Real-Time Water Quality Deployment Report

Lower Churchill River Network

July 3/4 to
September 9/12, 2025

Newfoundland Labrador

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

Contents

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Department of Environment, Conservation and Climate Change
Water Resources Management Division

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Real Time Water Quality Monitoring

- Staff with the Department of Environment, Conservation and Climate Change monitor real-time water quality data on a regular basis.
- This deployment report discusses water quality related events occurring at four stations on the Lower Churchill River: Churchill River below Metchin River, Churchill River above Grizzle Rapids, Churchill River below Muskrat Falls and Churchill River at English Point.
- Real-time water quality monitoring instruments were deployed at Churchill River below Metchin River and above Grizzle Rapids on July 3rd. Instruments were deployed at Churchill River below Muskrat Falls and Churchill River at English Point on July 4th.
- The instruments at Churchill River below Metchin River, above Grizzle Rapids and below Muskrat Falls were all removed on September 9th for deployment periods of 66, 66 and 65 days, respectively. The instrument at English Point was removed on September 12th, for a deployment period of 68 days.

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 on the data quality (Table 1).

Table 1: Instrument Performance Ranking classifications for deployment and removal

	Rank				
Parameter	**Excellent**	**Good**	**Fair**	**Marginal**	**Poor**
Temperature (C)	<=+/-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 > 35µS/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 Lower Churchill River stations deployed from July 3/4 to September 9/12, 2025 are summarized in Table 2.

Table 2: Comparison rankings for Lower Churchill River stations July 3/4 to September 9/12, 2025

Churchill River Station	Date	Action	Comparison Ranking				
			Temperature	pH	Conductivity	Dissolved Oxygen	Turbidity
Below Metchin River	July 3, 2025	Deployment	Good	Good	Excellent	Excellent	Good
	September 9, 2025	Removal	Excellent	Marginal	Excellent	Excellent	Excellent
Above Grizzle Rapids	July 3, 2025	Deployment	Good	Fair	Excellent	Excellent	Excellent
	September 9, 2025	Removal	Excellent	Poor	Excellent	Excellent	Excellent
Below Muskrat Falls	July 4, 2025	Deployment	Good	Good	Excellent	Excellent	Good
	September 9, 2025	Removal	Good	Excellent	Excellent	Excellent	Poor
At English Point	July 4, 2025	Deployment	Excellent	Good	Excellent	Fair	Excellent
	September 12, 2025	Removal	Excellent	Good	Excellent	Fair	Excellent

- **Churchill River below Metchin River**
  - At deployment, all parameters ranked as either 'excellent' or 'good'.
  - At removal, all parameters ranked as 'excellent' except pH which was 'marginal'.
- **Churchill River above Grizzle Rapids**
  - At deployment, all parameters ranked as 'excellent' or 'good' except pH which was 'fair'.
  - At removal, all parameters ranked as 'excellent' except pH which was 'poor'. The pH rankings may indicate an issue with the pH sensor when it was deployed, impacting results throughout the deployment.
- **Churchill River below Muskrat Falls**
  - At deployment, all parameters ranked as either 'excellent' or 'good'.
  - At removal, all parameters ranked as either 'excellent' or 'good' except turbidity which was 'poor' due to sediment buildup.
- **Churchill River at English Point**
  - At deployment and removal, all parameters ranked as either 'excellent' or 'good' except dissolved oxygen which was 'fair' for both rankings. This indicates there may have been a calibration error on the field sonde.

Data Interpretation

- The following graphs and discussion illustrate water quality related events occurring from July 3/4 to September 9/12, 2025 on the Lower Churchill River Network.
- During deployment, the instrument below Metchin River was out of the water on several occasions based on the data. As this data is erroneous, it has been removed from the dataset. Upon removal on September 9, the instrument was again out of the water.
- During deployment, the instrument at 6.15kms below Muskrat Falls was also out of the water on several occasions based on the data and has been removed from the dataset. Upon removal September 12, the instrument was noted as being out of the water.
- Due to issues with the air temperature sensor at the Mud Lake Road MET station, Muskrat Falls MET weather station data was used for analysis at English Point.
- With the exception of water quantity data (stage & 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.

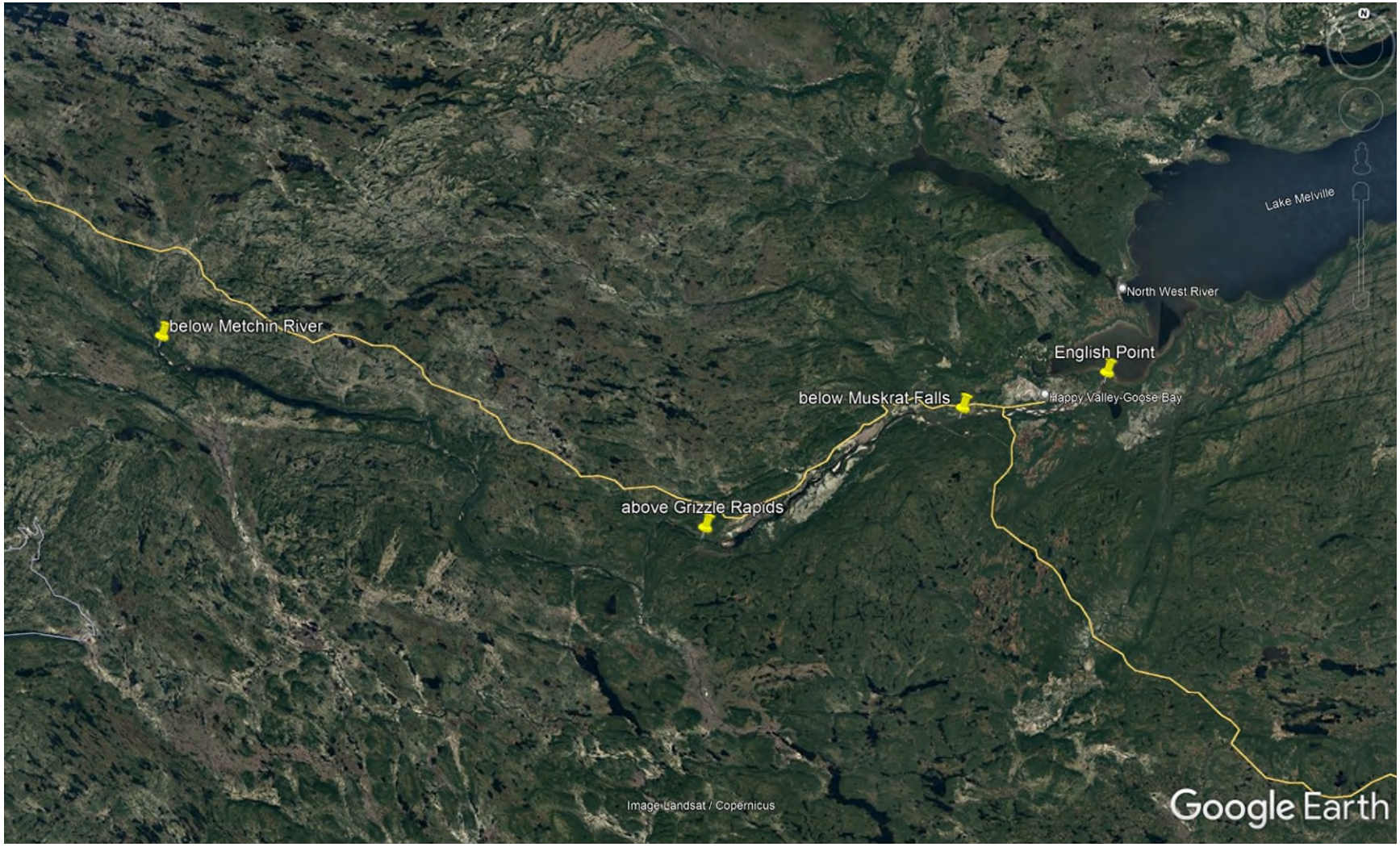

Figure 1: Lower Churchill Network of Real-Time Water Quality Stations

Churchill River below Metchin River

Water Temperature

- Over the deployment period, water temperature ranged from 13.2°C to 19.9°C, with a median value of 16.2°C (Figure 2). Air temperature data was obtained from the Metchin River near TLH Weather Station.
- Water temperature was relatively stable with some fluctuations until mid-August when values began to decrease. This is to be expected as air temperatures began decreasing into early Fall. Water temperature data exhibits a diurnal pattern as expected and closely correlates with ambient air temperatures.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

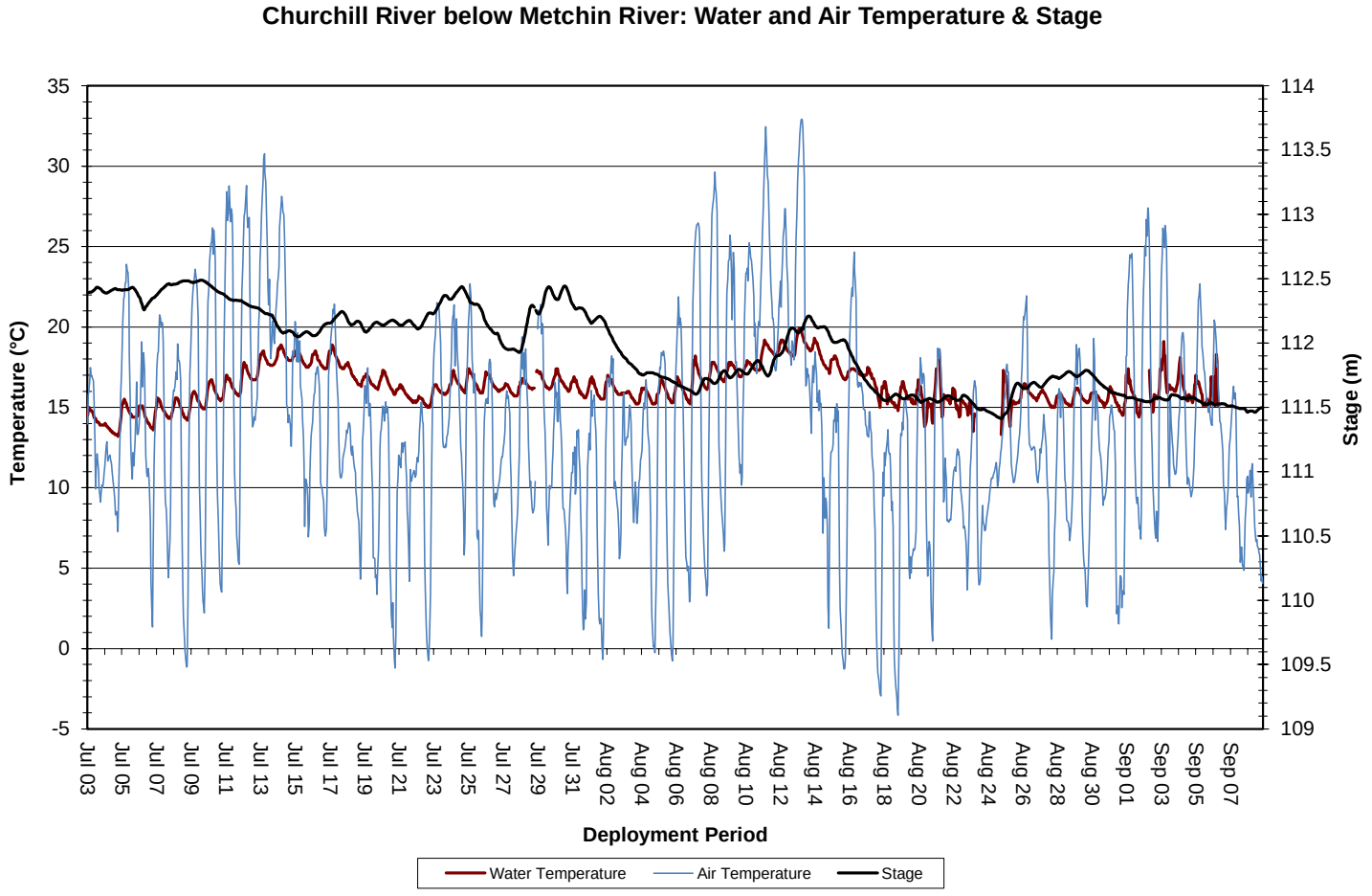

Figure 2: Water and Air Temperature & Stage at Churchill River below Metchin River

pH

- Over the deployment period, pH values ranged from 6.74 to 7.44 pH units, with a median value of 7.06 (Figure 3).
- pH values were quite stable over the course of deployment, remaining within the CCME's Guidelines for the Protection of Aquatic Life for the duration of the deployment period. Some data has been removed as the instrument was out of the water, providing erroneous data.
- Photosynthesis uses up hydrogen molecules; this causes the concentration of hydrogen ions to decrease, which in turn causes pH to increase. For this reason, pH may be higher during daylight hours and during the growing season when photosynthesis is at a maximum. This is illustrated by the diurnal fluctuations in pH values (Figure 3).
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

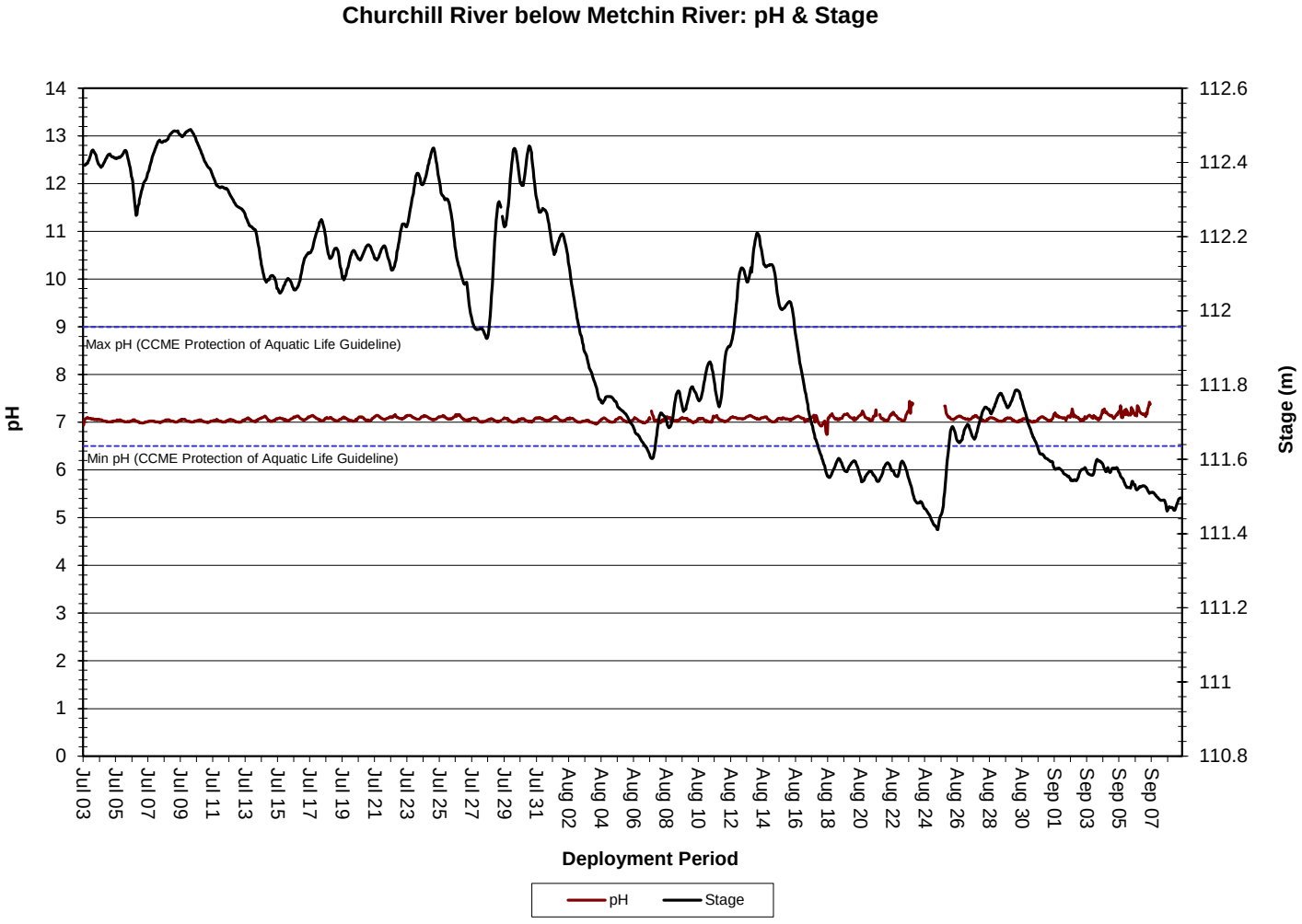

Figure 3: pH & Stage at Churchill River below Metchin River

Specific Conductivity

- Over the deployment period, specific conductivity ranged from 19.9µS/cm to 39.8µS/cm, with a median value of 21.9µS/cm (Figure 4). Some values have been removed as the data was erroneous during periods when the instrument was out of the water.
- The relationship between conductivity and stage is generally inversed. When stage levels increase, specific conductivity levels decrease as the increased amount of water in the river system dilutes solids that are present. This relationship is somewhat evident in the graph below (Figure 4).
- The increased fluctuations late August and early September are likely due to the low water around the instrument at these times just before levels dropped below the instrument.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

