Real-Time Water Quality Annual Report

Iron Ore Company of Canada
Labrador West Network

June 7 to
October 19, 2023

Newfoundland Labrador

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

Contents

Acknowledgements

The Real-Time Water Quality Monitoring Program (RTWQ) at Wabush Lake is fully funded by the Iron Ore Company of Canada (IOC). The program is made successful by a joint partnership between IOC, Environment and Climate Change Canada (ECCC), and the Newfoundland & Labrador Department of Environment & Climate Change (ECC).

Various individuals from each sector have been diligently involved to ensure this program is a successful operation including: various WRMD staff (ECC), Jody Wentzell (IOC) and various WSC staff (ECCC). In addition to these managers, there have been a team of individuals who work together to ensure the day to day operations of these stations are providing quality data. Maria Murphy (ECC) was responsible for these water quality stations during 2023. Responsibilities included deployment and removal of instruments, maintenance and calibration of the instruments and preparation of monthly deployment reports. Brenda Congram (ECC) is acknowledged for her assistance during deployment and removal procedures in 2023. Leona Hyde and Leah Burry are acknowledged for their role in performing Performance Testing and Evaluation (PTE) and in-house servicing of the instruments during winter 2023-2024.

ECCC staff are essential in the operation of the data logging/communication aspect of the network. Staff of the Meteorological Service of Canada Division – Water Survey of Canada, visit the stations regularly to ensure that the data logging and data transmission equipment is working properly. ECCC is also the lead on dealing with stage and flow issues at most stations.

Introduction

- The real-time water quality-monitoring network on Wabush Lake was established during the summer of 2007 in a partnership between what was then the Newfoundland & Labrador Department of Environment and Conservation (DOEC) and the Iron Ore Company of Canada (IOC).
- This network consisted of two water quality/quantity stations, one located downstream of the IOC tailings disposal area and one located upstream of the same area.
- The official names of these two stations are *Wabush Lake at Dolomite Road* and *Wabush Lake at Lake Outlet*, hereafter referred to as the Dolomite Road station and the Julienne Narrows station, respectively.
- On June 8th, 2016, an additional station was commissioned under this agreement. This station is located at *Dumbell Stream above Dumbell Lake*, hereafter referred to as the Dumbell Stream station.
- On June 12th, 2017 a new station was commissioned under this agreement. This station is located at *Pumphouse Stream above Drum Lake*, hereafter referred to as the Pumphouse Stream station.
- On November 19, 2023 a new station was commissioned under this agreement. This station is located at *Unnamed Tributary above Fraggle Rock Lake*, hereafter referred to as the Fraggle Rock station.
- These stations measure water quality parameters including water temperature, pH, specific conductivity, dissolved oxygen and turbidity, as well as water quantity parameters, stage and flow. Measurements are recorded on an hourly basis during the deployment period.
- There is a large portion of data missing from the last deployment at Dolomite Road. The station stopped transmitting during this period. Upon retrieval of the instrument, an attempt was made to download the internal data, but it was discovered that there was an electrical malfunction with the CPU board and only a portion of the data could be recovered.
- Due to the late commissioning of the station, Fraggle Rock, no water quality data is available for this report. A water quality monitoring instrument will be deployed in 2024.

Figure 1: RTWQ Monitoring Stations in Labrador West

- Initial deployment in 2023 was June 7th at Dolomite Road, Julienne Narrows and Dumbell Stream. Due to scheduled blasts, Pumphouse Stream was not accessible and was not deployed until July 13th. Instruments were removed for the winter season by October 18th, 2023, at Dumbell Stream, and October 19th at Dolomite Road, Julienne Narrows and Pumphouse Stream. The following report depicts and discusses water quality events throughout this period.
- The purpose of this network is to monitor, process, and distribute water quality/quantity data to IOC, ECC and ECCC, for assessment and management of water resources, as well as to provide an early warning for any potential or emerging water issues. Any necessary mitigative measures can then be implemented in a timely manner.
- ECC provides IOC with monthly and annual deployment reports.
- It is important to note that unless otherwise stated, small gaps in data are due to the removal of the instrument for maintenance and calibration.

Maintenance and Calibration

- To ensure accurate data collection, maintenance and calibration of the water quality instrumentation are performed preferably monthly.
- Maintenance includes a thorough cleaning of the instrument and replacement of any small sensor parts that are damaged or unsuitable for reuse. Once the instrument is cleaned, ECC staff carefully calibrate each sensor attachment for pH, specific conductivity, dissolved oxygen and turbidity.
- Installation and removal dates for the 2023 season are summarized in the table below.

