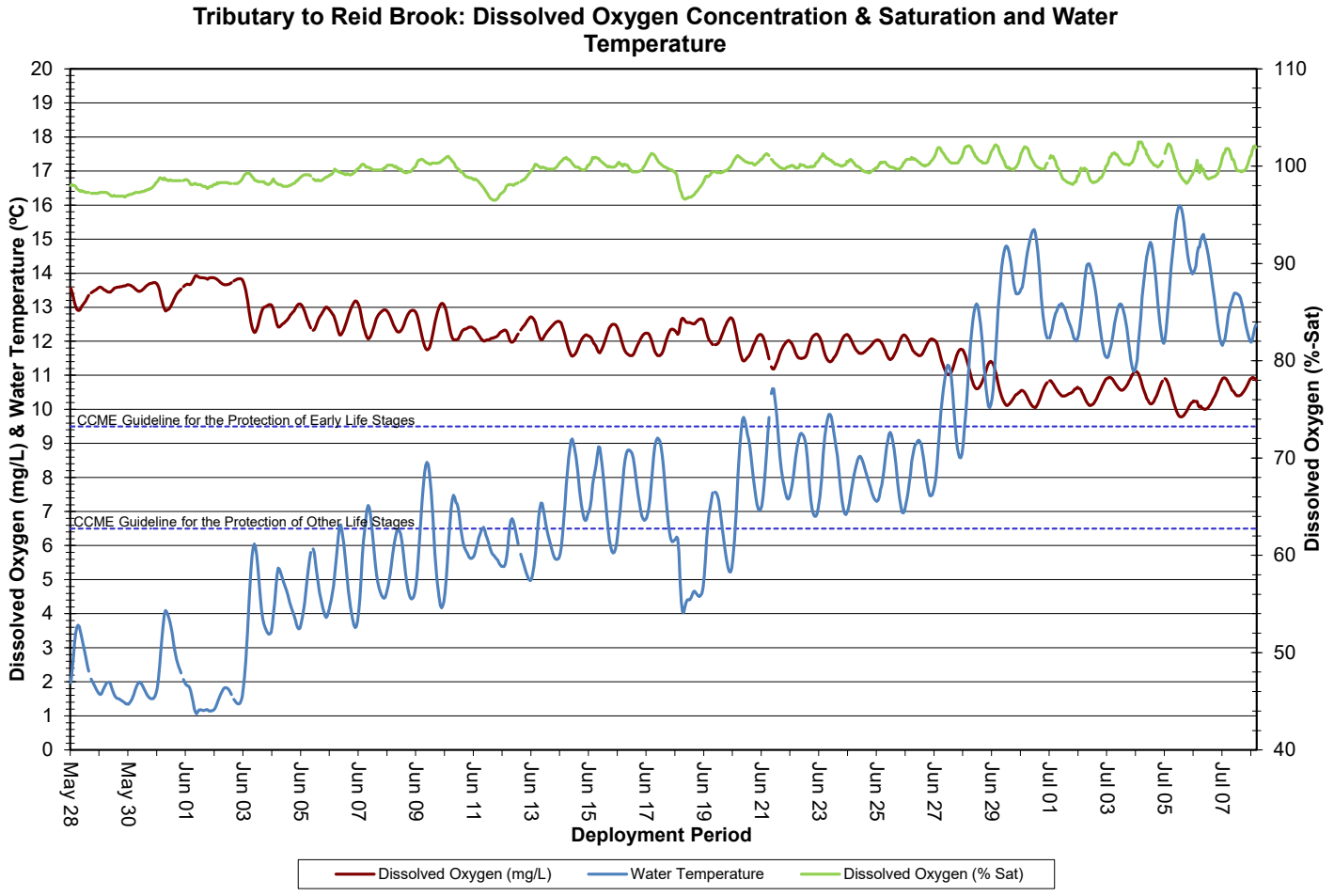

Figure 23: Dissolved Oxygen & Water Temperature at Tributary to Reid Brook

Turbidity

Over the deployment period, turbidity ranged from 0.6NTU to 24.3NTU, with a median value of 1.0NTU (Figure 24). A median value of 1.0NTU indicates that there was a very low level of background turbidity at this station.

This site is particularly prone to variable turbidity as it has a sandy-clay bottom that is easily disturbed by precipitation events. Turbidity events correlated closely with observed rainfall events, and turbidity returned to baseline levels following each temporary increase (Figure 24). Precipitation data was obtained from the Voisey's Bay Weather Station.