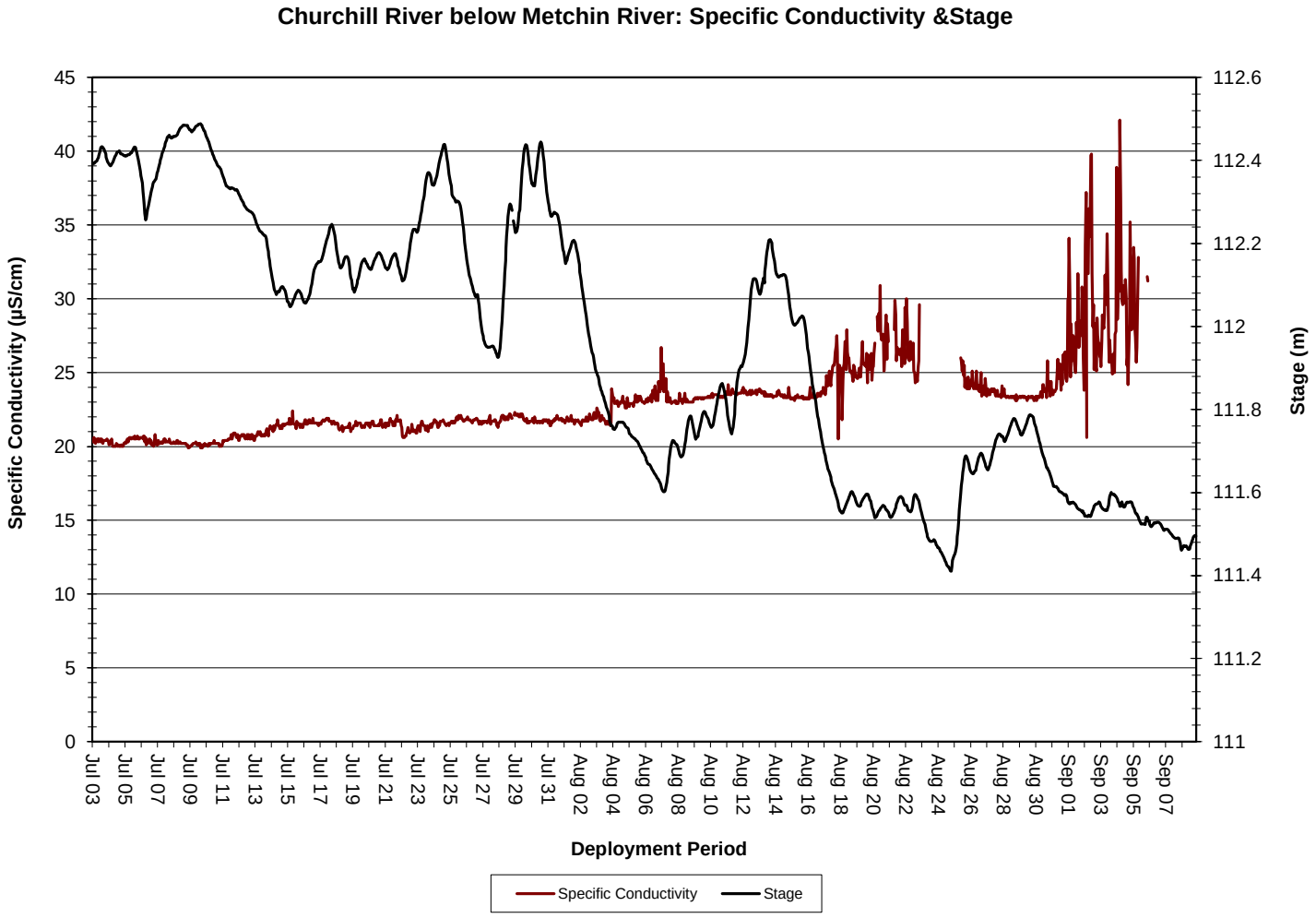

Figure 4: Specific Conductivity & Stage at Churchill River below Metchin River

Dissolved Oxygen

- Over the deployment period, dissolved oxygen content ranged from 9.01mg/L to 10.65mg/L, with a median value of 9.60mg/L. Saturation of dissolved oxygen ranged from 94.6% to 105.1%, with a median value of 99.4% (Figure 5). Some values have been removed due to the instrument being out of the water.
- There is an evident relationship between water temperature and dissolved oxygen. Over the deployment period, dissolved oxygen levels were stable until mid-August before increasing into September as water temperatures were slowly decreasing. Dissolved oxygen also follows a diurnal pattern as water temperatures rise and fall under the influence of ambient air temperatures. Generally, dissolved oxygen levels are higher in a waterbody during cooler temperatures.
- Dissolved oxygen levels were below the CCME's Guideline for the Protection of Early Life Stages for half of the deployment. Dissolved oxygen levels remained above the CCME's Guideline for the Protection of Other Life Stages for the duration of deployment.

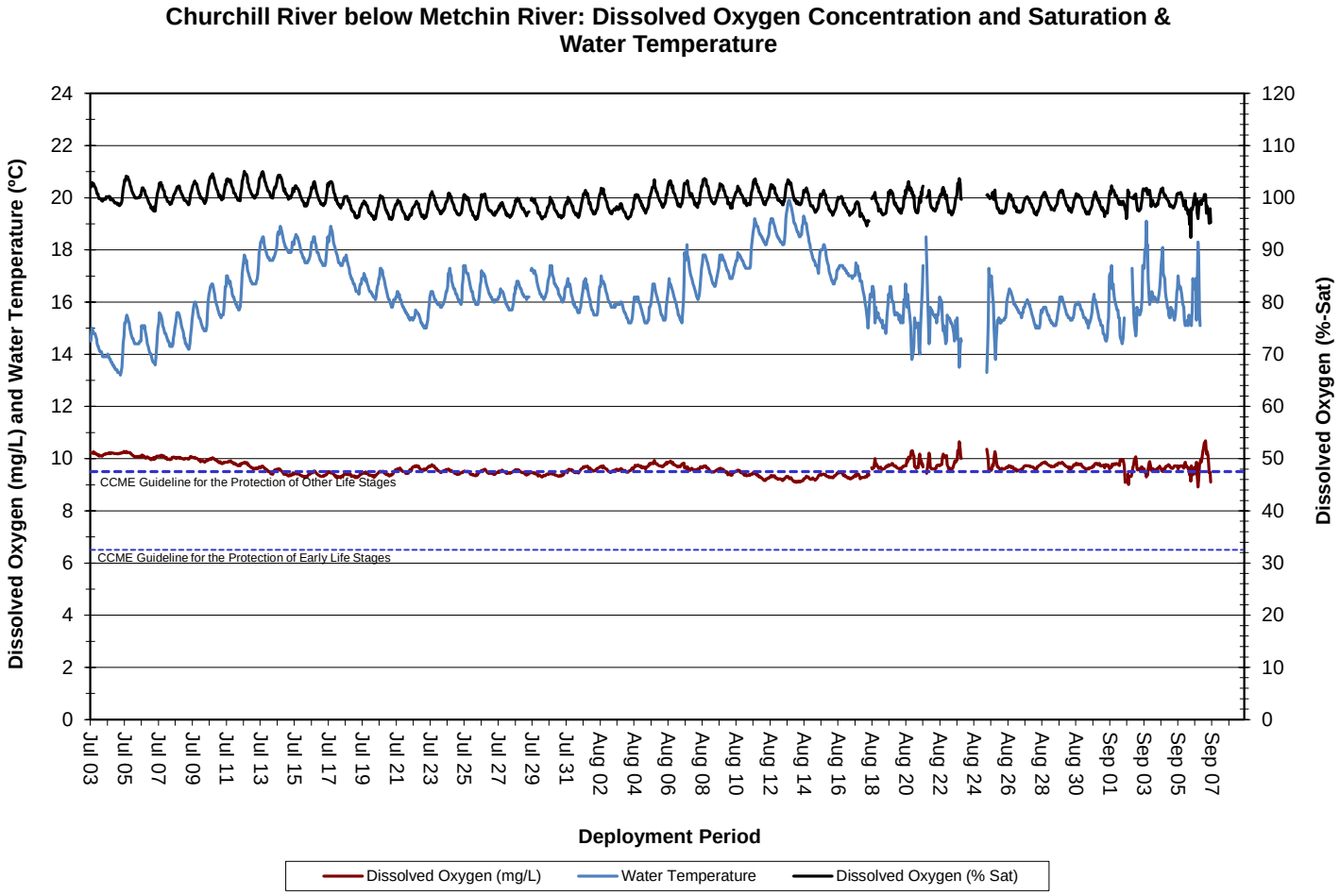

Figure 5: Dissolved Oxygen & Water Temperature at Churchill River below Metchin River

Turbidity

- Over the deployment period, turbidity ranged from 0 NTU to 372.9 NTU, with a median value of 0.0 NTU (Figure 6). A median value of 0.0 NTU indicates little natural background turbidity in the waterbody. Precipitation data was obtained from the Metchin River near TLH Weather Station. Some values have been removed as they were likely caused by the instrument being out of the water.
- This station is located at a wide and deep section of the Churchill River and therefore turbidity levels are typically less susceptible to precipitation events as compared to other areas.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

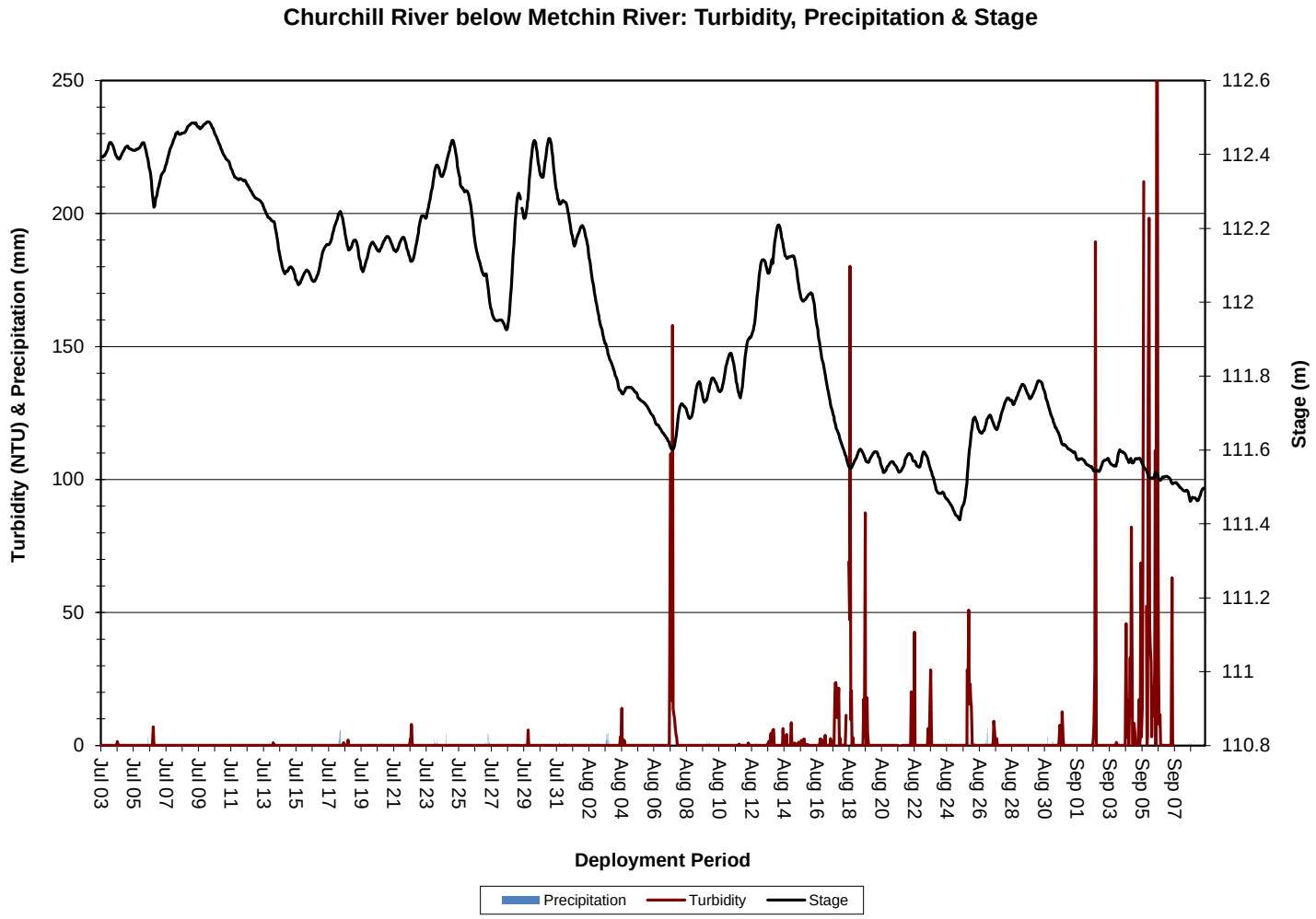

Figure 6: Turbidity, Precipitation & Stage at Churchill River below Metchin River

Stage and Flow

- Over the deployment period, stage levels ranged from 111.41m to 112.49m, with a median value of 111.95m. Flow ranged from 236.27m^3/s to 1021.91m^3/s, with a median value of 858.04m^3/s (Figure 7).
- Stage and flow continually decreased over the course of deployment. On three occasions, water levels were so low that the water quality instrument was out of the water and the hydrometric equipment could not obtain flow measurements. Precipitation events across the same period somewhat correlate with decreases in both stage and flow (Figure 8).
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