Table 1: Water quality instrument deployment start and end dates for 2023

Installation	***Removal***	***Deployment duration (days)***
June 7	July 12-13	35-36
July 12-13	September 5-6	55
September 5-6	October 18-19	43

Quality Assurance and Quality Control

- As part of the Quality Assurance and Quality Control protocol (QA/QC), an assessment of the reliability of data recorded by an instrument is made at the beginning and end of the deployment period. The procedure is based on the approach used by the United States Geological Survey.
- At deployment and removal, a QA/QC Sonde is temporarily deployed adjacent to the Field Sonde. Values for temperature, pH, conductivity, dissolved oxygen and turbidity are compared between the

two instruments**.** Based on the degree of difference between parameters recorded by the Field Sonde and QA/QC Sonde at deployment and at removal, a qualitative statement is made on the data quality (Table 2).

Table 2: 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 > 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 sonde is the most important. All other parameters can be broken down into three groups: temperature dependant, temperature compensated and temperature independent. As the temperature sensor is not isolated from the rest of the sonde, the entire sonde 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 IOC water quality stations for the 2023 deployment season are summarized in Table 3.
- For additional information and explanations of ranking, please refer to the monthly deployment reports.

Table 3: Comparison rankings for IOC RTWQ stations June 7 to October 18-19, 2023

Station	*Date*		*Temperature*	*pH*	*Specific Conductivity*	*Dissolved Oxygen*	*Turbidity*
Dolomite Road	07-Jun-23	Deployment	Good	Good	Excellent	Good	Good
	13-Jul-23	Removal	Marginal	Excellent	Good	Excellent	Excellent
	13-Jul-23	Deployment	Excellent	Excellent	Excellent	Excellent	Excellent
	6-Sep-23	Removal	Excellent	Excellent	Excellent	Excellent	Good
	6-Sep-23	Deployment	Excellent	Excellent	Excellent	Excellent	Excellent
	19-Oct-23	Removal	N/A	N/A	N/A	N/A	N/A
Julienne Narrows	07-Jun-23	Deployment	Excellent	Good	Excellent	Good	Marginal
	13-Jul-23	Removal	Good	Excellent	Good	Excellent	Good
	13-Jul-23	Deployment	Excellent	Excellent	Good	Excellent	Excellent
	6-Sep-23	Removal	Excellent	Good	Excellent	Excellent	Good
	6-Sep-23	Deployment	Good	Good	Good	Excellent	Fair
	19-Oct-23	Removal	Good	Excellent	Excellent	Excellent	Excellent
Dumbell Stream	07-Jun-23	Deployment	Excellent	Excellent	Excellent	Excellent	Excellent
	12-Jul-23	Removal	Excellent	Excellent	Good	Excellent	Excellent
	12-Jul-23	Deployment	Excellent	Excellent	Good	Excellent	Excellent
	5-Sep-23	Removal	Excellent	Good	Excellent	Excellent	Excellent
	5-Sep-23	Deployment	Excellent	Excellent	Good	Excellent	Excellent
	18-Oct-23	Removal	Excellent	Excellent	Good	Marginal	Excellent
Pumphouse Stream	13-Jul-23	Deployment	Excellent	Good	Excellent	Excellent	Excellent
	6-Sep-23	Removal	Excellent	Good	Excellent	Excellent	Excellent
	6-Sep-23	Deployment	Good	Good	Excellent	Good	Excellent
	19-Oct-23	Removal	Good	Excellent	Poor	Excellent	Good

Data Interpretation

- The following graphs and discussion illustrate water quality-related events from June 7th to October 19th, 2023 at the four IOC RTWQ stations.
- With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion below adhere to this stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.
- Weather data is collected from a weather station near Moosehead Lake.

Wabush Lake Network

- Water temperature ranged from 5.70 to 22.56ºC at Julienne Narrows during the 2023 deployment season. The median value was 13.60 ºC (Figure 2).
- Water temperature ranged from 8.33 to 25.71ºC at Dolomite Road during the 2023 deployment season. The median value was 16.70 ºC (Figure 2).
- Water temperature steadily increases until the middle of July and correlates to air temperature. It then decreases as water temperature cools into the fall. Water temperature is typically higher at Dolomite Road then Julienne Narrows.