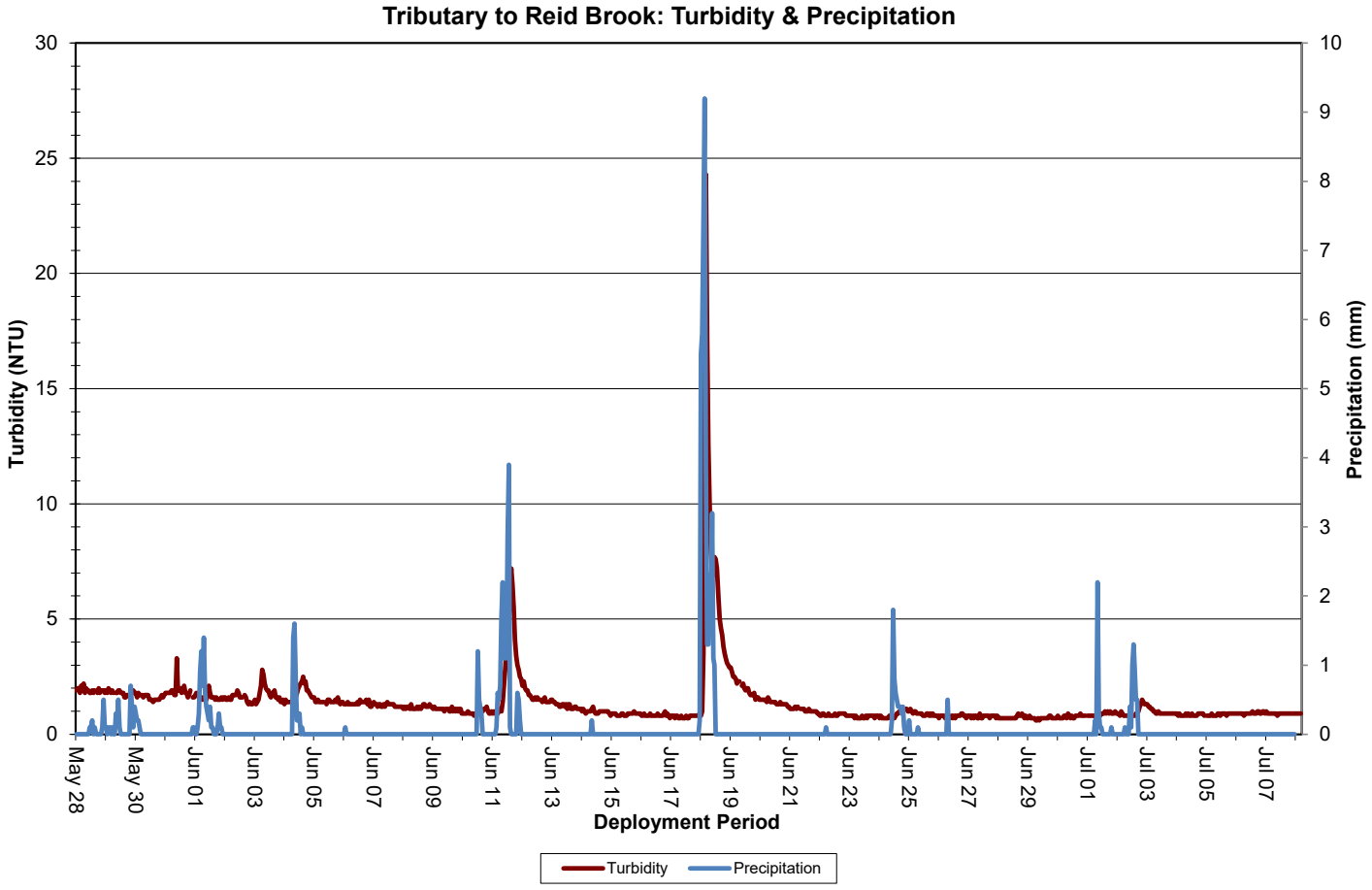

Figure 24: Turbidity & Precipitation at Tributary to Reid Brook

Stage and Flow

Over the deployment period, stage values ranged from 0.194m to 1.013m, with a median value of 0.654m. Stream flow values ranged from 0.151m^3/s to 4.055m^3/s, with a median value of 0.606m^3/s. Precipitation data was obtained from the Voisey's Bay Weather Station (Figure 25).

Stage and flow were variable across the deployment period. Increases in both stage and flow were generally attributable to observed rainfall events (Figure 25).

Please note the stage and flow data used below is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request to WSC.

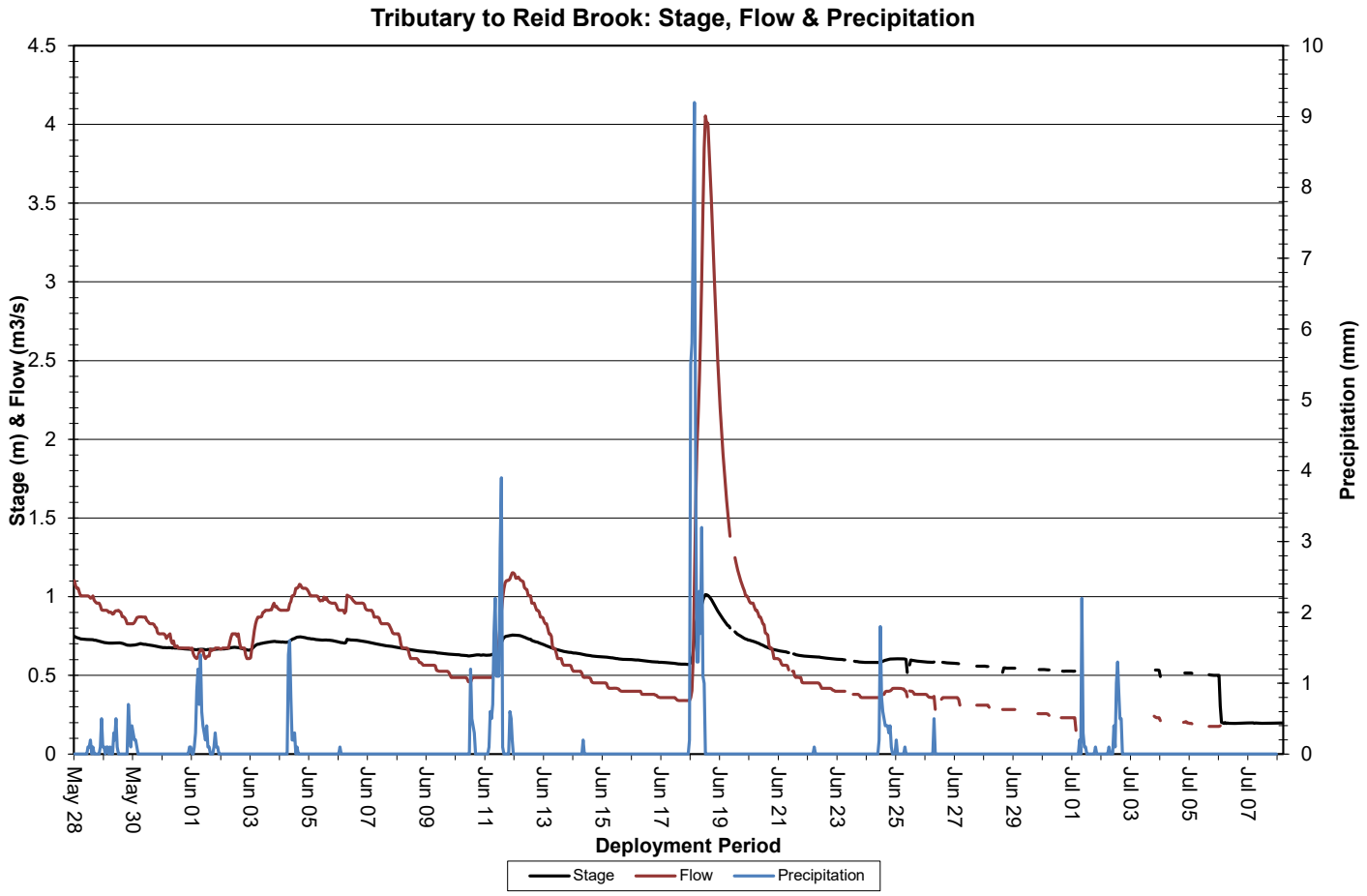

Figure 25: Stage, Flow & Precipitation at Tributary to Reid Brook

Conclusions

Water temperatures across all stations ranged from a minimum of 1.06°C at Tributary to Reid Brook to a maximum of 20.52°C at Camp Pond Brook below Camp Pond. Overall, water temperature was increasing across the network. Stations at Camp Pond Brook, Tributary to Reid Brook, and Reid Brook below Tributary are more sensitive to changes in ambient air temperatures as these sites are brooks with continuously moving water. In contrast, Reid Brook at Outlet of Reid Pond is a large pond with a high surface area and deeper, slower-moving water.

pH values across all stations ranged from a minimum of 5.85pH units at Tributary to Reid Brook to 7.01pH units at Reid Brook at Outlet of Reid Pond. pH values were relatively consistent across the deployment period with some fluctuations related to stage increases.

Specific conductivity across all stations ranged from a minimum of 10.25µS/cm at Reid Brook below Tributary to a maximum of 52.7µS/cm at Camp Pond Brook below Camp Pond. Conductivity values at Reid Brook at Outlet of Reid Pond were the generally the lowest across the network. Camp Pond Brook below Camp Pond had the highest median value at 36.7µS/cm.

Dissolved oxygen levels across all stations ranged from a minimum of 0.01mg/L at Reid Brook below Tributary due to being buried in sand, to a maximum of 13.9mg/L at Tributary to Reid Brook. Dissolved oxygen is generally decreasing at this time of year and varies diurnally as water temperature is greatly affected by ambient air temperature. Dissolved oxygen levels remained above the CCME's Guideline for the Protection of Other Life Stages at all stations for the duration of deployment except when buried to sand at Reid Brook below Tributary. Instances where dissolved oxygen concentrations fell below the CCME's Guideline for the Protection of Early Life Stages correlated closely with warmer water temperatures.