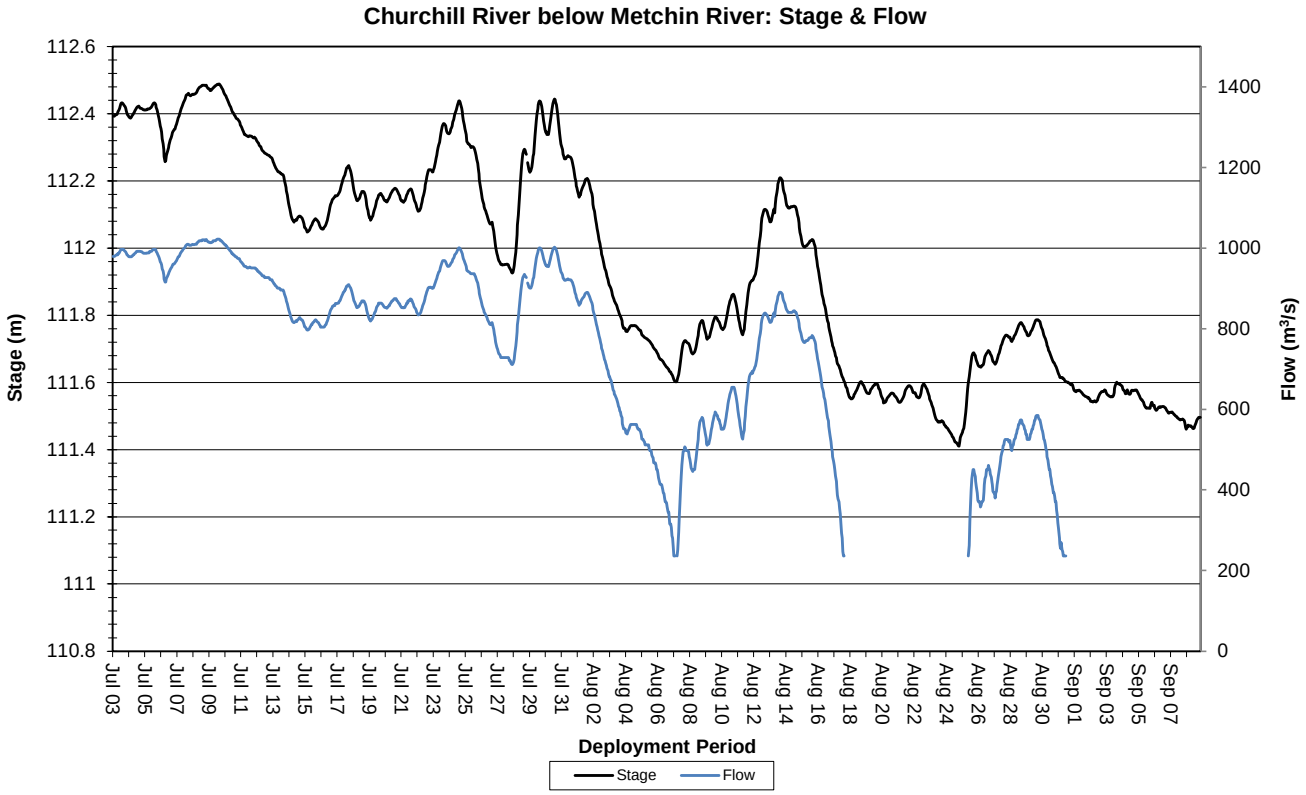

Figure 7: Stage & Flow at Churchill River below Metchin River

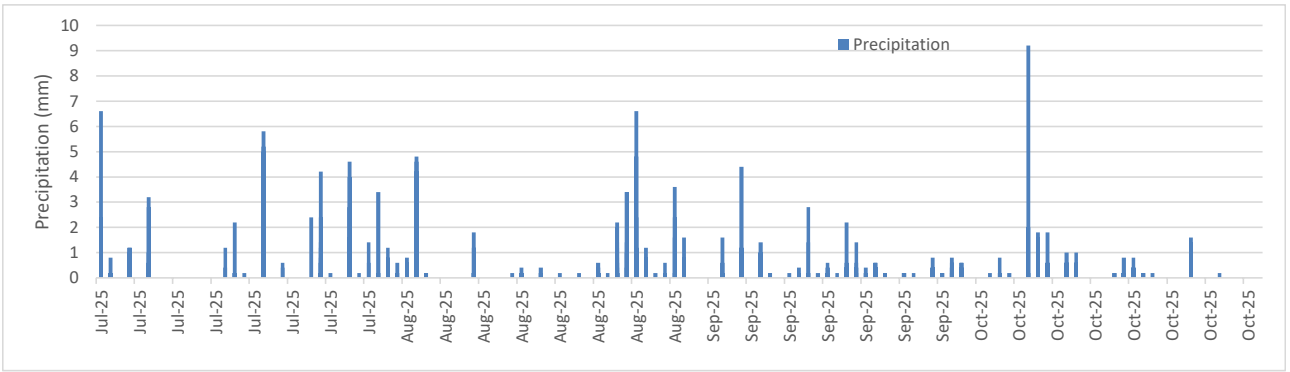

Figure 8: Precipitation at Churchill River below Metchin River

Churchill River above Grizzle Rapids

Water Temperature

- Over the deployment period, water temperature ranged from 12.6°C to 20.7°C, with a median value of 16.5°C (Figure 9). Air temperature data was obtained from the Metchin River near TLH Weather Station.
- Water temperature slowly increased through July before peaking mid-August and beginning to decrease again as temperatures cooled. These trends are to be expected as air temperatures followed a similar trend through the summer season and then started to decrease at the end of deployment. Water temperature data exhibits a diurnal pattern and closely correlates with ambient air temperatures.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

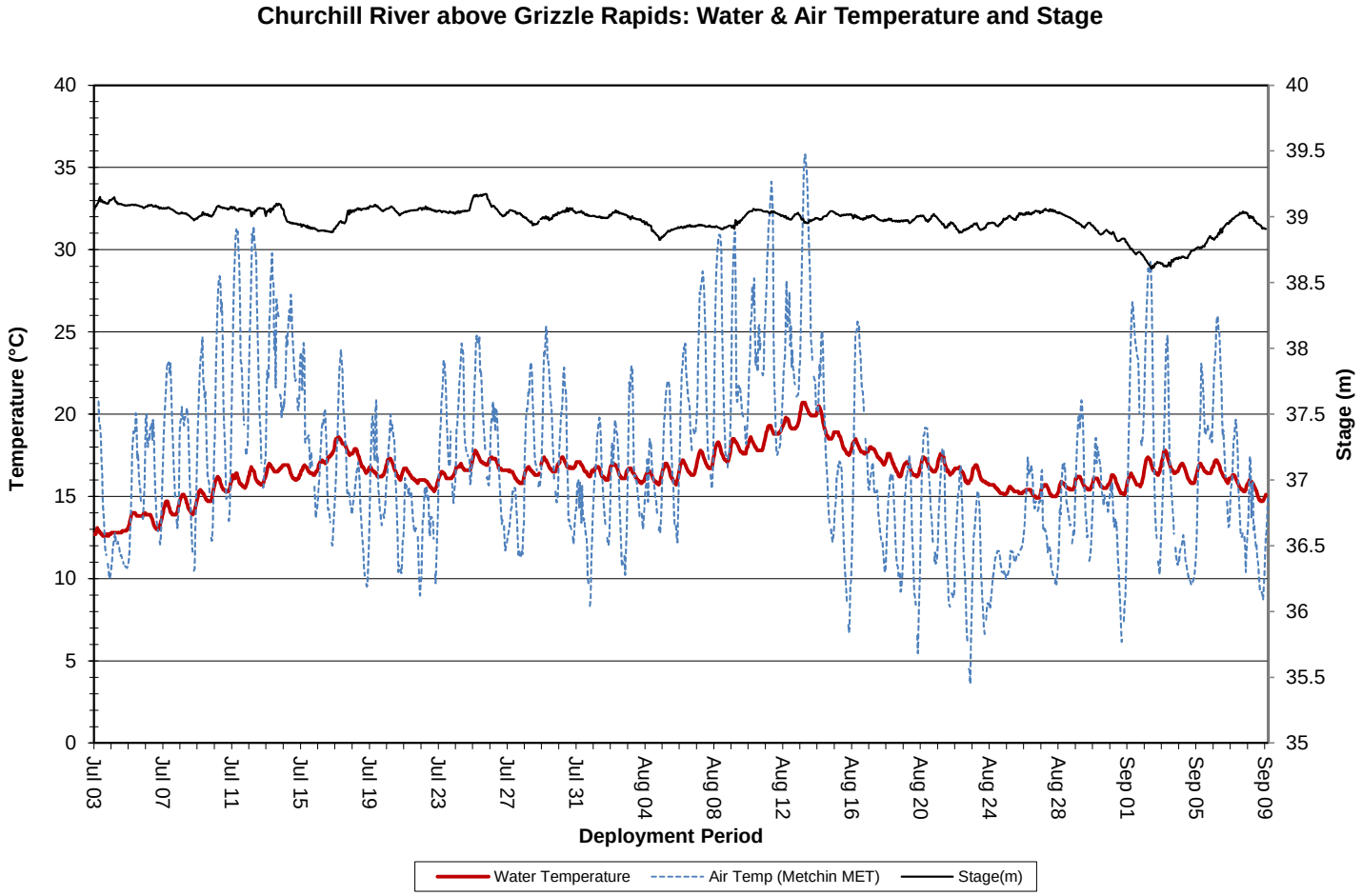

Figure 9: Water and Air Temperature & Stage at Churchill River above Grizzle Rapids

pH

- Over the deployment period, pH values ranged from 6.81 pH units to 7.19 pH units, with a median value of 7.00 (Figure 10).
- pH values were quite stable hovering around 7 pH units and remained within the CCME's Guidelines for the Protection of Aquatic Life for the duration of deployment. pH was affected briefly by stage increases from precipitation around August 24th.
- Photosynthesis uses up hydrogen molecules; this causes the concentration of hydrogen ions to decrease, which in turn causes pH to increase. For this reason, pH may be higher during daylight hours and during the growing season when photosynthesis is at a maximum. This is illustrated by the diurnal fluctuations in pH values (Figure 10).
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

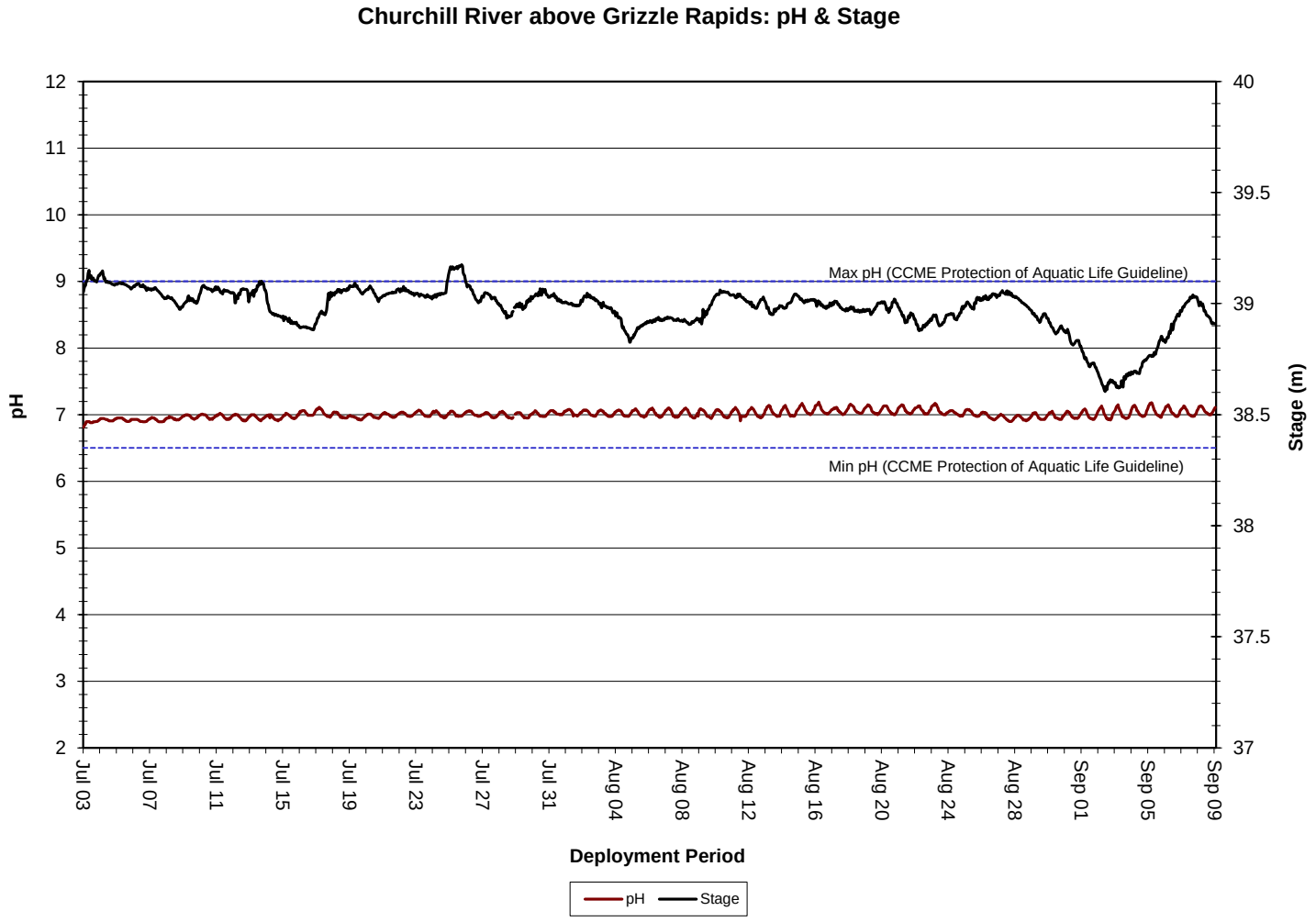

Figure 10: pH & Stage at Churchill River above Grizzle Rapids

Specific Conductivity

- Over the deployment period, specific conductivity ranged from 15.3µS/cm to 23.0µS/cm, with a median of 20.2µS/cm (Figure 11).
- The relationship between conductivity and stage is generally inversed. When stage levels increase, specific conductivity levels generally decrease as the increased amount of water in the river system dilutes solids that are present. This relationship is only somewhat evident in the graph below, likely because this station is located at a deep and wide section of the Churchill River and other factors in the water column influence conductivity levels.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

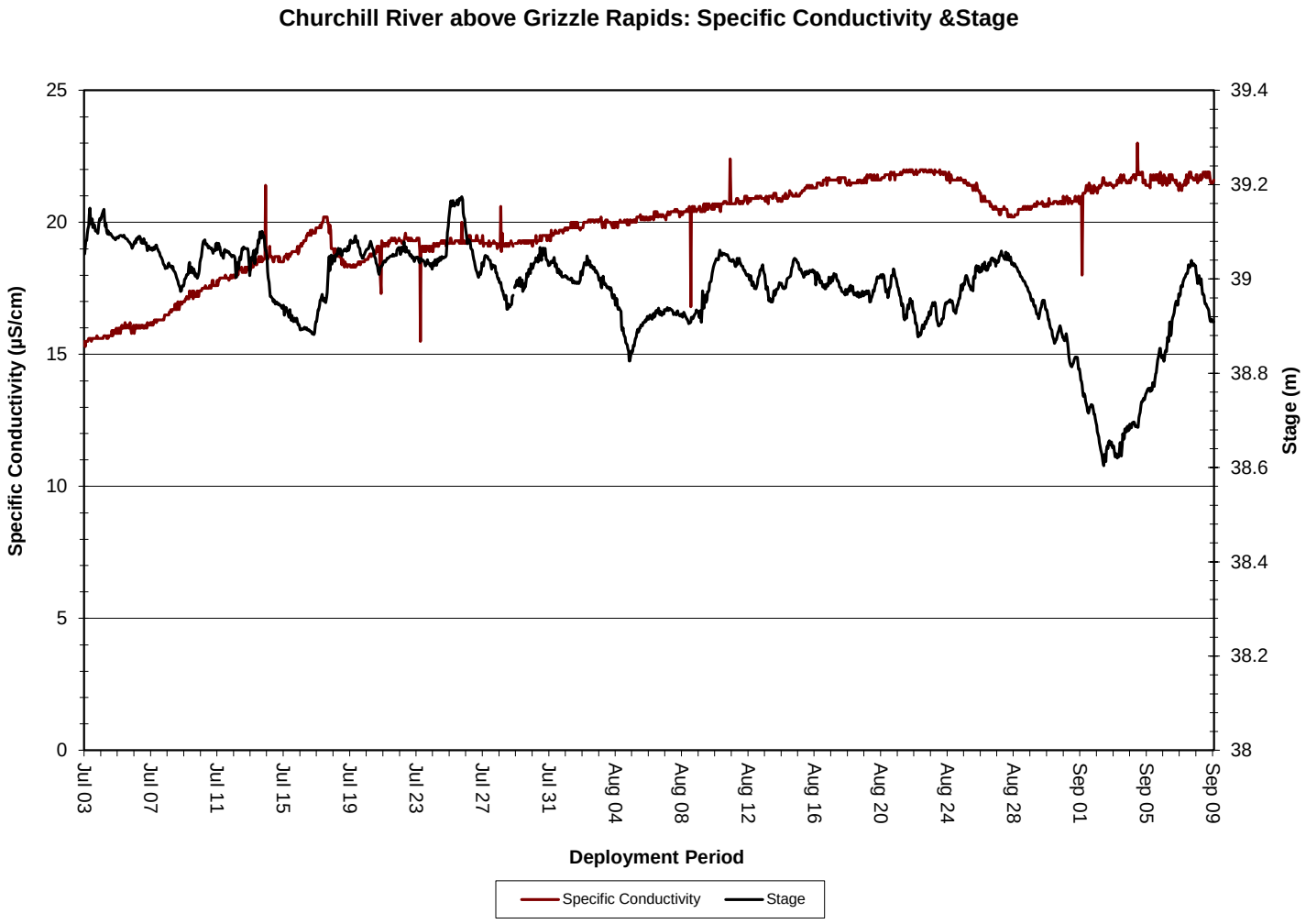

Figure 11: Specific Conductivity & Stage at Churchill River above Grizzle Rapids

Dissolved Oxygen

- Over the deployment period, dissolved oxygen content ranged from 8.92mg/L to 10.82mg/L, with a median value of 9.69mg/L. Saturation of dissolved oxygen ranged from 97.3% saturation to 104.7% saturation, with a median value of 100.5% (Figure 12).
- There is an obvious relationship between water temperature and dissolved oxygen. Over the deployment period, dissolved oxygen levels gradually decreased as water temperatures increased through the summer. Dissolved oxygen also follows a diurnal pattern as water temperatures rise and fall under the influence of ambient air temperatures. Generally, dissolved oxygen levels are higher in a waterbody during cooler temperatures. During deployment, when temperatures were highest, dissolved oxygen levels were lowest.
- Dissolved oxygen levels were occasionally below the CCME's Guideline for the Protection of Early Life Stages during the deployment period. Dissolved oxygen levels were above the CCME's Guideline for the Protection of Other Life Stages for the duration of deployment.