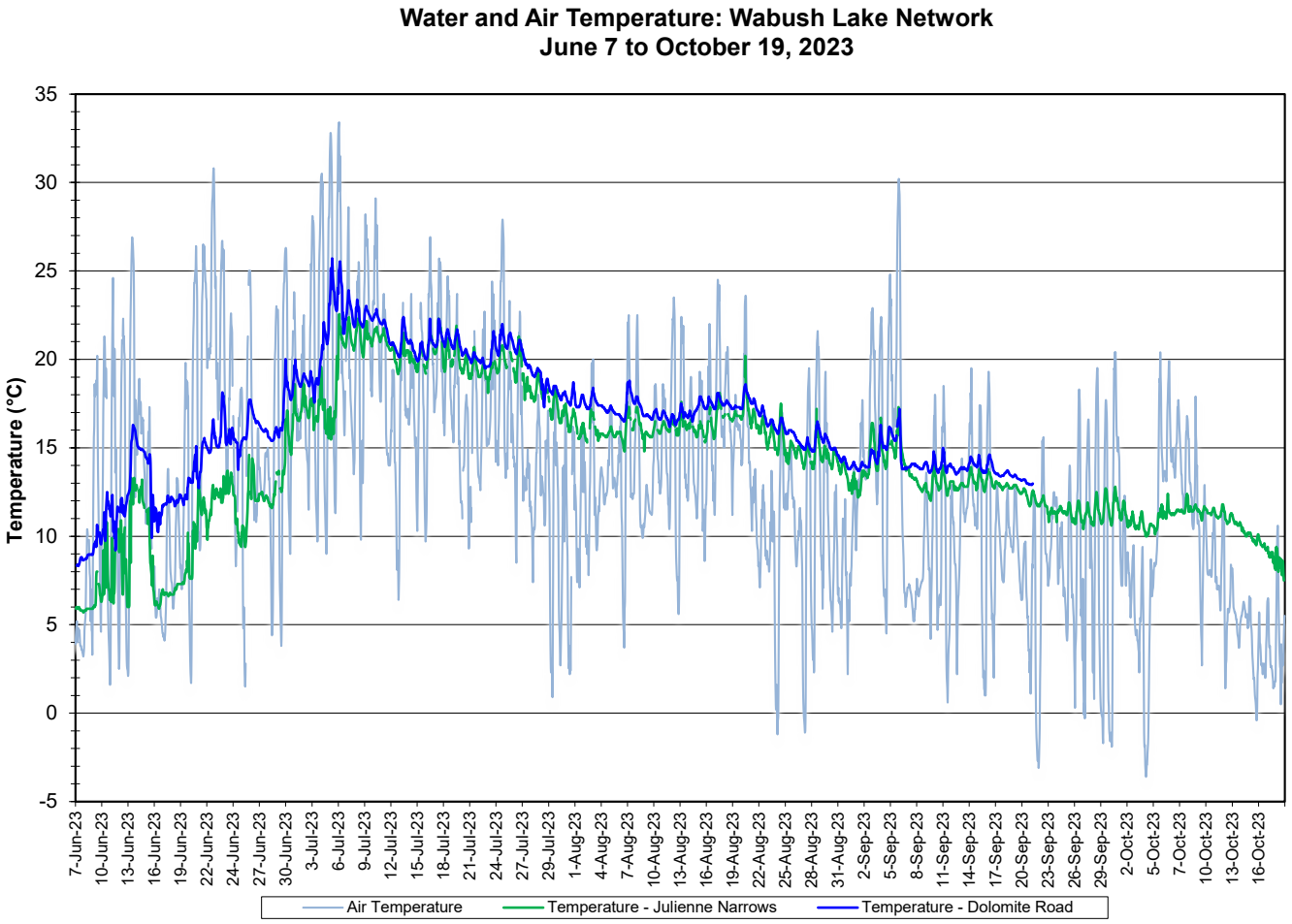

Figure 2: Water and Air Temperature – Wabush Lake Network

- pH ranged from 7.64 to 8.55 pH units at Julienne Narrows and from 7.17 to 8.51 pH units at Dolomite Road (Figure 3) during the 2023 deployment season. The median pH was 8.01 and 7.64 units, respectively.
- pH fluctuates daily at both stations. Peaks are observed during late afternoon and early evening. Some decreases in pH are noted when there are increases in stage.
- pH increased at Dolomite Road during the first month of the deployment season.
- All the values during the deployment season are within the CCME Water Quality Guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units).