Turbidity levels across all stations ranged from a minimum of 0.6 NTU at Tributary to Reid Brook to a maximum of 372.1 NTU at Reid Brook below Tributary when buried in sand. Turbidity levels showed natural increases and decreases generally corresponding to precipitation events at all stations.

Overall, the changes in water quality parameters over the course of this deployment can be explained by natural events. Camp Pond Brook below Camp Pond does have the potential for anthropogenic influences as the site is the closest to the inhabited area. It is important to note that during a change (a decrease or increase) in water quality, change only occurs for a short period of time and then water quality parameters return to baseline. However, as in the case of Reid Brook below Tributary, instruments can get buried in sediment and provide inaccurate data.

References

Canadian Council of Ministers of the Environment. (2014) "Canadian water quality guidelines for the protection of aquatic life" Canadian Council of Ministers of the Environment. Retrieved from: http://www.ccme.ca/en/resources/canadian_environmental_quality_guidelines/index.html

Canadian Council of Ministers of the Environment. (2014) "Water Quality Guidelines for the Protection of Aquatic Life" Canadian Council of Ministers of the Environment. Retrieved from: http://st-ts.ccme.ca/en/index.html?chems=162&chapters=1

OTT Hydromet (2017) "Hydrolab" Retrieved from: http://www.ott.com/en-us/products/water-quality-2/hydrolab-ds5x-multiparameter-data-sonde-855/

Mike Sader (2017) "Turbidity Measurement: A Simple, Effective Indicator of Water Quality Change". OTT Hydromet. Retrieved from http://www.ott.com/en-us/products/download/turbidity-white-paper/

Swanson, H.A., and Baldwin, H.L., (1965) "A Primer on Water Quality" U.S. Geological Survey. Retrieved from: http://ga.water.usgs.gov/edu/characteristics.html

APPENDIX A: Comparison Graphs

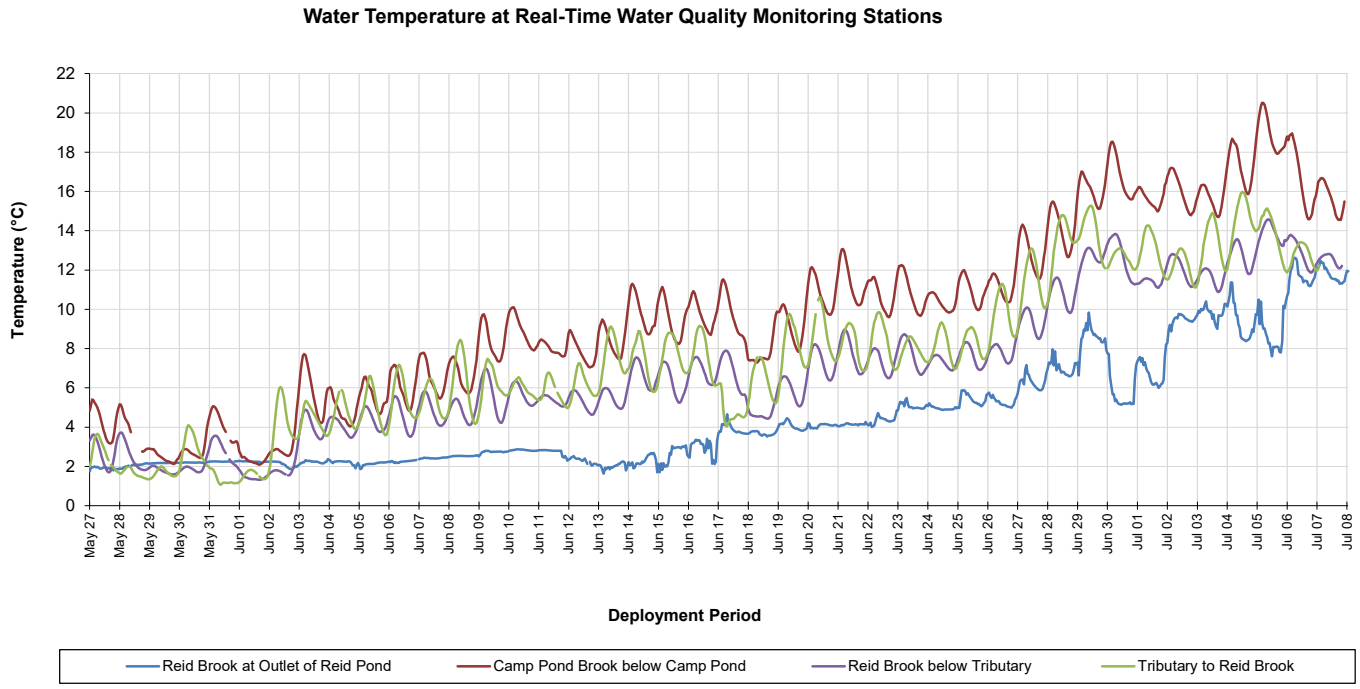

Figure A1: Comparison of Water Temperature (^{0}C) between all Real-Time Stations in Voisey's Bay.

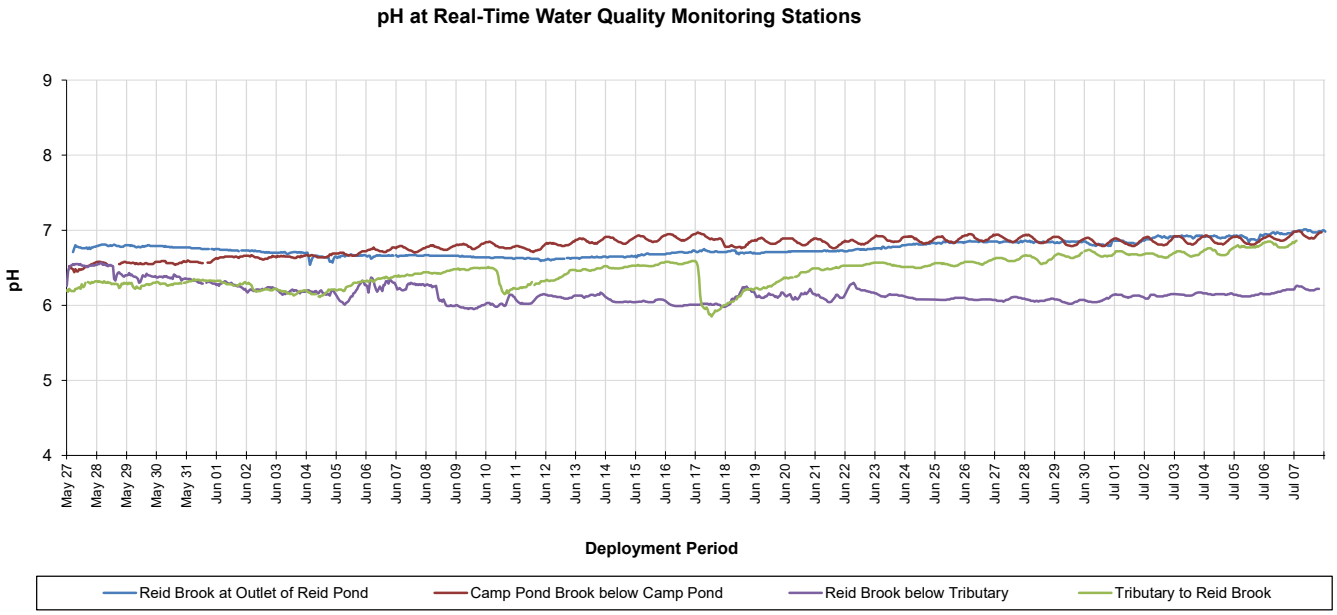

Figure A2: Comparison of pH between all Real-Time Stations in Voisey's Bay.