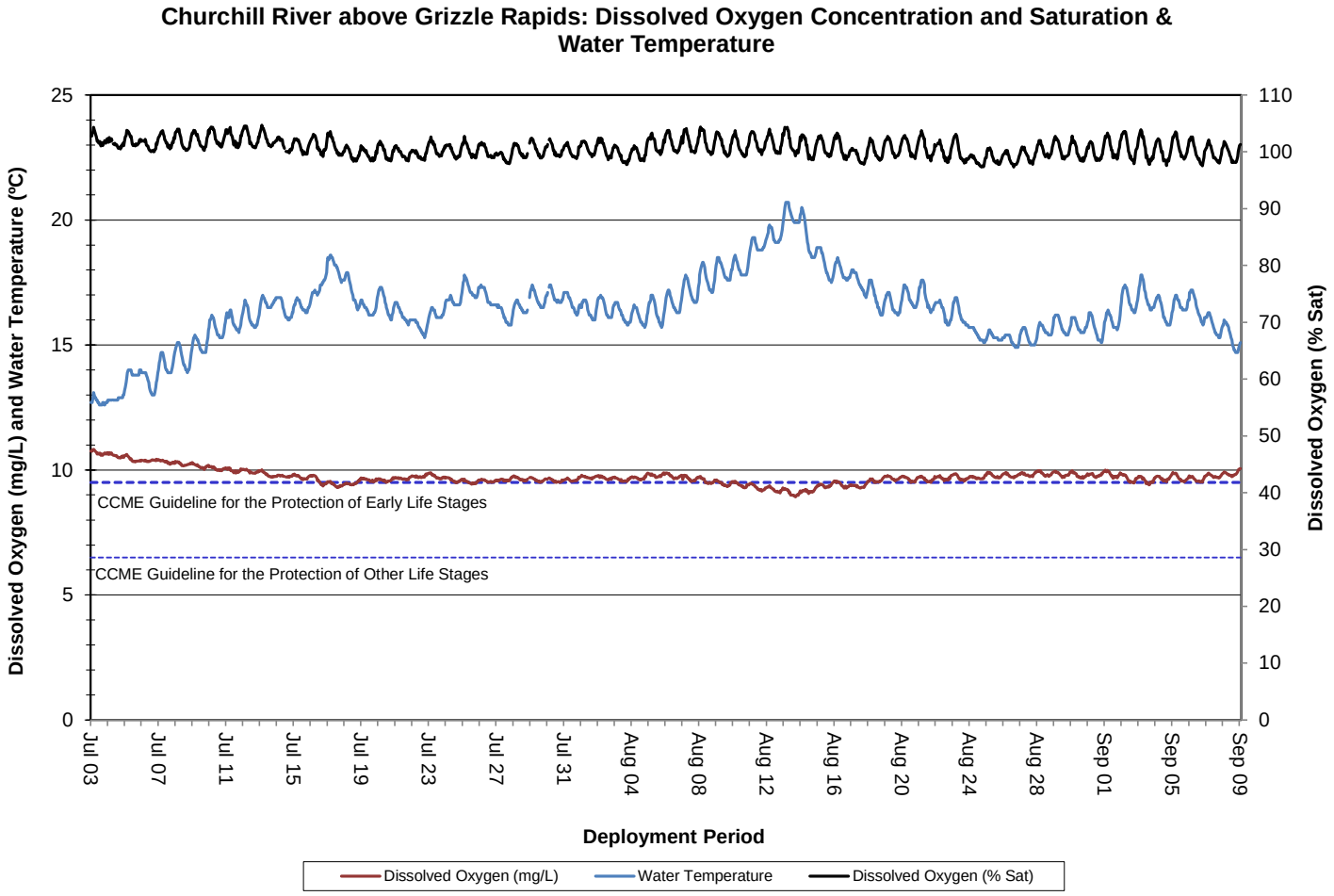

Figure 12: Dissolved Oxygen & Water Temperature at Churchill River above Grizzle Rapids

Turbidity

- Over the deployment period, turbidity was very stable at 0 NTU for almost the entirety of the deployment (Figure 13), which indicates a very low level of natural background turbidity in the waterbody. Spikes occurring only on a few occasions and were short lived. Precipitation data was obtained from the Metchin River at TLH Weather Station.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

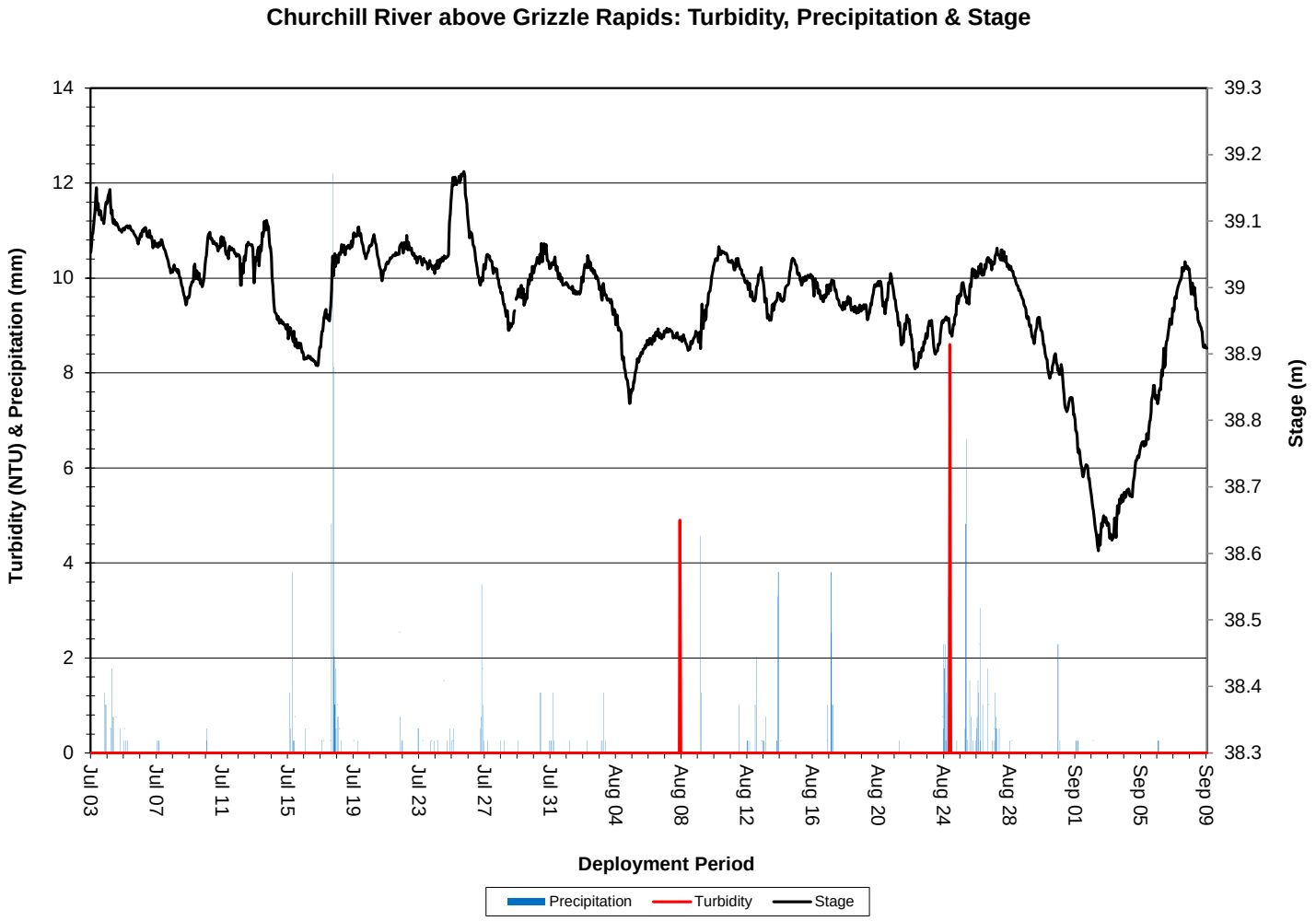

Figure 13: Turbidity, Precipitation & Stage at Churchill River above Grizzle Rapids

Stage

- Over the deployment period, stage ranged from 38.604m to 39.175m, with a median value of 39.002m (Figure 14). Precipitation data was obtained from the Metchin River near TLH Weather Station.
- Stage was somewhat variable across the deployment period, with precipitation events often correlating with increases in stage (Figure 14).
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

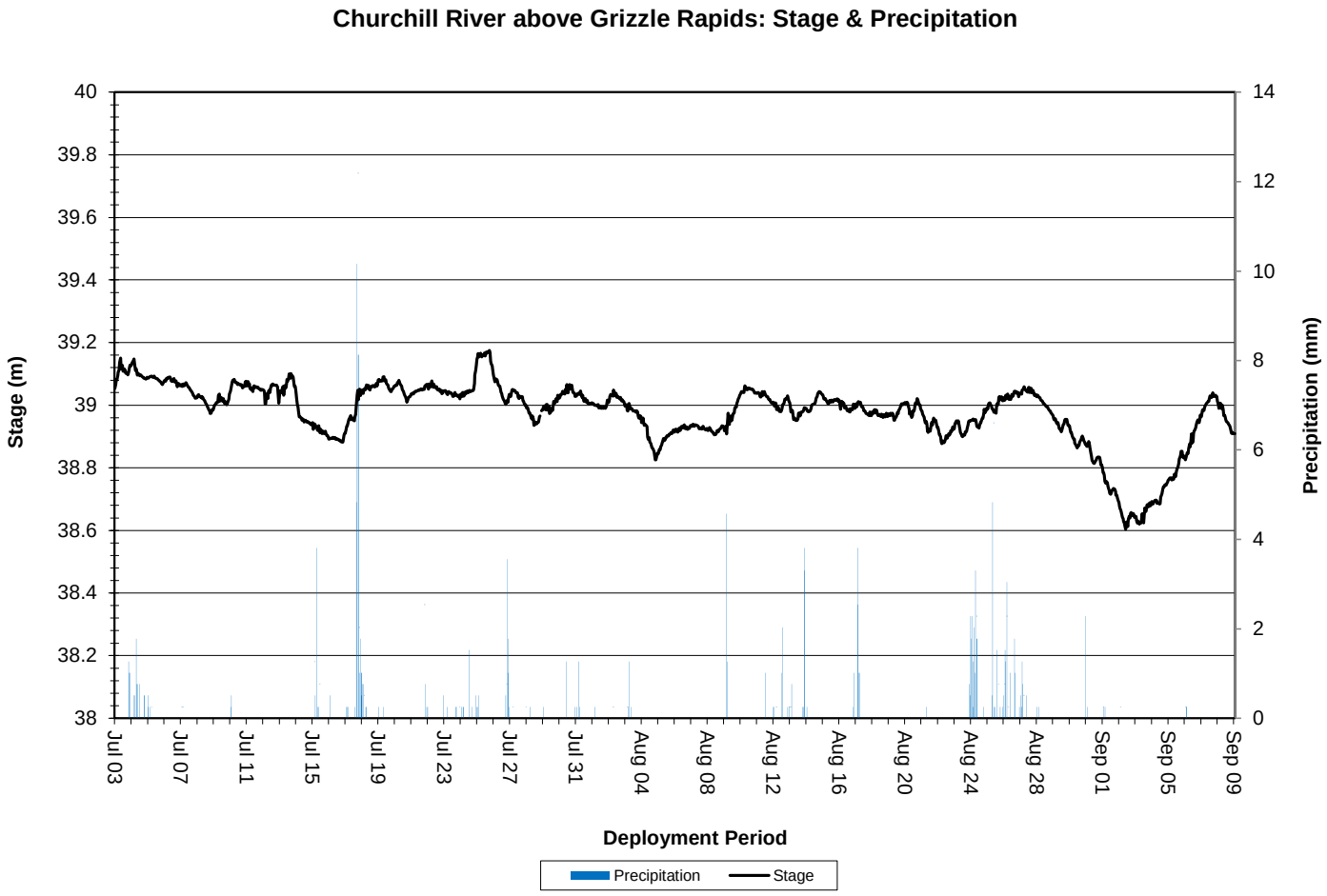

Figure 14: Stage & Precipitation at Churchill River above Grizzle Rapids

Churchill River below Muskrat Falls

Water Temperature

- Over the deployment period, water temperature ranged from 10.8°C to 19.9°C, with a median value of 16.3°C (Figure 15). Air temperature data was obtained from the Muskrat Falls MET Station.
- Water temperature increased through July until mid-August before starting a gradual decline. This is expected as ambient air temperatures began dropping at that time. Water temperatures closely correlate with ambient air temperatures, fluctuating to a much lesser extent.
- Several periods of data were removed from the dataset as the instrument was either buried or out of the water at that time.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

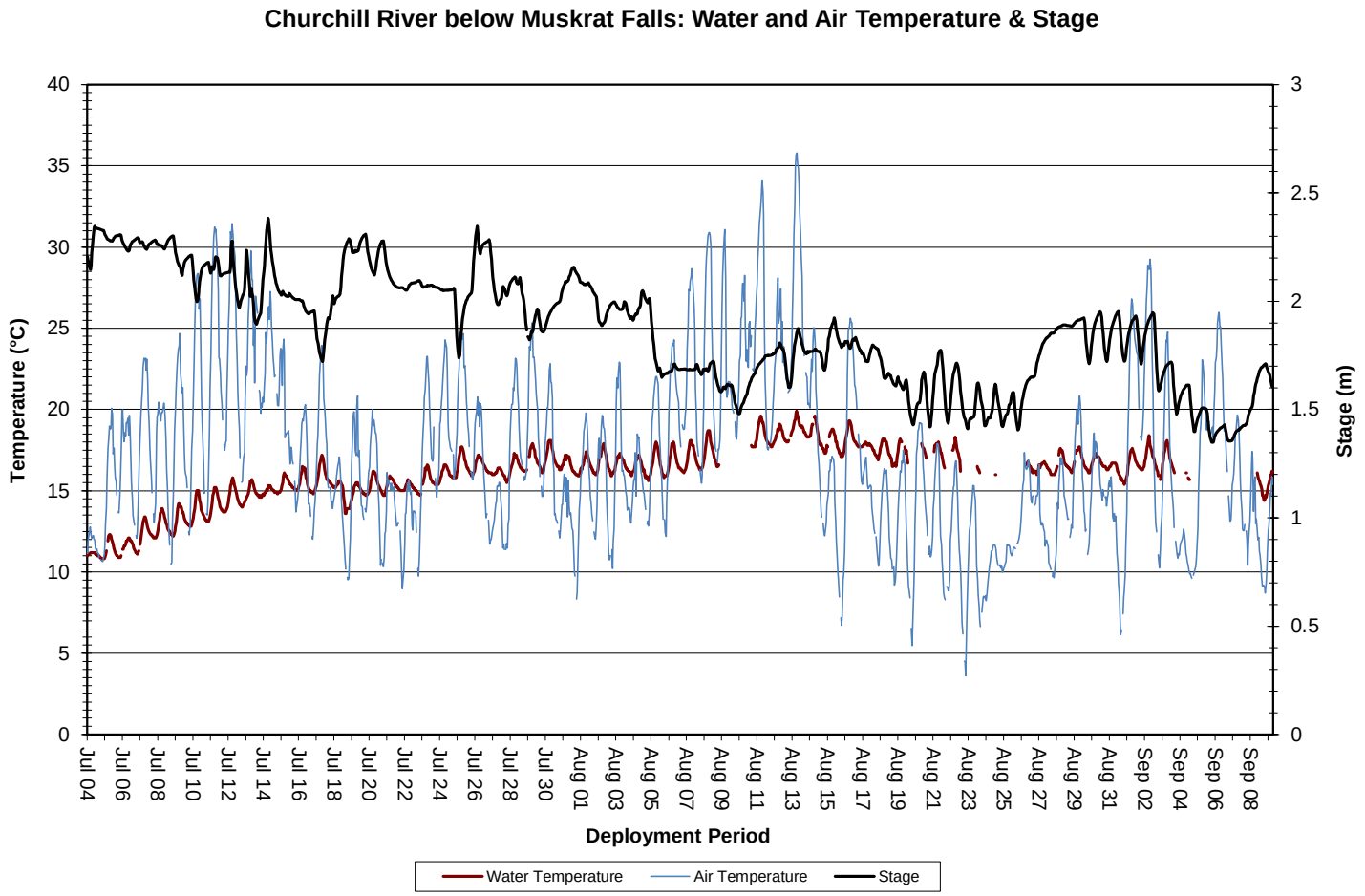

Figure 15: Water and Air Temperature & Stage at Churchill River below Muskrat Falls

pH

- Over the deployment period, pH ranged from 6.34 pH units to 6.91 pH units, with a median value of 6.58 (Figure 16).
- pH values were stable over the course of deployment and remained within the CCME's Guidelines for the Protection of Aquatic Life for the majority of the deployment period (Figure 16).
- Several periods of data were removed from the dataset as the instrument was either buried or out of the water at that time.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