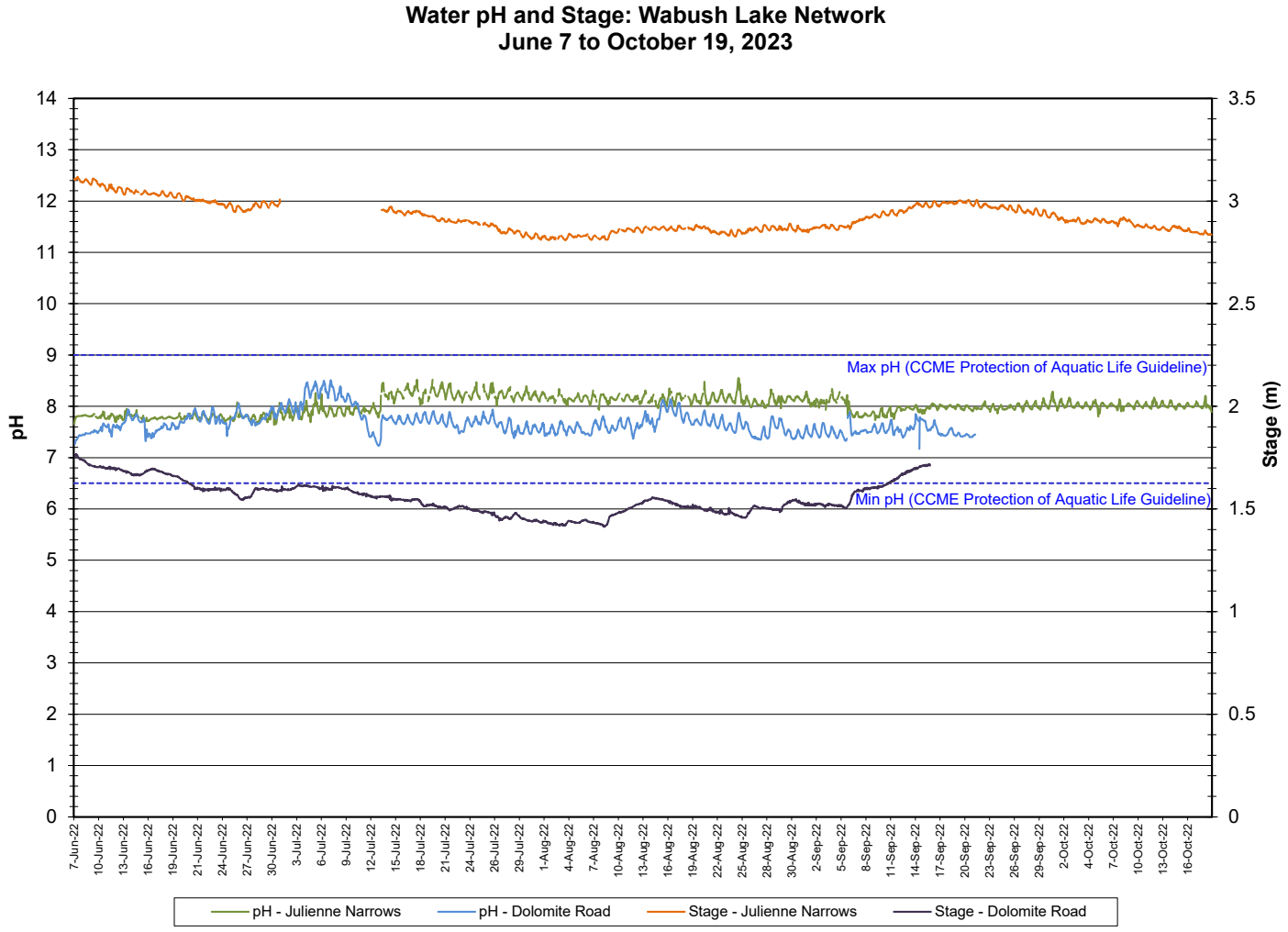

Figure 3: Water pH and Stage – Wabush Lake Network

- Throughout the 2023 deployment season, specific conductivity ranged from 72.1 to 123.2 µs/cm at Julienne Narrows and from 46.0 to 79.1 µs/cm at Dolomite Road (Figure 4).
- Daily fluctuations are evident at the Julienne Narrows station. This can be attributed to varying contributions of iron ore tailings deposited into Wabush Lake upstream of Julienne Narrows and downstream of Dolomite Road. This can also explain the difference in specific conductivity levels between the two stations.
- At Dolomite Road, conductivity increases gradually during the beginning of the deployment season and decreases slightly beginning in September, correlating with a rise in stage.
- With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion below adhere to this stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