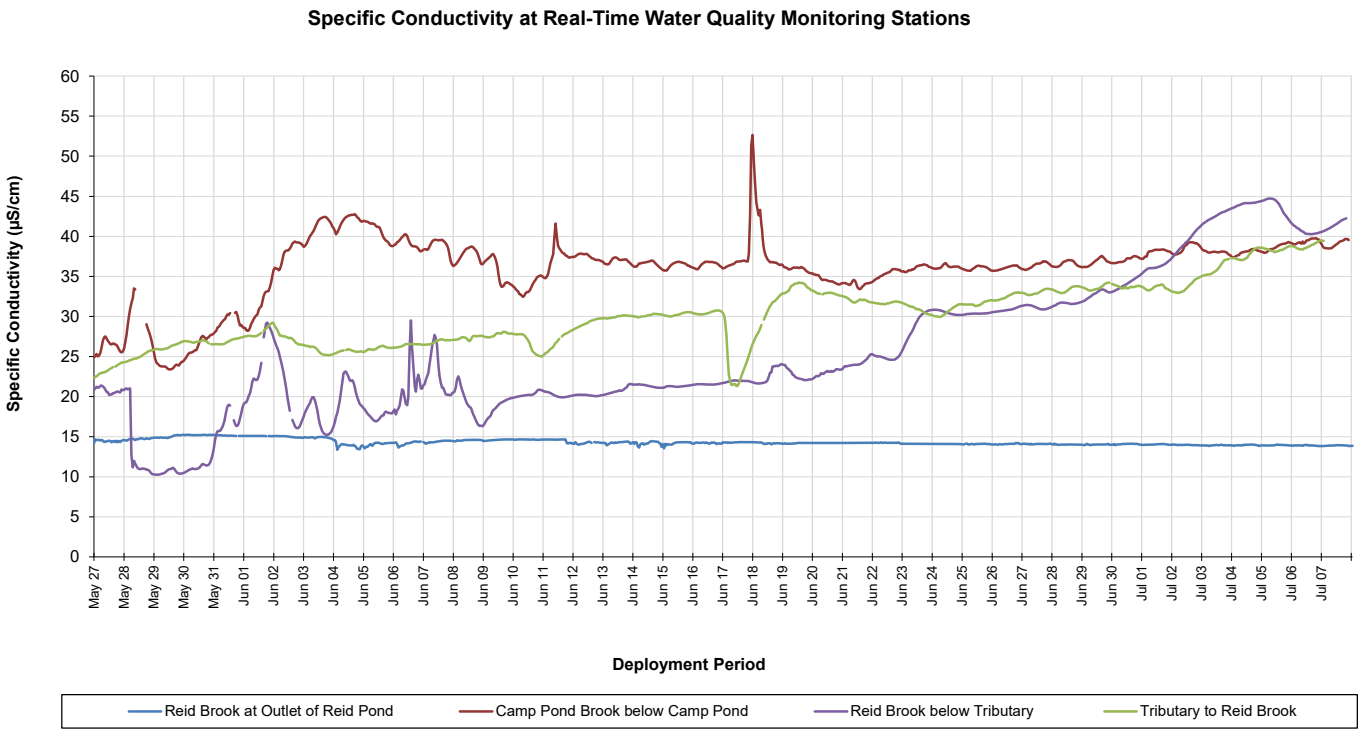

Figure A3: Comparison of Specific Conductivity (µS/cm) between all Real-Time Stations in Voisey's Bay.

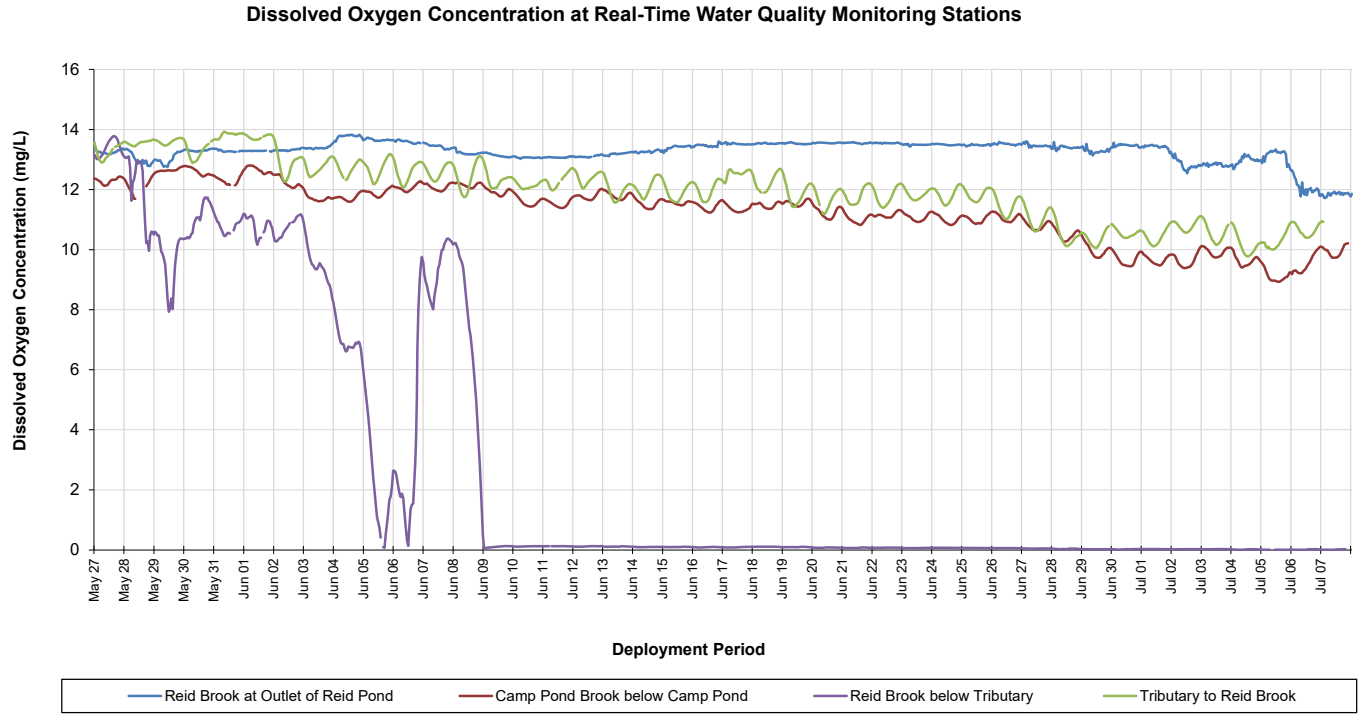

Figure A4: Comparison of Dissolved Oxygen (mg/L) between all Real-Time Stations in Voisey's Bay.