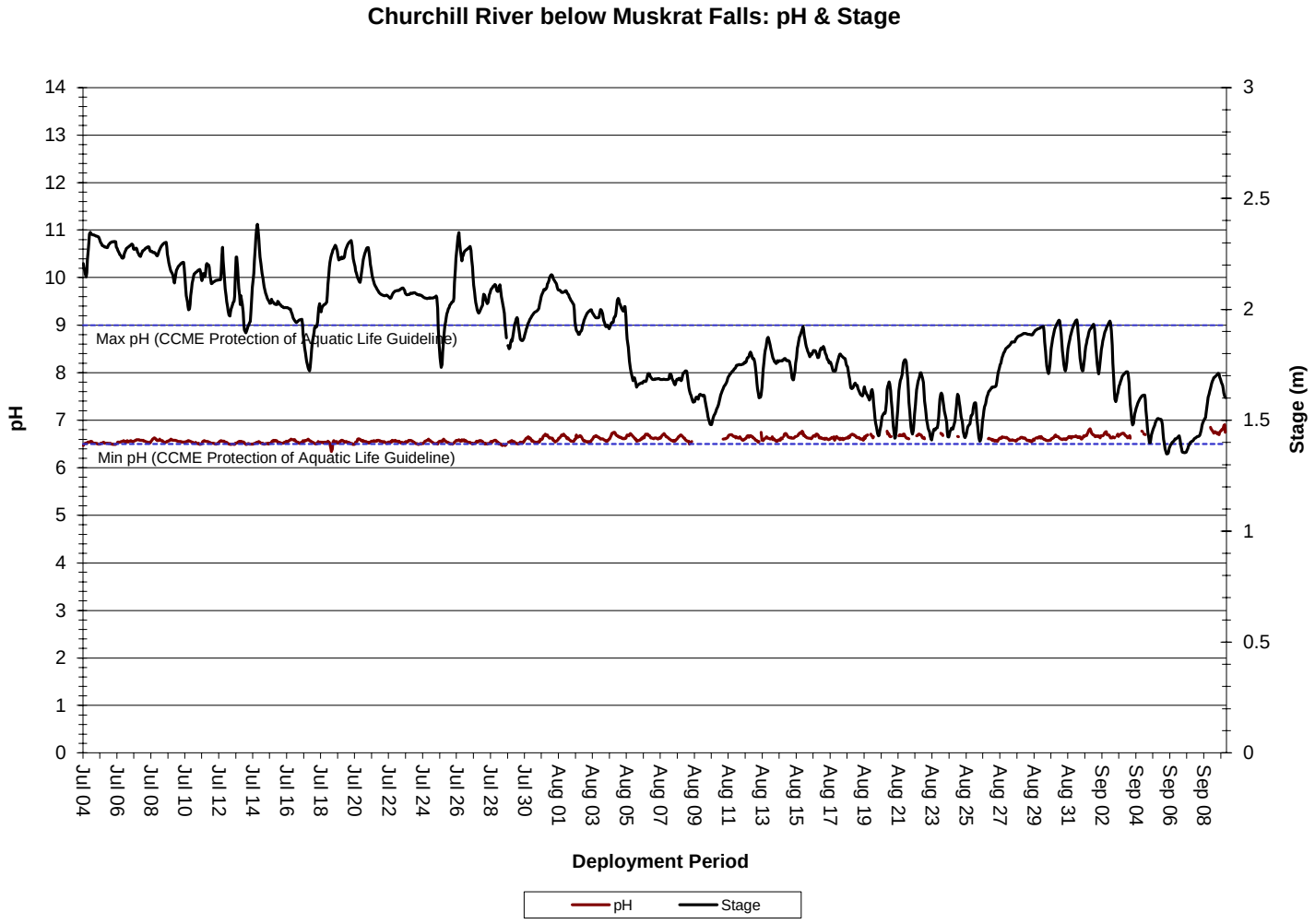

Figure 16: pH & Stage at Churchill River below Muskrat Falls

Specific Conductivity

- Over the deployment period, specific conductivity ranged from 15.0µS/cm to 22.3µS/cm, with a median value of 18.9µS/cm (Figure 17).
- The relationship between conductivity and stage is generally inversed. When stage decreases, specific conductivity increases as the decreased amount of water in the river system concentrates solids that are present, and vice versa. This relationship is only somewhat evident in the graph below, likely because this station is located at a deep and wide section of the Churchill River and other factors in the water column influence conductivity levels (Figure 17).
- Several periods of data were removed from the dataset as the instrument was either buried or out of the water at that time. Those periods correspond to the lowest water levels recorded.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

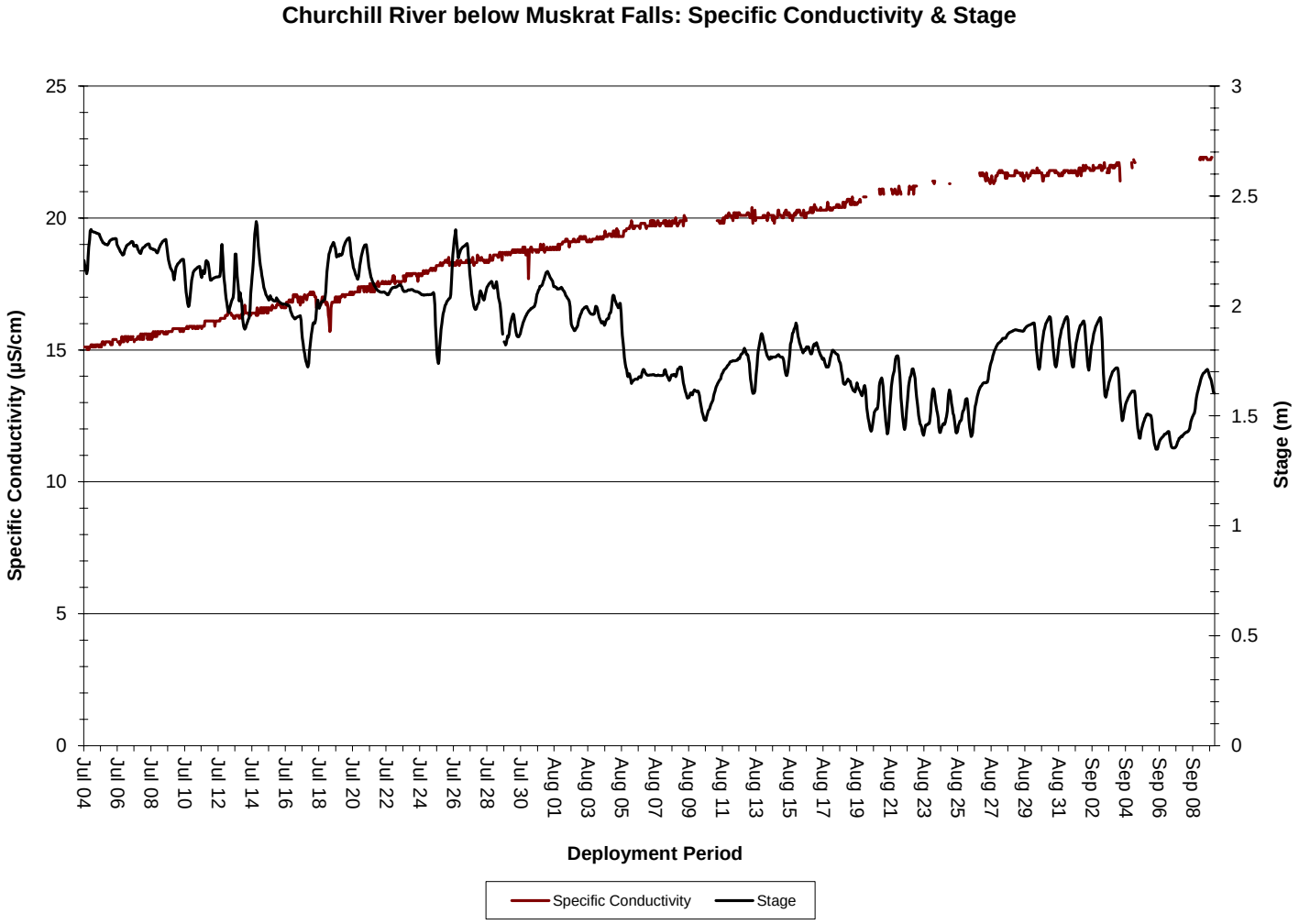

Figure 17: Specific Conductivity & Stage at Churchill River below Muskrat Falls

Dissolved Oxygen

- Over the deployment period, dissolved oxygen concentration ranged from 8.78mg/L to 11.0mg/L, with a median value of 9.43mg/L. Saturation of dissolved oxygen ranged from 90.6% to 105.8%, with a median value of 98.4% (Figure 18).
- Dissolved oxygen and water temperature exhibit an inverse relationship: as one parameter increases, the other decreases, and vice versa. Dissolved oxygen levels slowly decreased over the course of deployment until mid-August when temperatures were warmest. It then began a gradual increase as temperatures began to cool into September. Dissolved oxygen also follows a diurnal pattern as water temperatures rise and fall under the influence of ambient air temperatures.
- Dissolved oxygen levels were below the CCME's Guideline for the Protection of Early Life Stages for the majority of the deployment , and above the CCME's Guideline for the Protection of Other Life Stages for the duration of deployment.

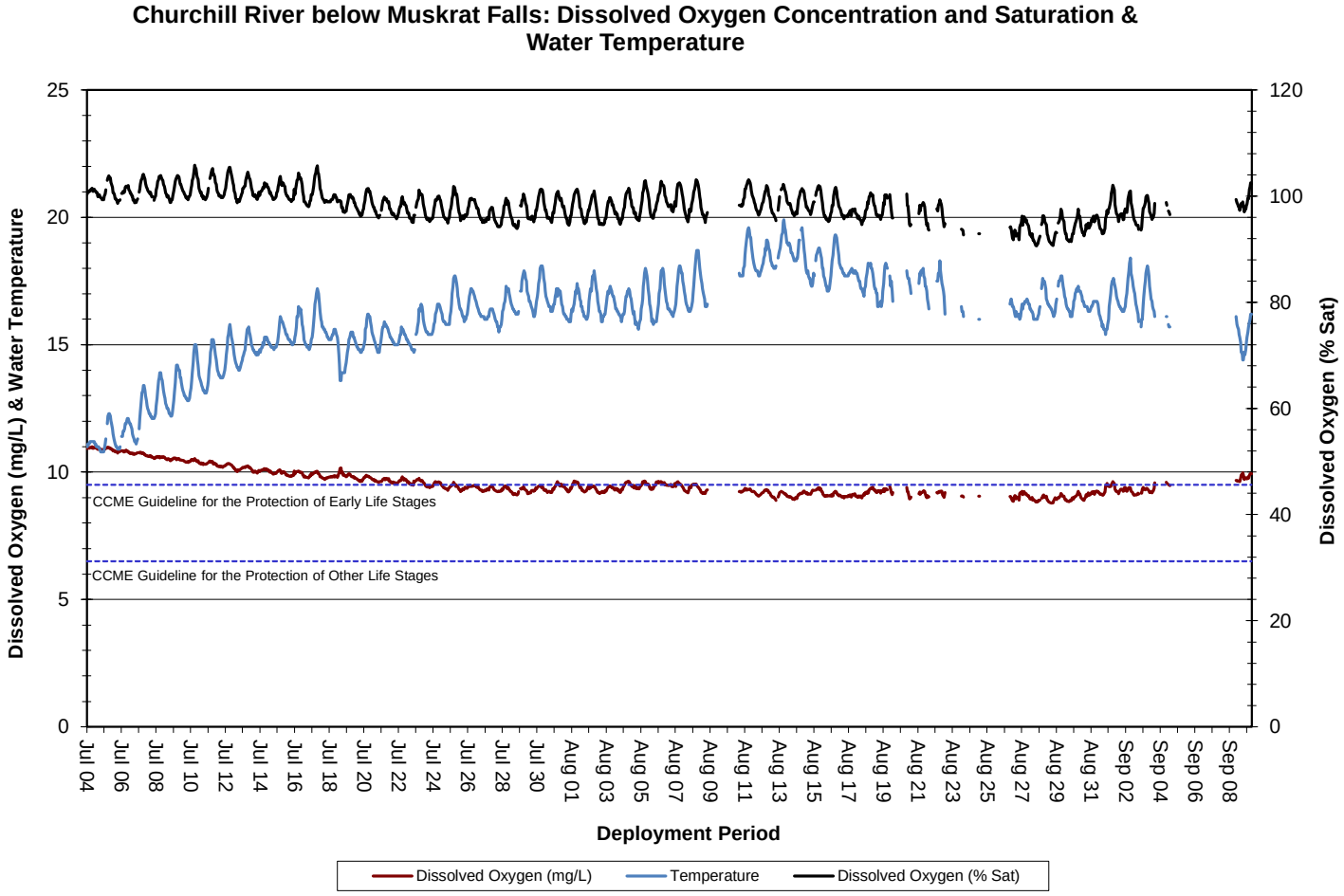

Figure 18: Dissolved Oxygen & Water Temperature at Churchill River below Muskrat Falls

Turbidity

- Over the deployment period, turbidity ranged from 0 NTU to 396.6 NTU, with a median value of 388.2 NTU. Turbidity was elevated for the majority of the deployment and did not return to baseline, indicating the instrument was likely buried or out of the water. Precipitation data was obtained from the Muskrat Falls MET Station.
- There was no correlation between turbidity events and precipitation events this deployment period as the instrument was either buried or out of the water for the majority of time (Figure 19). Turbidity levels are often quite variable at this station, and do not always correlate with precipitation events given that this station is located on a wide and deep section of the Churchill River.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

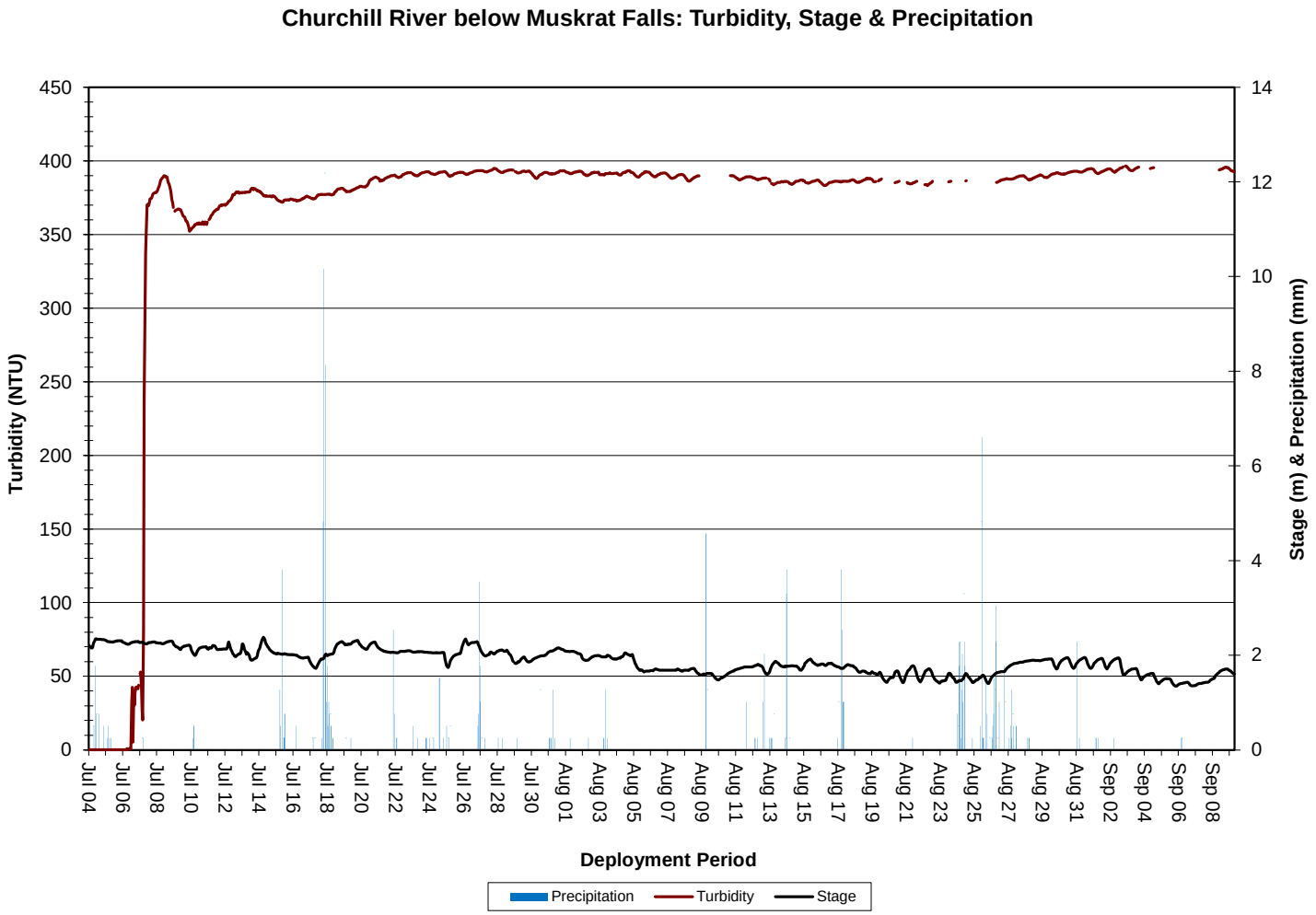

Figure 19: Turbidity, Precipitation & Stage at Churchill River below Muskrat Falls

Stage & Flow

- Over the deployment period, stage ranged from 1.348m to 2.383m, with a median value of 1.885m. Flow ranged from 726.877m^3/s to 1598.029m^3/s, with a median value of 1086.267m^3/s (Figure 20). Precipitation data was obtained from the Muskrat Falls MET Station.
- Stage and flow were slightly variable over the course of deployment and somewhat correlated with precipitation events. This is partly related to the fact that this station is located on a very wide section of the Churchill River and therefore not as easily influenced by smaller precipitation events. Stage and flow at this station are also influenced by upstream activities at the Muskrat Falls hydroelectric project.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

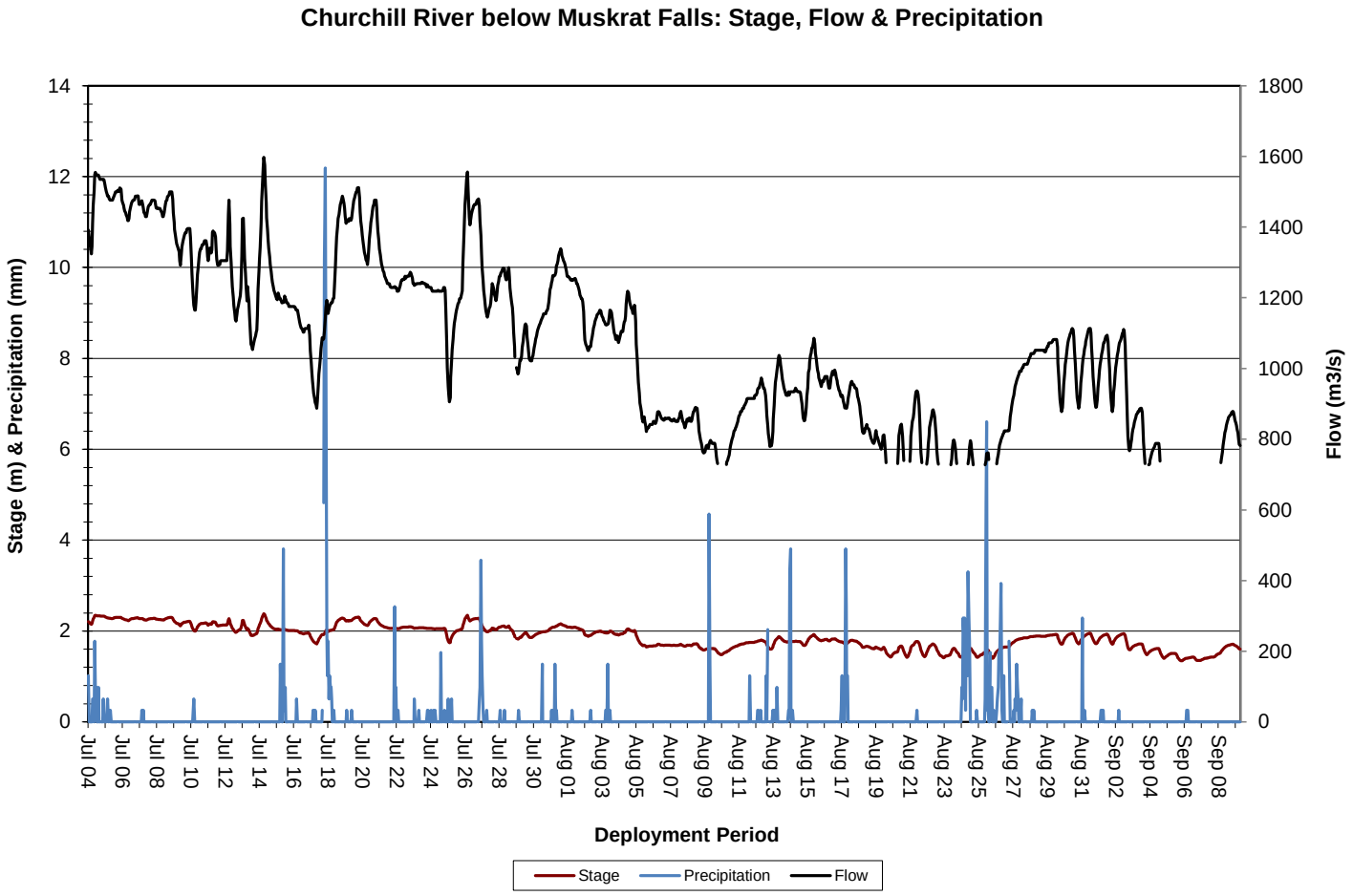

Figure 20: Stage, Flow & Precipitation at Churchill River below Muskrat Falls

Chlorophyll

- Over the deployment period, chlorophyll ranged from 0.57ug/L to 2.10ug/L, with a median value of 1.06ug/L (Figure 21).
- Chlorophyll is found within living cells of photosynthetic organisms like phytoplankton and cyanobacteria. The amount of chlorophyll found in water can be used to understand the general biological health of an ecosystem. Chlorophyll can also be used to identify algal bloom events and is an indicator of nutrient loading in ecosystems.
- As with the other water quality parameters, several periods of data were removed from the chlorophyll dataset as the instrument was either buried or out of the water at those times. Those periods correspond to the lowest water levels recorded.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

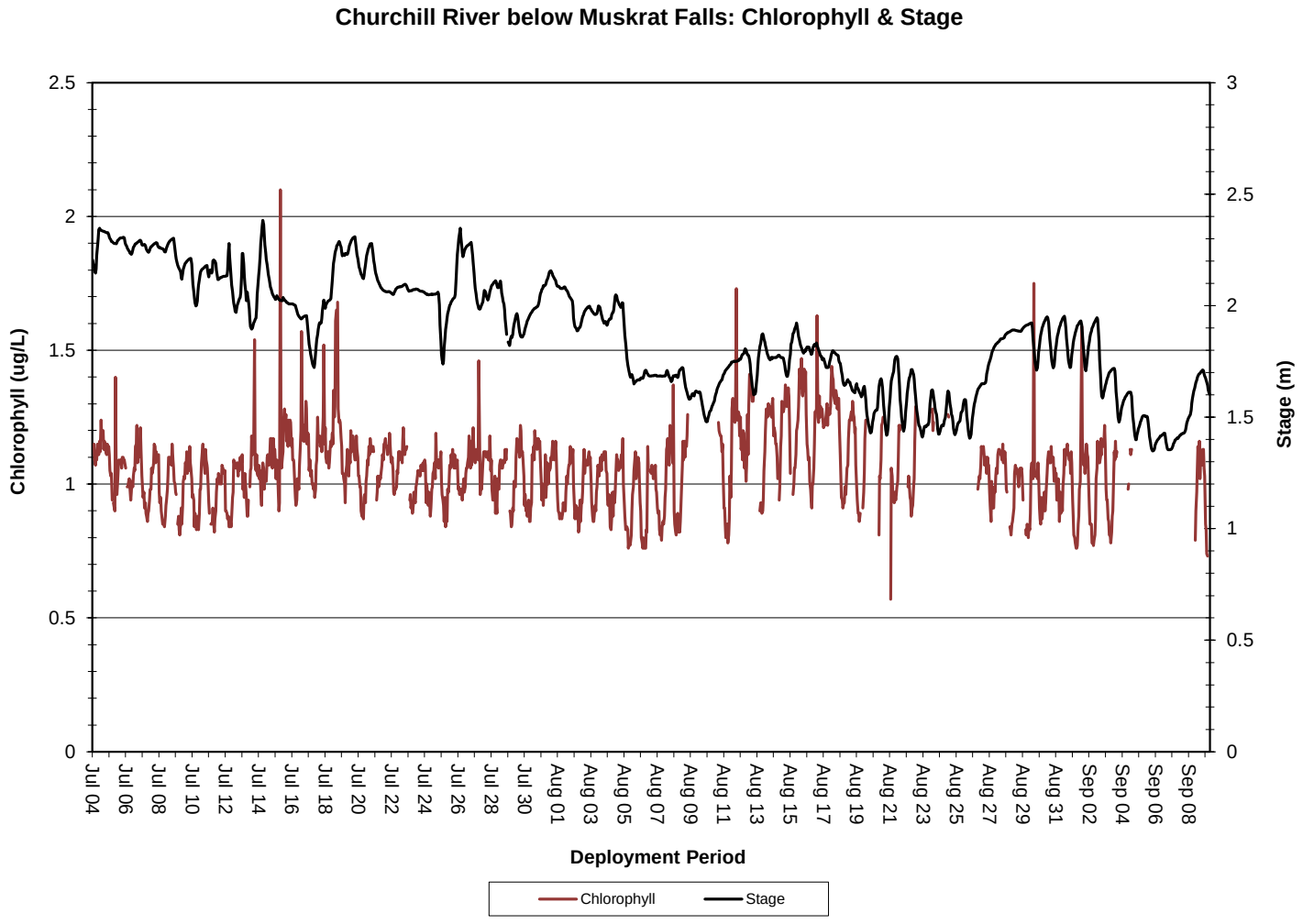

Figure 21: Chlorophyll & Stage at Churchill River below Muskrat Falls

Churchill River at English Point

Water Temperature

- Water temperature ranged from 11.8°C to 23.3°C, with a median value of 17.0°C (Figure 22). Air temperature data was obtained from the Muskrat Falls MET Weather Station due to issues with the Mud Lake Road station.
- Water temperature increased through July until mid-August when it peaked before beginning and gradual decrease through late summer. Water temperatures closely correlated with ambient air temperatures, which followed a similar trend across the same period.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

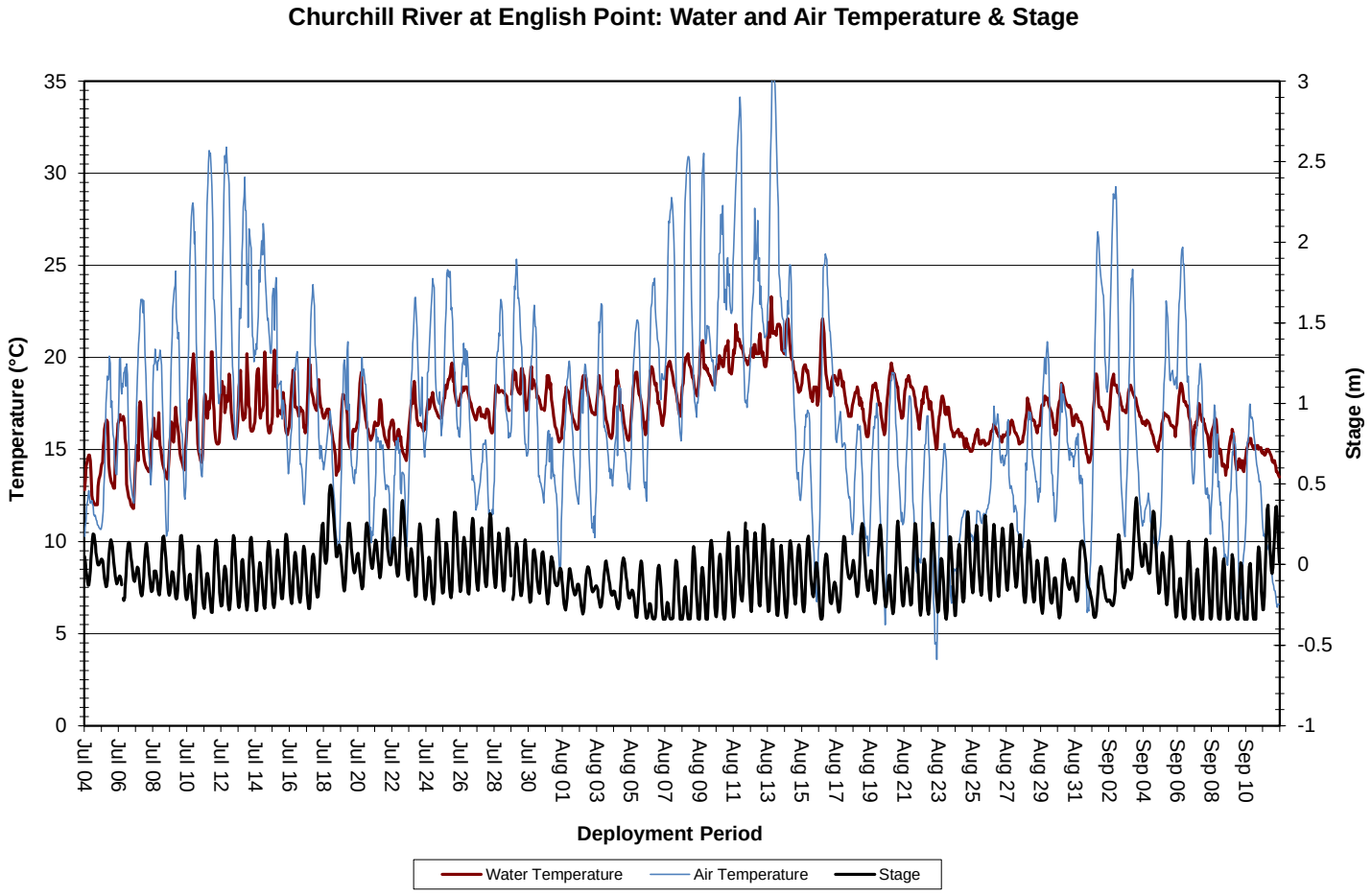

Figure 22: Water and Air Temperature & Stage at Churchill River at English Point

pH

- Over the deployment period, pH ranged from 6.46 pH units to 7.94 pH units, with a median value of 6.95 (Figure 23).
- pH values were relatively stable over the course of deployment, remaining within the CCME's Guidelines for the Protection of Aquatic Life for the duration of deployment except on July 19th when a sudden spike in stage coincided with a slight drop in pH. Levels quickly returned to normal.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