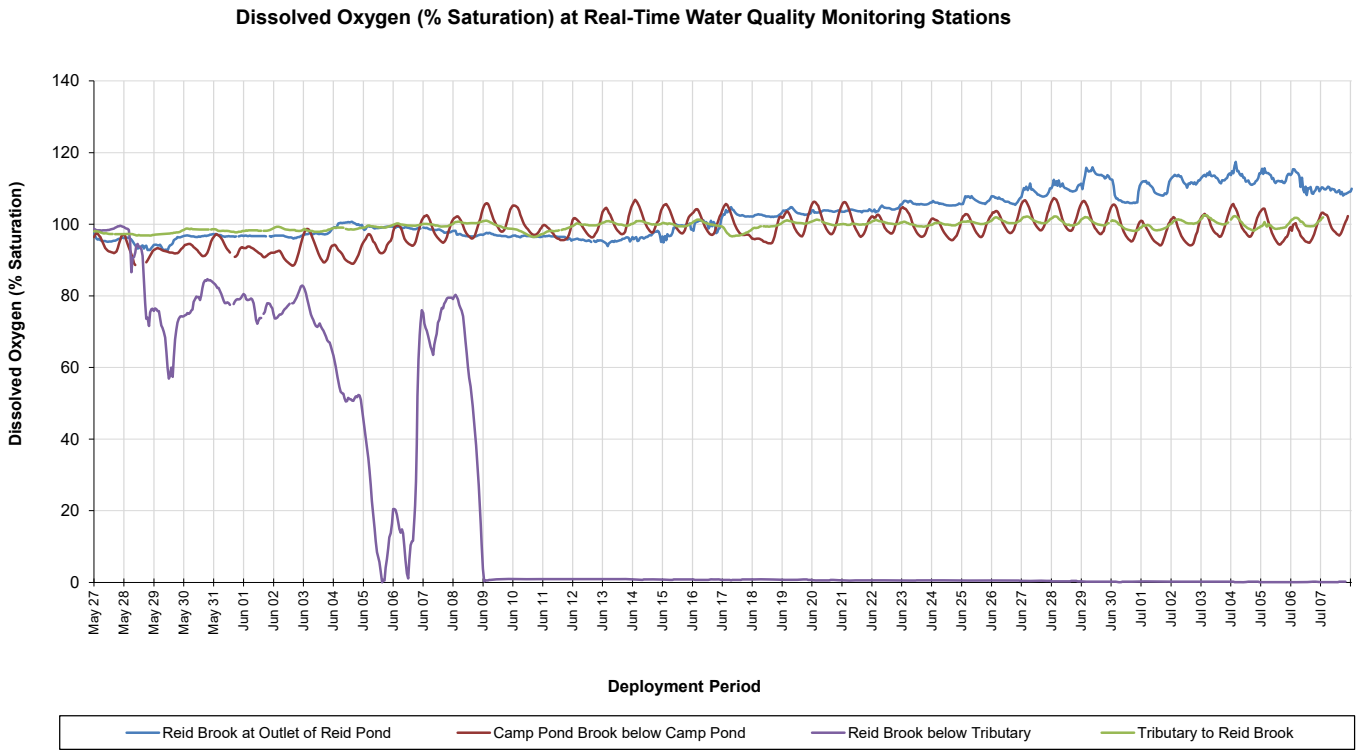

Figure A5: Comparison of Dissolved Oxygen (% Sat) between all Real-Time Stations in Voisey's Bay.

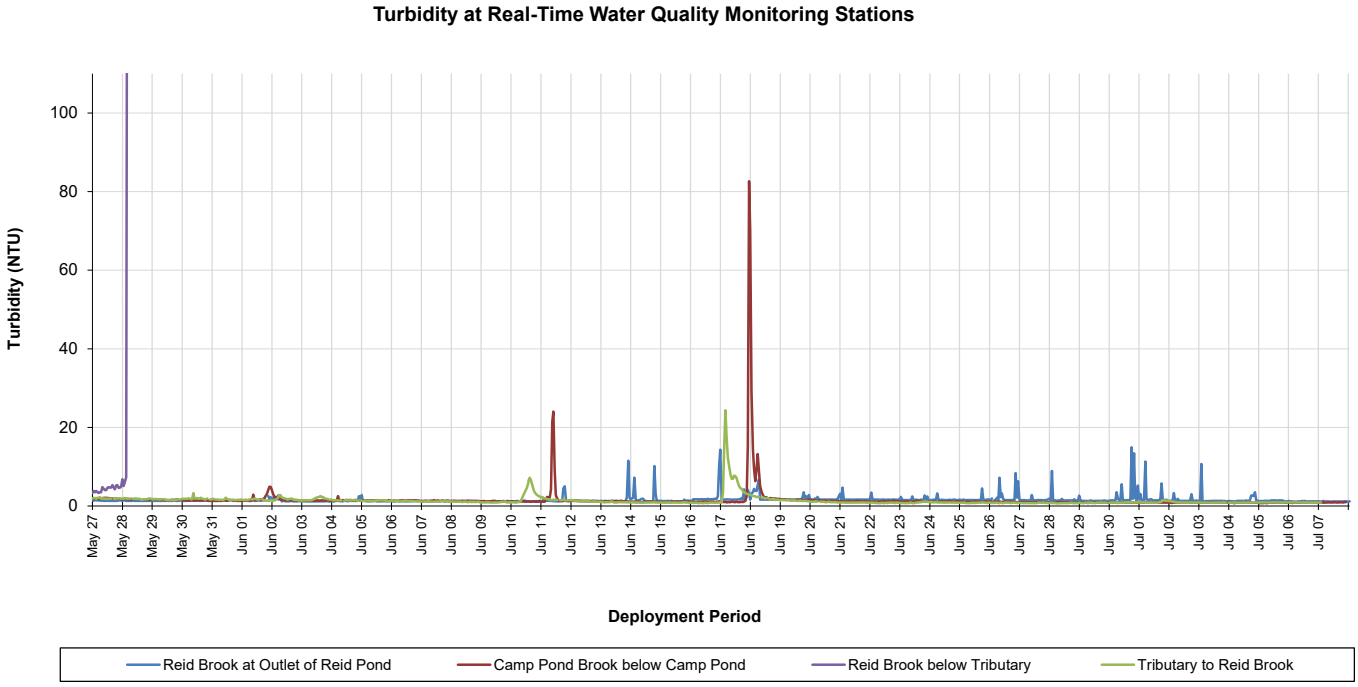

Figure A6: Comparison of Turbidity (NTU) between all Real-Time Stations in Voisey's Bay.