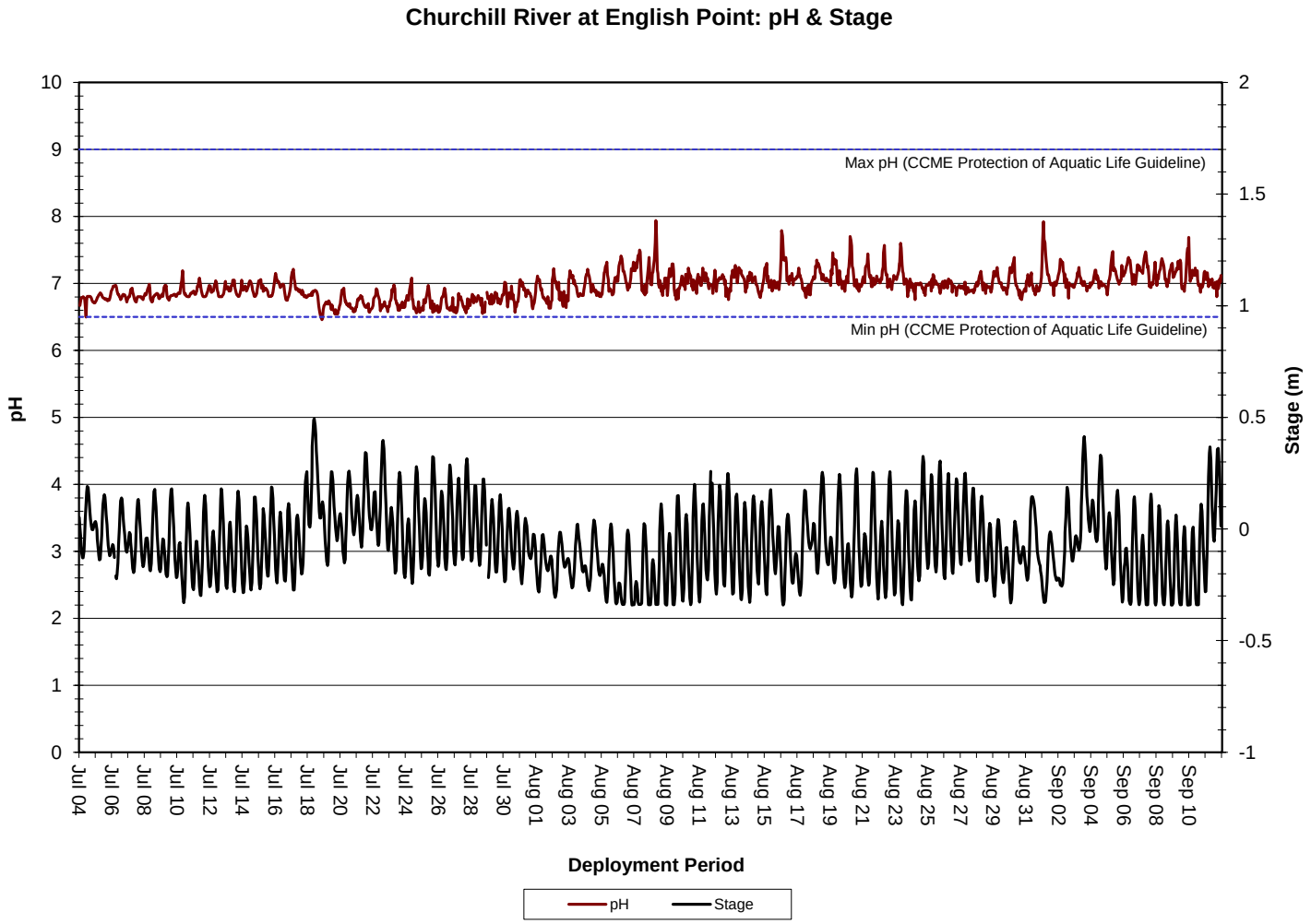

Figure 23: pH & Stage at Churchill River at English Point

Specific Conductivity

- Over the deployment period, specific conductivity ranged from 19.6µS/cm to 102.4µs/cm, with a median value of 32.34µS/cm (Figure 24).
- Specific conductivity fluctuates considerably at this location due to the tidal influences of the Atlantic Ocean on Lake Melville. As the tide comes in, specific conductivity increases as dissolved solids and salinity increase, and vice versa as the tide goes out. This increase and decrease in specific conductivity and stage occurs twice daily. This pattern is generally consistent throughout the deployment period (Figure 23).
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

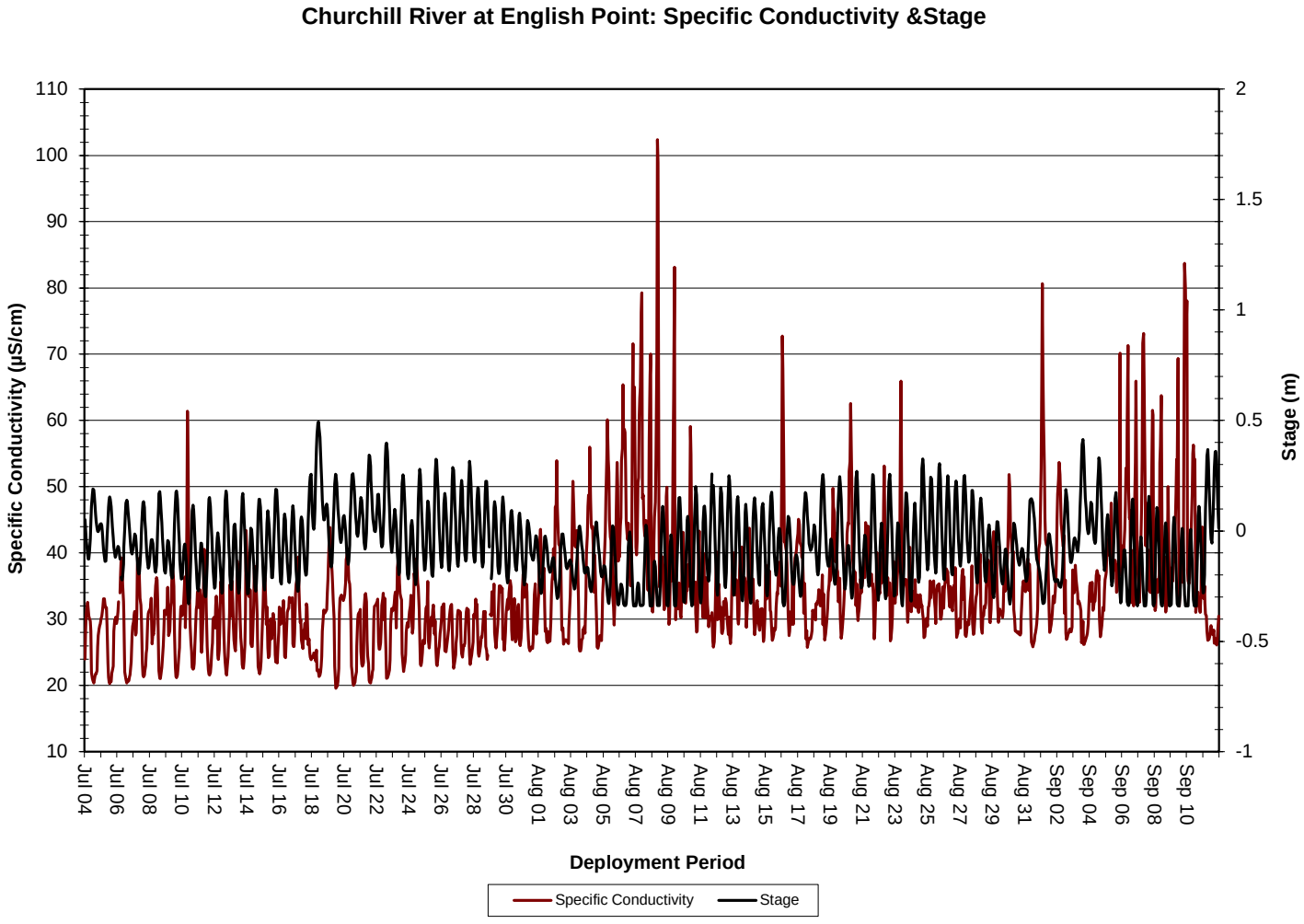

Figure 24: Specific Conductivity & Stage at Churchill River at English Point

Dissolved Oxygen

- Over the deployment period, dissolved oxygen concentration ranged from 9.16mg/L to 11.19mg/L, with a median value of 10.05mg/L. Saturation of dissolved oxygen ranged from 90.8% to 117.4% saturation, with a median value of 103.8% (Figure 25).
- There is an evident relationship between water temperature and dissolved oxygen. As water temperatures increased slightly through July until mid-August, dissolved oxygen levels decreased slightly. Dissolved oxygen levels also follow a diurnal pattern as water temperatures rise and fall under the influence of ambient air temperatures. Generally, dissolved oxygen levels are higher in a waterbody during cooler temperatures. Dissolved oxygen values began to increase again gradually mid-August onwards as water temperatures began to cool into early Fall.
- Dissolved oxygen levels hovered above and below the CCME's Guideline for the Protection of Early Life Stages for the duration of deployment. Dissolved oxygen levels were above the CCME's Guideline for the Protection of Other Life Stages for the duration of deployment (Figure 25).

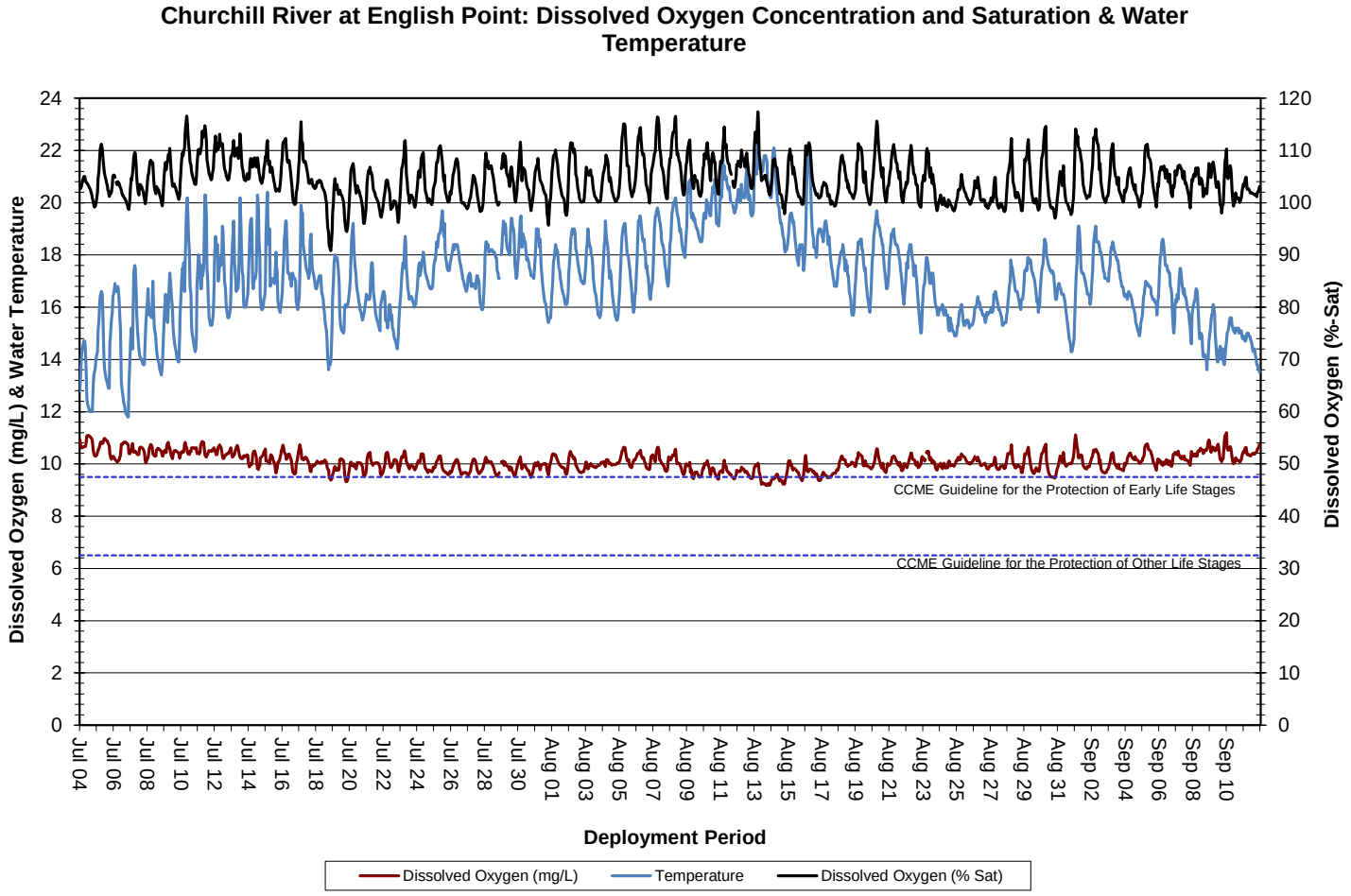

Figure 25: Dissolved Oxygen & Water Temperature at Churchill River at English Point

Turbidity

- Over the deployment period, turbidity ranged from 1.8 NTU to 330 NTU, with a median value of 4.3 NTU (Figure 26). A median value of 4.3 NTU indicates a low level of background turbidity. Precipitation and wind speed data was obtained from the Muskrat Falls MET Station due to issues with the Mud Lake Road MET station.
- Turbidity events generally correlate with precipitation events, as these can increase the presence of suspended material in water. High winds and tidal influences can also contribute to turbidity events at this station by disturbing sediment from the riverbed (Figure 26).
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

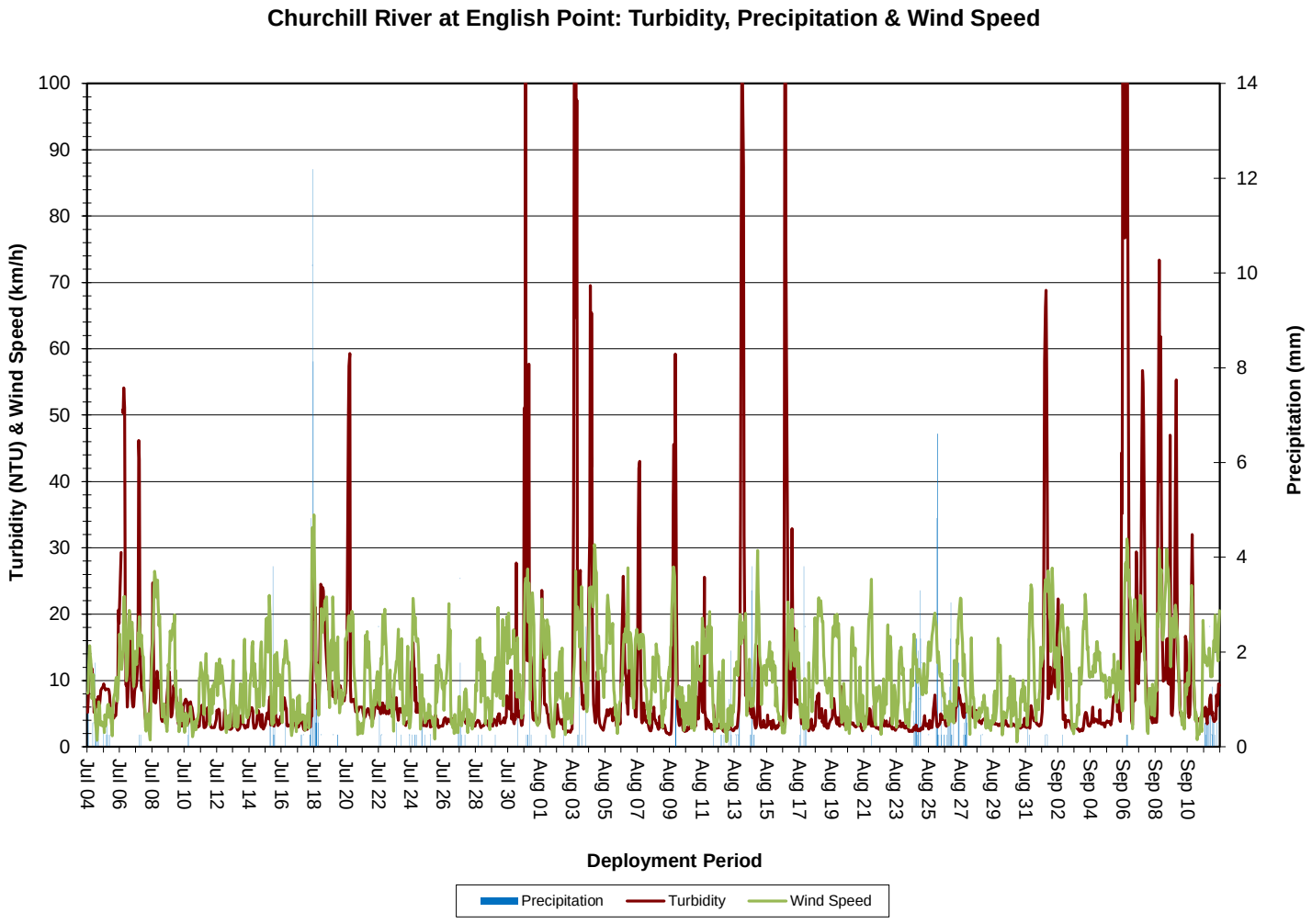

Figure 26: Turbidity, Precipitation & Wind Speed at Churchill River at English Point

Stage

- Over the deployment period, stage ranged from -0.34m to 0.494m, with a median value of -0.073m (Figure 27). Precipitation data was obtained from the Muskrat Falls MET Station.
- Stage fluctuates considerably at this location due to the tidal influences of the Atlantic Ocean. This pattern is consistent over the deployment period. Increases in stage often correlate with precipitation events.
- Water Survey of Canada (Environment and Climate Change Canada) is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