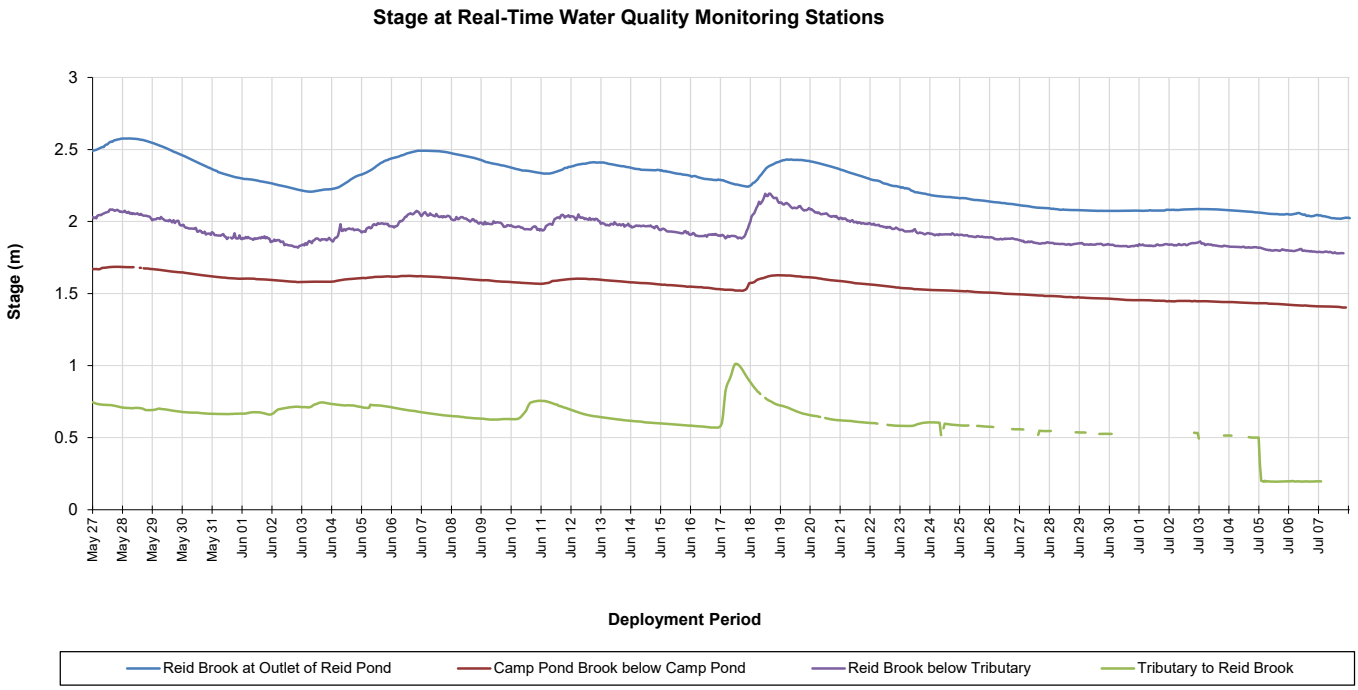

Figure A7: Comparison of Stage (m) between all Real-Time Stations in Voisey's Bay. Please note that stage data is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data.

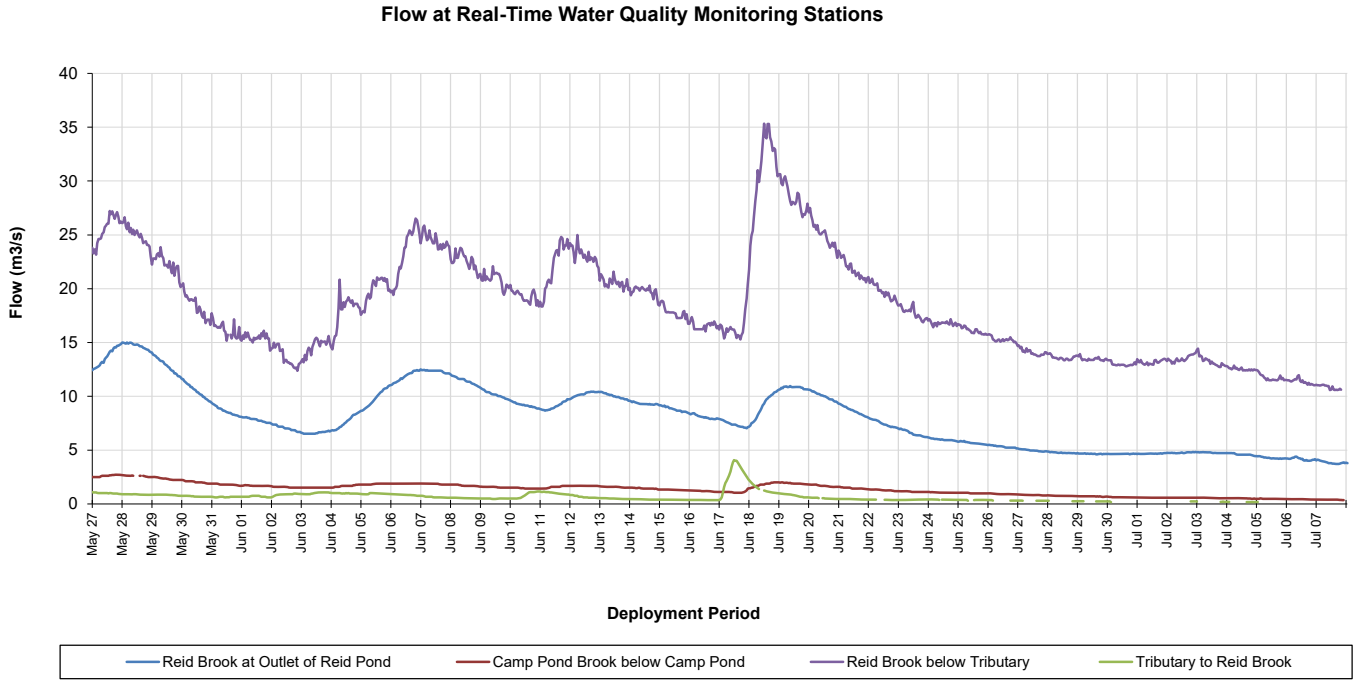

Figure A8: Comparison of Flow (m^3/s) between all Real-Time Stations in Voisey's Bay. Please note that flow data is raw data. It has not been corrected for backwater effect. WSC is responsible for QA/QC of water quantity data.

APPENDIX B: Water Parameter Description

Dissolved Oxygen: The amount of Dissolved Oxygen (DO) (mg/L or % saturation) in the water is vital to the survival of aquatic organisms. The concentration of DO is affected by such things as water temperature, water depth and flow (e.g., aeration by rapids, riffles etc.), consumption by aerobic organisms, consumption by inorganic chemical reactions, consumption by plants during darkness, and production by plants during the daylight (CCME 2014).

Flow: Flow (m3/s) is a measure of how quickly a volume of water is displaced in streams, rivers, and other channels.

pH: pH is the measure of hydrogen ion activity and affects: (i) the availability of nutrients to aquatic life; (ii) the concentration of biochemical substances dissolved in water; (iii) the efficiency of hemoglobin in the blood of vertebrates; and (iv) the toxicity of pollutants. Changes in pH can be attributed to industrial effluence, saline inflows or aquatic organisms involved in the photosynthetic cycling of CO_2 (CCME 2014).

Specific conductivity: Specific conductivity (µS/cm) is a measure of water's ability to conduct electricity, with values normalized to a water temperature of 25°C. Specific conductance indicates the concentration of dissolved solids (such as salts) in the water, which can affect the growth and reproduction of aquatic life. Specific conductivity is affected by rainfall events, the composition of inflowing tributaries and their associated geology, saline inflow (e.g., road salt), agricultural run-off and industrial inputs (Swanson and Baldwin 1965).

Stage: Stage (m) is the elevation of the water surface and is often used as a surrogate for the more difficult to measure flow.

Temperature: Essential to the measurement of most water quality parameters, temperature (°C) controls most processes and dynamics of limnology. Water temperature is influenced by such things as ambient air temperature, solar radiation, meteorological events, industrial effluence, wastewater, inflowing tributaries, as well as water body size and depth (OTT Hydromet 2017).

Total Dissolved Solids: Total Dissolved Solids (TDS) (g/l) is a measure of alkaline salts dissolved in water or in fine suspension and can affect the growth and reproduction of aquatic life. It is affected by rainfall events, the composition of inflowing tributaries and their associated geology, saline inflow (e.g., road salt), agricultural run-off and industrial inputs (CCME 2014; Swanson and Baldwin 1965).

Turbidity: Turbidity (NTU) is a measure of the translucence of water and indicates the amount of suspended material in the water. Turbidity is caused by any substance that makes water cloudy (e.g., soil erosion, micro-organisms, vegetation, chemicals, etc.) and can correspond to precipitation events, high stage, and floating debris near the sensor (Sadar, 2017).

APPENDIX C: Grab Sample Results

Bureau Veritas Job #: C582948
Report Date: 2025/07/25

NL Department of Environment, Climate Change and Municipalities
Site Location: LABRADOR
Your P.O. #: 224006869
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASVW49 REID BROOK AT OUTLET OF REID POND								
Sampling Date 2025/07/08 12:55								
Matrix W								
Sample # 2025-6509-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	4.8	1.0	mg/L	N/A	2025/07/16		9967651
Total Kjeldahl Nitrogen (TKN)	-	ND	0.10	mg/L	N/A	2025/07/24		9967776
Nitrate (N)	-	0.058	0.050	mg/L	N/A	2025/07/21		9967763
Total dissolved solids (calc., EC)	-	7.7	1.0	mg/L	N/A	2025/07/24		9967899
Inorganics								
Conductivity	-	14	1.0	uS/cm	N/A	2025/07/23	M2C	9975153
Chloride (Cl-)	-	ND	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Sulphate (SO4)	-	1.2	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Total Alkalinity (Total as CaCO3)	-	3.3	2.0	mg/L	N/A	2025/07/23	M2C	9975154
Colour	-	9.2	5.0	TCU	N/A	2025/07/18	ABU	9971273
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/23	M2C	9975156
Nitrate + Nitrite (N)	-	0.058	0.050	mg/L	N/A	2025/07/18	EMT	9971275
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/21	MCN	9971276
Nitrogen (Ammonia Nitrogen)	-	0.060	0.050	mg/L	N/A	2025/07/17	MCN	9971510
Total Nitrogen (N)	-	ND	0.10	mg/L	N/A	2025/07/16	S6S	9970031
Dissolved Organic Carbon (C)	-	2.0	0.50	mg/L	N/A	2025/07/24	S6S	9976015
Total Organic Carbon (C)	-	2.1	0.50	mg/L	N/A	2025/07/23	S6S	9975150
pH	-	6.78		pH	N/A	2025/07/23	M2C	9975151
Total Phosphorus	-	ND	0.004	mg/L	2025/07/15	2025/07/16	VKH	9969996
Total Suspended Solids	-	1.4	1.0	mg/L	2025/07/15	2025/07/16	RD4	9969506
Turbidity	-	0.28	0.10	NTU	N/A	2025/07/23	KMC	9974535
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/21	2025/07/22	JEP	9972317
Dup.Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/21	2025/07/22	JEP	9972317
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.050	0.0050	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Barium (Ba)	-	0.0024	0.0010	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Boron (B)	-	ND	0.050	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Calcium (Ca)	-	1.4	0.10	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Copper (Cu)	-	ND	0.00050	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Iron (Fe)	-	ND	0.050	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Magnesium (Mg)	-	0.30	0.10	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Manganese (Mn)	-	ND	0.0020	mg/L	2025/07/15	2025/07/15	MTZ	9969532

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

Bureau Veritas Job #: C582948
Report Date: 2025/07/25

NL Department of Environment, Climate Change and Municipalities
Site Location: LABRADOR
Your P.O. #: 224006869
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASVW49 REID BROOK AT OUTLET OF REID POND								
Sampling Date 2025/07/08 12:55								
Matrix W								
Sample # 2025-6509-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Potassium (K)	-	0.11	0.10	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Sodium (Na)	-	0.96	0.10	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Strontium (Sr)	-	0.0054	0.0020	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/15	2025/07/15	MTZ	9969532
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/15	2025/07/15	MTZ	9969532

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

Bureau Veritas Job #: C582948
Report Date: 2025/07/25

NL Department of Environment, Climate Change and Municipalities
Site Location: LABRADOR
Your P.O. #: 224006869
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASVW50 CAMP POND BROOK BELOW CAMP POND								
Sampling Date 2025/07/09 10:06								
Matrix W								
Sample # 2025-6510-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	13	1.0	mg/L	N/A	2025/07/15		9967895
Total Kjeldahl Nitrogen (TKN)	-	0.13	0.10	mg/L	N/A	2025/07/24		9967776
Nitrate (N)	-	ND	0.050	mg/L	N/A	2025/07/21		9967763
Total dissolved solids (calc., EC)	-	21	1.0	mg/L	N/A	2025/07/23		9967899
Inorganics								
Conductivity	-	38	1.0	uS/cm	N/A	2025/07/22	M2C	9974317
Chloride (Cl-)	-	3.4	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Dup.Chloride (Cl-)	-	3.4	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Dup.Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Sulphate (SO4)	-	5.1	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Dup.Sulphate (SO4)	-	4.6	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Total Alkalinity (Total as CaCO3)	-	7.8	2.0	mg/L	N/A	2025/07/22	M2C	9974318
Colour	-	27	5.0	TCU	N/A	2025/07/18	ABU	9971273
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/22	M2C	9974319
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/07/18	EMT	9971275
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/21	MCN	9971276
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/07/17	MCN	9971510
Total Nitrogen (N)	-	0.13	0.10	mg/L	N/A	2025/07/16	S6S	9970031
Dissolved Organic Carbon (C)	-	4.0	0.50	mg/L	N/A	2025/07/24	S6S	9976015
Total Organic Carbon (C)	-	4.3	0.50	mg/L	N/A	2025/07/23	S6S	9975150
pH	-	6.96		pH	N/A	2025/07/22	M2C	9974314
Total Phosphorus	-	0.005	0.004	mg/L	2025/07/15	2025/07/16	VKH	9969996
Total Suspended Solids	-	ND	1.0	mg/L	2025/07/16	2025/07/17	ISM	9970485
Turbidity	-	0.23	0.10	NTU	N/A	2025/07/23	KMC	9974535
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/21	2025/07/22	JEP	9972317
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.051	0.0050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Barium (Ba)	-	0.0062	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Boron (B)	-	ND	0.050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Calcium (Ca)	-	3.5	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Copper (Cu)	-	0.0029	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Iron (Fe)	-	0.21	0.050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