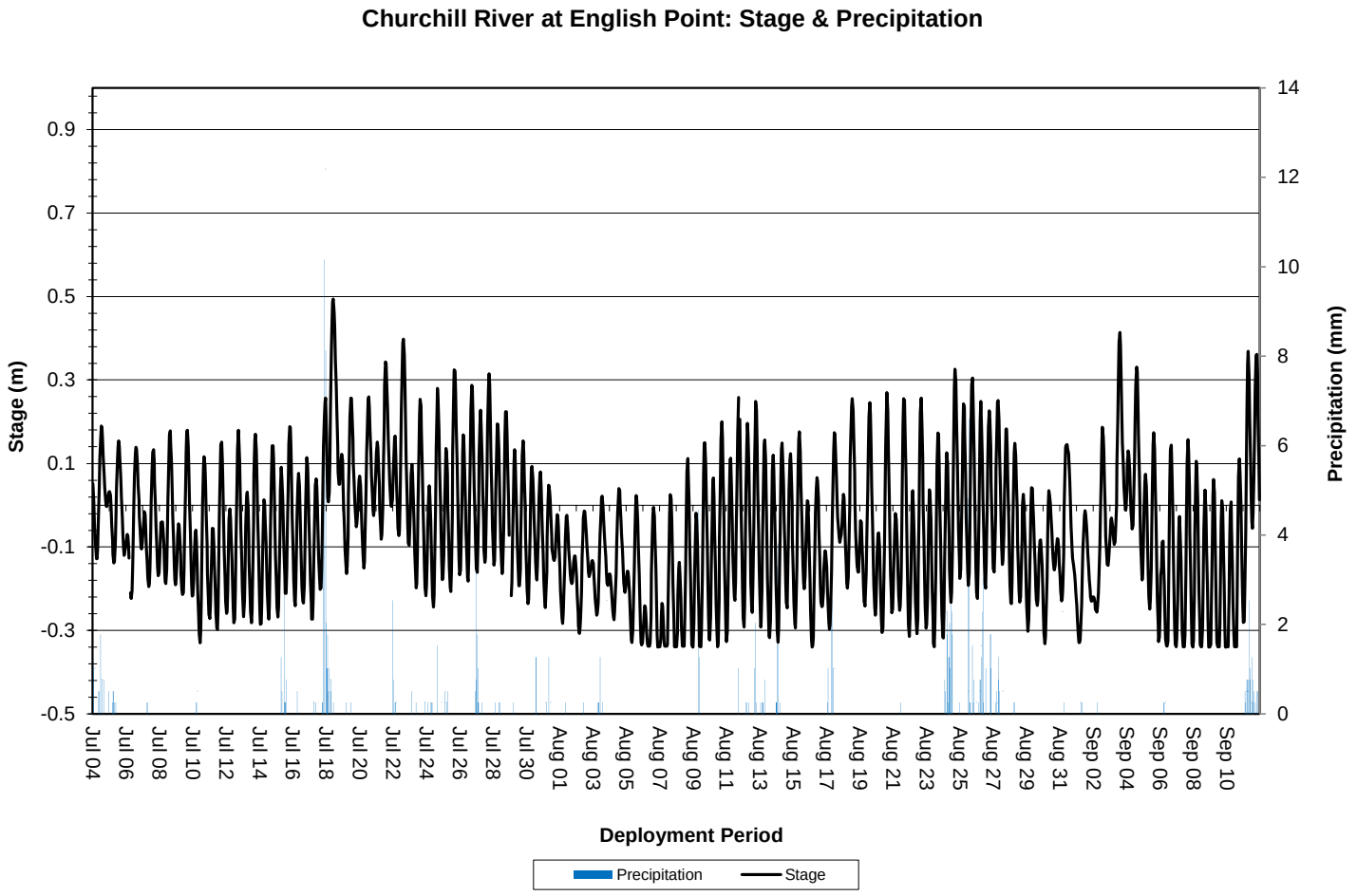

Figure 27: Stage & Precipitation at Churchill River at English Point

Conclusions

- Instruments at four water quality monitoring stations on the Lower Churchill River were deployed from July 3/4 through September 9/12, 2025.
- Water temperature was generally increased through July to mid-August at all stations before starting a gradual decline into early Fall. This is to be expected based on ambient air temperature trends during the same period through July and August.
- pH was relatively stable at all stations over the course of deployment. pH was within the CCME's Guidelines for the Protection of Aquatic Life for the duration of deployment at Churchill River below Metchin River and above Grizzle Rapids, and for the majority of deployment at Churchill River below Muskrat Falls and at English Point.
- Specific conductivity was gradually increasing over the course of deployment at all stations. Since English Point is influenced by tides in Lake Melville, specific conductivity values at the Churchill River at English Point station had a much wider range, which is comparable to other deployments at this location.
- Dissolved oxygen levels slowly decreased at all stations through July to mid-August as water temperatures increased, but then began a gradual decline as temperatures started to cool. Dissolved oxygen levels are generally higher in water at cooler temperatures. Dissolved oxygen levels fell below the CCME's Guideline for the Protection of Early Life Stages at some point during deployment at all stations. Dissolved oxygen levels were above the CCME's Guideline for the Protection of Other Life Stages for the duration of deployment at all stations.
- Turbidity events occurred at all stations and were generally related to precipitation, wind or tidal events. At above Grizzle and English point, turbidity values returned to background levels following each observed event. However, at below Metchin and below Muskrat Falls stations, instruments were periodically out of the water or buried, affecting the turbidity values.

References

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APPENDIX A

Water Parameter Description

Water Parameter Description

Dissolved Oxygen - The amount of Dissolved Oxygen (DO) (mg/l or % saturation) in the water is vital to aquatic organisms for their survival. 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 (USGS, 2017).

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 a measure of the relative amount of free hydrogen and hydroxyl ions in water. pH is an important indicator of chemically changing water, and determines the solubility and biological availability of nutrients and heavy metals in the water (USGS, 2017).

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 (Fondriest Environmental Inc, 2016).

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 aquatic processes. 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. In turn, water temperature has an influence on the metabolic rates and biological activity of aquatic organisms (Fondriest Environmental Inc, 2016b).

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 (Swenson 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 (Swenson and Baldwin 1965).

APPENDIX B

Grab Sample Results

Bureau Veritas Job #: C581602
Report Date: 2025/07/23

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
ASTJ17 CR ABOVE GR								
Sampling Date 2025/07/03 12:10								
Matrix W								
Sample # 2025-6308-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	7.4	1.0	mg/L	N/A	2025/07/14		9965917
Total Kjeldahl Nitrogen (TKN)	-	0.15	0.10	mg/L	N/A	2025/07/14		9966081
Nitrate (N)	-	ND	0.050	mg/L	N/A	2025/07/14		9965921
Total dissolved solids (calc., EC)	-	9.6	1.0	mg/L	N/A	2025/07/19		9966080
Inorganics								
Conductivity	-	17	1.0	uS/cm	N/A	2025/07/18	M2C	9971887
Chloride (Cl-)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Sulphate (SO4)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Total Alkalinity (Total as CaCO3)	-	6.5	2.0	mg/L	N/A	2025/07/18	M2C	9971888
Colour	-	40	5.0	TCU	N/A	2025/07/14	EMT	9967621
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/18	M2C	9971889
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/07/14	EMT	9967683
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/14	EMT	9967684
Nitrogen (Ammonia Nitrogen)	-	0.097	0.050	mg/L	N/A	2025/07/17	MCN	9971509
Total Nitrogen (N)	-	0.15	0.10	mg/L	N/A	2025/07/14	S6S	9968143
Dissolved Organic Carbon (C)	-	4.7	0.50	mg/L	N/A	2025/07/22	S6S	9974477
Total Organic Carbon (C)	-	5.1	0.50	mg/L	N/A	2025/07/21	S6S	9973563
pH	-	6.99		pH	N/A	2025/07/18	M2C	9971884
Total Phosphorus	-	0.011	0.004	mg/L	2025/07/11	2025/07/14	VKH	9968191
Total Suspended Solids	-	1.2	1.0	mg/L	2025/07/10	2025/07/14	RD4	9966835
Turbidity	-	0.81	0.10	NTU	N/A	2025/07/21	KMC	9973236
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/16	2025/07/16	JEP	9969774
Dup.Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/16	2025/07/16	JEP	9969774
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.095	0.0050	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Barium (Ba)	-	0.0072	0.0010	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Boron (B)	-	ND	0.050	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Calcium (Ca)	-	1.9	0.10	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Copper (Cu)	-	ND	0.00050	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Iron (Fe)	-	0.23	0.050	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Magnesium (Mg)	-	0.64	0.10	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Manganese (Mn)	-	0.012	0.0020	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/07/10	2025/07/11	MTZ	9967197

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 #: C581602
Report Date: 2025/07/23

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
ASTJ17 CR ABOVE GR								
Sampling Date 2025/07/03 12:10								
Matrix W								
Sample # 2025-6308-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Potassium (K)	-	0.26	0.10	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Sodium (Na)	-	0.59	0.10	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Strontium (Sr)	-	0.011	0.0020	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/10	2025/07/11	MTZ	9967197
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/10	2025/07/11	MTZ	9967197

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Bureau Veritas Job #: C581602
Report Date: 2025/07/23

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
ASTJ18 CR BELOW MR								
Sampling Date 2025/07/03 14:10								
Matrix W								
Sample # 2025-6309-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	9.9	1.0	mg/L	N/A	2025/07/11		9965917
Total Kjeldahl Nitrogen (TKN)	-	0.11	0.10	mg/L	N/A	2025/07/15		9966081
Nitrate (N)	-	ND	0.050	mg/L	N/A	2025/07/14		9965921
Total dissolved solids (calc., EC)	-	12	1.0	mg/L	N/A	2025/07/19		9966080
Inorganics								
Conductivity	-	21	1.0	uS/cm	N/A	2025/07/21	M2C	9971887
Chloride (Cl-)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Sulphate (SO4)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Total Alkalinity (Total as CaCO3)	-	6.3	2.0	mg/L	N/A	2025/07/18	M2C	9971888
Colour	-	25	5.0	TCU	N/A	2025/07/14	EMT	9967621
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/18	M2C	9971889
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/07/14	EMT	9967683
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/14	EMT	9967684
Nitrogen (Ammonia Nitrogen)	-	0.061	0.050	mg/L	N/A	2025/07/17	MCN	9971509
Total Nitrogen (N)	-	0.11	0.10	mg/L	N/A	2025/07/14	S6S	9968148
Dissolved Organic Carbon (C)	-	4.2	0.50	mg/L	N/A	2025/07/22	S6S	9973568
Total Organic Carbon (C)	-	4.2	0.50	mg/L	N/A	2025/07/21	S6S	9973563
pH	-	7.20		pH	N/A	2025/07/18	M2C	9971884
Total Phosphorus	-	0.008	0.004	mg/L	2025/07/11	2025/07/14	VKH	9968191
Total Suspended Solids	-	5.2	1.0	mg/L	2025/07/10	2025/07/14	RD4	9966835
Turbidity	-	0.77	0.10	NTU	N/A	2025/07/21	KMC	9973236
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/16	2025/07/16	JEP	9969774
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.099	0.0050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Barium (Ba)	-	0.0099	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Boron (B)	-	ND	0.050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Calcium (Ca)	-	2.6	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Copper (Cu)	-	0.00059	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Iron (Fe)	-	0.20	0.050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Magnesium (Mg)	-	0.84	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Manganese (Mn)	-	0.015	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704

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Bureau Veritas Job #: C581602
Report Date: 2025/07/23

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
ASTJ18 CR BELOW MR								
Sampling Date 2025/07/03 14:10								
Matrix W								
Sample # 2025-6309-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Potassium (K)	-	0.33	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Sodium (Na)	-	0.62	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Strontium (Sr)	-	0.012	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/10	2025/07/10	MOA	9966704

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Bureau Veritas Job #: C581602
Report Date: 2025/07/23

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
ASTJ19 CR BELOW MF								
Sampling Date 2025/07/04 09:35								
Matrix W								
Sample # 2025-6310-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	7.1	1.0	mg/L	N/A	2025/07/11		9965917
Total Kjeldahl Nitrogen (TKN)	-	0.18	0.10	mg/L	N/A	2025/07/14		9966081
Nitrate (N)	-	ND	0.050	mg/L	N/A	2025/07/14		9965921
Total dissolved solids (calc., EC)	-	9.9	1.0	mg/L	N/A	2025/07/19		9966080
Inorganics								
Conductivity	-	18	1.0	uS/cm	N/A	2025/07/18	M2C	9971887
Chloride (Cl-)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Sulphate (SO4)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Total Alkalinity (Total as CaCO3)	-	8.0	2.0	mg/L	N/A	2025/07/18	M2C	9971888
Colour	-	50	5.0	TCU	N/A	2025/07/14	EMT	9967621
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/18	M2C	9971889
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/07/14	EMT	9967683
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/14	EMT	9967684
Nitrogen (Ammonia Nitrogen)	-	0.067	0.050	mg/L	N/A	2025/07/17	MCN	9971509
Total Nitrogen (N)	-	0.18	0.10	mg/L	N/A	2025/07/14	S6S	9968143
Dissolved Organic Carbon (C)	-	5.5	0.50	mg/L	N/A	2025/07/22	S6S	9974477
Total Organic Carbon (C)	-	5.7	0.50	mg/L	N/A	2025/07/21	S6S	9973563
pH	-	7.59		pH	N/A	2025/07/18	M2C	9971884
Total Phosphorus	-	0.011	0.004	mg/L	2025/07/11	2025/07/14	VKH	9968191
Total Suspended Solids	-	3.2	2.0	mg/L	2025/07/10	2025/07/14	RD4	9966835
Turbidity	-	3.3	0.10	NTU	N/A	2025/07/21	KMC	9973236
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/16	2025/07/16	JEP	9969774
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.16	0.0050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Barium (Ba)	-	0.0075	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Boron (B)	-	ND	0.050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Calcium (Ca)	-	1.8	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Copper (Cu)	-	0.00068	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Iron (Fe)	-	0.23	0.050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Magnesium (Mg)	-	0.62	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Manganese (Mn)	-	0.0080	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704

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Bureau Veritas Job #: C581602
Report Date: 2025/07/23

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
ASTJ19 CR BELOW MF								
Sampling Date 2025/07/04 09:35								
Matrix W								
Sample # 2025-6310-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Potassium (K)	-	0.28	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Sodium (Na)	-	0.62	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Strontium (Sr)	-	0.010	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/10	2025/07/10	MOA	9966704

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Report Date: 2025/07/23

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
ASTJ20 CR@ EP								
Sampling Date 2025/07/04 10:25								
Matrix W								
Sample # 2025-6311-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	8.1	1.0	mg/L	N/A	2025/07/11		9965917
Total Kjeldahl Nitrogen (TKN)	-	0.13	0.10	mg/L	N/A	2025/07/14		9966081
Nitrate (N)	-	ND	0.050	mg/L	N/A	2025/07/14		9965921
Total dissolved solids (calc., EC)	-	15	1.0	mg/L	N/A	2025/07/19		9966080
Inorganics								
Conductivity	-	27	1.0	uS/cm	N/A	2025/07/18	M2C	9971887
Chloride (Cl-)	-	3.1	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Sulphate (SO4)	-	ND	1.0	mg/L	N/A	2025/07/10	VP2	9967097
Total Alkalinity (Total as CaCO3)	-	7.1	2.0	mg/L	N/A	2025/07/18	M2C	9971888
Colour	-	59	10	TCU	N/A	2025/07/14	EMT	9967621
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/07/18	M2C	9971889
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/07/14	EMT	9967683
Nitrite (N)	-	0.018	0.010	mg/L	N/A	2025/07/14	EMT	9967684
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/07/17	MCN	9971509
Dup.Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/07/17	MCN	9971509
Total Nitrogen (N)	-	0.13	0.10	mg/L	N/A	2025/07/14	S6S	9968143
Dissolved Organic Carbon (C)	-	6.3	0.50	mg/L	N/A	2025/07/22	S6S	9974477
Total Organic Carbon (C)	-	6.7	0.50	mg/L	N/A	2025/07/21	S6S	9973563
pH	-	6.99		pH	N/A	2025/07/18	M2C	9971884
Total Phosphorus	-	0.019	0.004	mg/L	2025/07/11	2025/07/14	VKH	9968191
Total Suspended Solids	-	4.0	1.0	mg/L	2025/07/10	2025/07/14	RD4	9966835
Turbidity	-	11	0.10	NTU	N/A	2025/07/21	KMC	9973236
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/16	2025/07/16	JEP	9969774
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.24	0.0050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Barium (Ba)	-	0.0088	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Boron (B)	-	ND	0.050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Calcium (Ca)	-	1.8	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Copper (Cu)	-	0.00099	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Iron (Fe)	-	0.41	0.050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Magnesium (Mg)	-	0.85	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Manganese (Mn)	-	0.015	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704

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Bureau Veritas Job #: C581602
Report Date: 2025/07/23

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
ASTJ20 CR@ EP								
Sampling Date 2025/07/04 10:25								
Matrix W								
Sample # 2025-6311-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Potassium (K)	-	0.40	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Sodium (Na)	-	2.6	0.10	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Strontium (Sr)	-	0.014	0.0020	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/10	2025/07/10	MOA	9966704
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/10	2025/07/10	MOA	9966704

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