Bureau Veritas Job #: C582948
Report Date: 2025/07/25

NL Department of Environment, Climate Change and Municipalities
Site Location: LABRADOR
Your P.O. #: 224006869
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASVW50 CAMP POND BROOK BELOW CAMP POND								
Sampling Date 2025/07/09 10:06								
Matrix W								
Sample # 2025-6510-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Magnesium (Mg)	-	1.0	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Manganese (Mn)	-	0.013	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Nickel (Ni)	-	0.018	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Potassium (K)	-	0.54	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Sodium (Na)	-	2.1	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Strontium (Sr)	-	0.019	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/14	2025/07/14	MTZ	9968747

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

Bureau Veritas Job #: C582948
Report Date: 2025/07/25

NL Department of Environment, Climate Change and Municipalities
Site Location: LABRADOR
Your P.O. #: 224006869
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASVW51 REID BROOK BELOW TRIBUTARY								
Sampling Date 2025/07/09 11:17								
Matrix W								
Sample # 2025-6511-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	11	1.0	mg/L	N/A	2025/07/15		9967895
Total Kjeldahl Nitrogen (TKN)	-	ND	0.10	mg/L	N/A	2025/07/24		9967776
Nitrate (N)	-	0.051	0.050	mg/L	N/A	2025/07/21		9967763
Total dissolved solids (calc., EC)	-	19	1.0	mg/L	N/A	2025/07/23		9967899
Inorganics								
Conductivity	-	35	1.0	uS/cm	N/A	2025/07/22	M2C	9974317
Chloride (Cl-)	-	3.5	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Sulphate (SO4)	-	3.5	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Total Alkalinity (Total as CaCO3)	-	9.2	2.0	mg/L	N/A	2025/07/22	M2C	9974318
Colour	-	26	5.0	TCU	N/A	2025/07/18	ABU	9971273
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/22	M2C	9974319
Nitrate + Nitrite (N)	-	0.051	0.050	mg/L	N/A	2025/07/18	EMT	9971275
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/21	MCN	9971276
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/07/18	MCN	9971510
Total Nitrogen (N)	-	ND	0.10	mg/L	N/A	2025/07/16	S6S	9970031
Dissolved Organic Carbon (C)	-	3.4	0.50	mg/L	N/A	2025/07/24	S6S	9976015
Total Organic Carbon (C)	-	3.8	0.50	mg/L	N/A	2025/07/23	S6S	9975150
pH	-	7.04		pH	N/A	2025/07/22	M2C	9974314
Total Phosphorus	-	ND	0.004	mg/L	2025/07/15	2025/07/16	VKH	9969996
Total Suspended Solids	-	1.4	1.0	mg/L	2025/07/16	2025/07/17	ISM	9970485
Turbidity	-	0.26	0.10	NTU	N/A	2025/07/23	KMC	9974535
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/21	2025/07/22	JEP	9972317
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.063	0.0050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Barium (Ba)	-	0.0055	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Boron (B)	-	ND	0.050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Calcium (Ca)	-	2.9	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Copper (Cu)	-	0.00098	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Iron (Fe)	-	0.25	0.050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Magnesium (Mg)	-	0.86	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Manganese (Mn)	-	0.0060	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Nickel (Ni)	-	0.0089	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

Bureau Veritas Job #: C582948
Report Date: 2025/07/25

NL Department of Environment, Climate Change and Municipalities
Site Location: LABRADOR
Your P.O. #: 224006869
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASVW51 REID BROOK BELOW TRIBUTARY								
Sampling Date 2025/07/09 11:17								
Matrix W								
Sample # 2025-6511-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Potassium (K)	-	0.38	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Sodium (Na)	-	2.2	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Strontium (Sr)	-	0.019	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/14	2025/07/14	MTZ	9968747

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

Bureau Veritas Job #: C582948
Report Date: 2025/07/25

NL Department of Environment, Climate Change and Municipalities
Site Location: LABRADOR
Your P.O. #: 224006869
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASVW52 TRIBUTARY TO REID BROOK								
Sampling Date 2025/07/09 10:55								
Matrix W								
Sample # 2025-6512-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	12	1.0	mg/L	N/A	2025/07/15		9967895
Total Kjeldahl Nitrogen (TKN)	-	0.12	0.10	mg/L	N/A	2025/07/24		9967900
Nitrate (N)	-	ND	0.050	mg/L	N/A	2025/07/21		9967763
Total dissolved solids (calc., EC)	-	22	1.0	mg/L	N/A	2025/07/24		9967899
Inorganics								
Conductivity	-	40	1.0	uS/cm	N/A	2025/07/23	M2C	9975153
Dup.Conductivity	-	40	1.0	uS/cm	N/A	2025/07/23	M2C	9975153
Chloride (Cl-)	-	4.0	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Sulphate (SO4)	-	3.9	1.0	mg/L	N/A	2025/07/15	RSU	9969246
Total Alkalinity (Total as CaCO3)	-	8.0	2.0	mg/L	N/A	2025/07/23	M2C	9975154
Dup.Total Alkalinity (Total as CaCO3)	-	8.2	2.0	mg/L	N/A	2025/07/23	M2C	9975154
Colour	-	29	5.0	TCU	N/A	2025/07/18	ABU	9971273
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/23	M2C	9975156
Dup.Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/23	M2C	9975156
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/07/18	EMT	9971275
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/21	MCN	9971276
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/07/17	MCN	9971510
Total Nitrogen (N)	-	0.12	0.10	mg/L	N/A	2025/07/16	S6S	9970031
Dissolved Organic Carbon (C)	-	3.9	0.50	mg/L	N/A	2025/07/24	S6S	9976015
Total Organic Carbon (C)	-	4.0	0.50	mg/L	N/A	2025/07/23	S6S	9975150
pH	-	6.98		pH	N/A	2025/07/23	M2C	9975151
Dup.pH	-	7.01		pH	N/A	2025/07/23	M2C	9975151
Total Phosphorus	-	0.005	0.004	mg/L	2025/07/15	2025/07/16	VKH	9969996
Total Suspended Solids	-	2.8	1.0	mg/L	2025/07/16	2025/07/17	ISM	9970485
Turbidity	-	0.21	0.10	NTU	N/A	2025/07/23	KMC	9974535
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/21	2025/07/22	JEP	9972324
Dup.Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/21	2025/07/22	JEP	9972324
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.069	0.0050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Barium (Ba)	-	0.0064	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Boron (B)	-	ND	0.050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Calcium (Ca)	-	3.3	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Copper (Cu)	-	0.0017	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Iron (Fe)	-	0.30	0.050	mg/L	2025/07/14	2025/07/14	MTZ	9968747

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

NL Department of Environment, Climate Change and Municipalities
Site Location: LABRADOR
Your P.O. #: 224006869
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASVW52 TRIBUTARY TO REID BROOK								
Sampling Date 2025/07/09 10:55								
Matrix W								
Sample # 2025-6512-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Magnesium (Mg)	-	0.97	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Manganese (Mn)	-	0.0064	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Nickel (Ni)	-	0.011	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Potassium (K)	-	0.39	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Sodium (Na)	-	2.4	0.10	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Strontium (Sr)	-	0.021	0.0020	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/14	2025/07/14	MTZ	9968747
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/14	2025/07/14	MTZ	9968747

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com