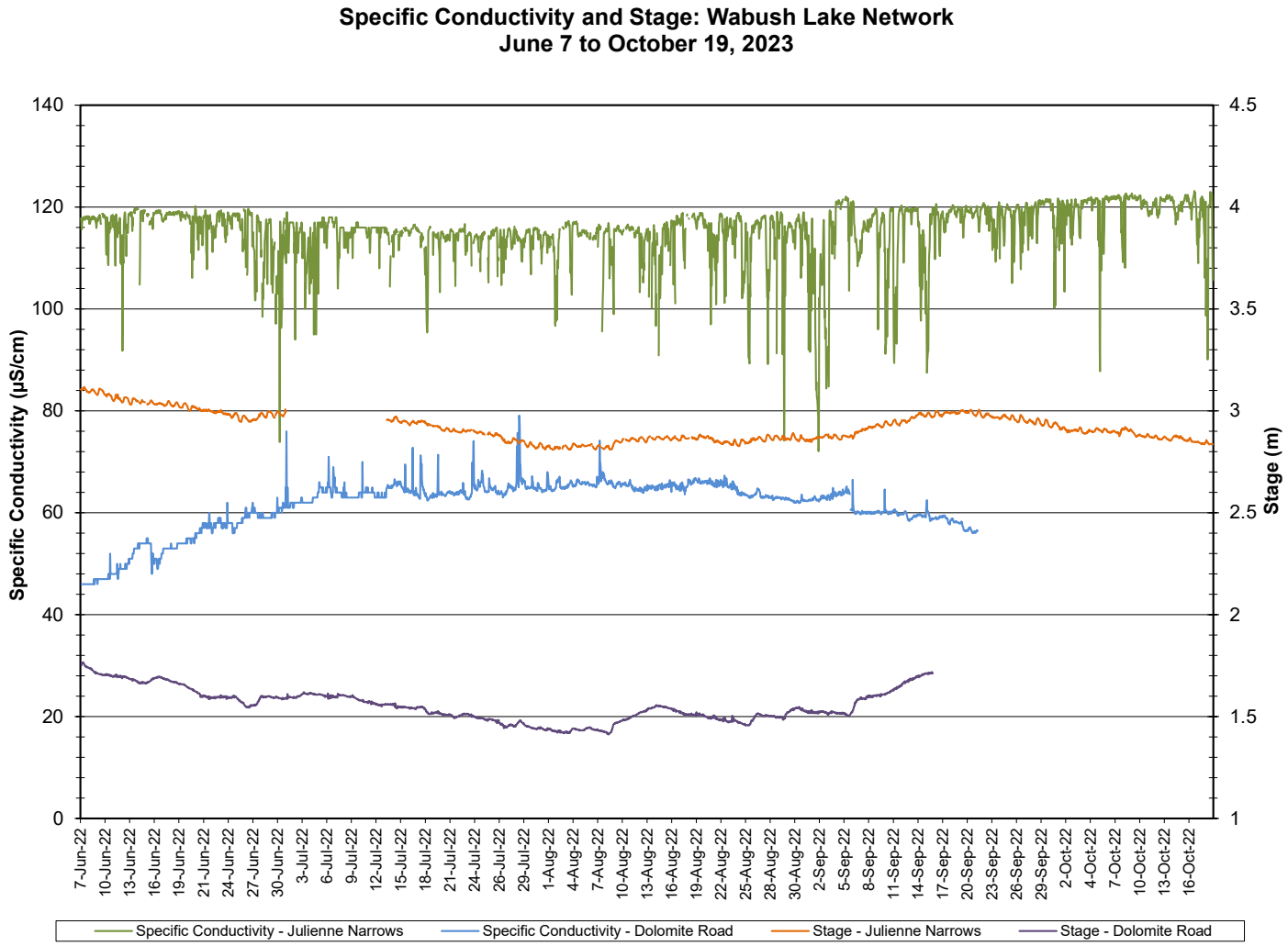

Figure 4: Specific Conductivity and Stage – Wabush Lake Network

- Dissolved oxygen ranged from 86.7 to 117.1% saturation and 8.11 to 12.16 mg/l with a median value of 10.03 mg/L at Julienne Narrows (Figure 5).
- Dissolved oxygen ranged from 85.5 to 115.5% saturation and 8.13 to 11.05 mg/l with a median value of 9.34 mg/L at Dolomite Road (Figure 5).
- Dissolved oxygen fluctuated daily at both stations with decreases observed at night.
- Dissolved oxygen decreases during the first month of the deployment season, when water temperatures are at their warmest. It then increases, as water temperature decreases into the fall.
- All values were above the CCME Water Quality Guideline for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages of 6.5 mg/l. The majority of values recorded were above the minimum CCME Water Quality Guideline for the Protection of Aquatic Life for Cold Water Biota at Early Life Stages of 9.5 mg/l. The guidelines are indicated in blue on Figure 5.

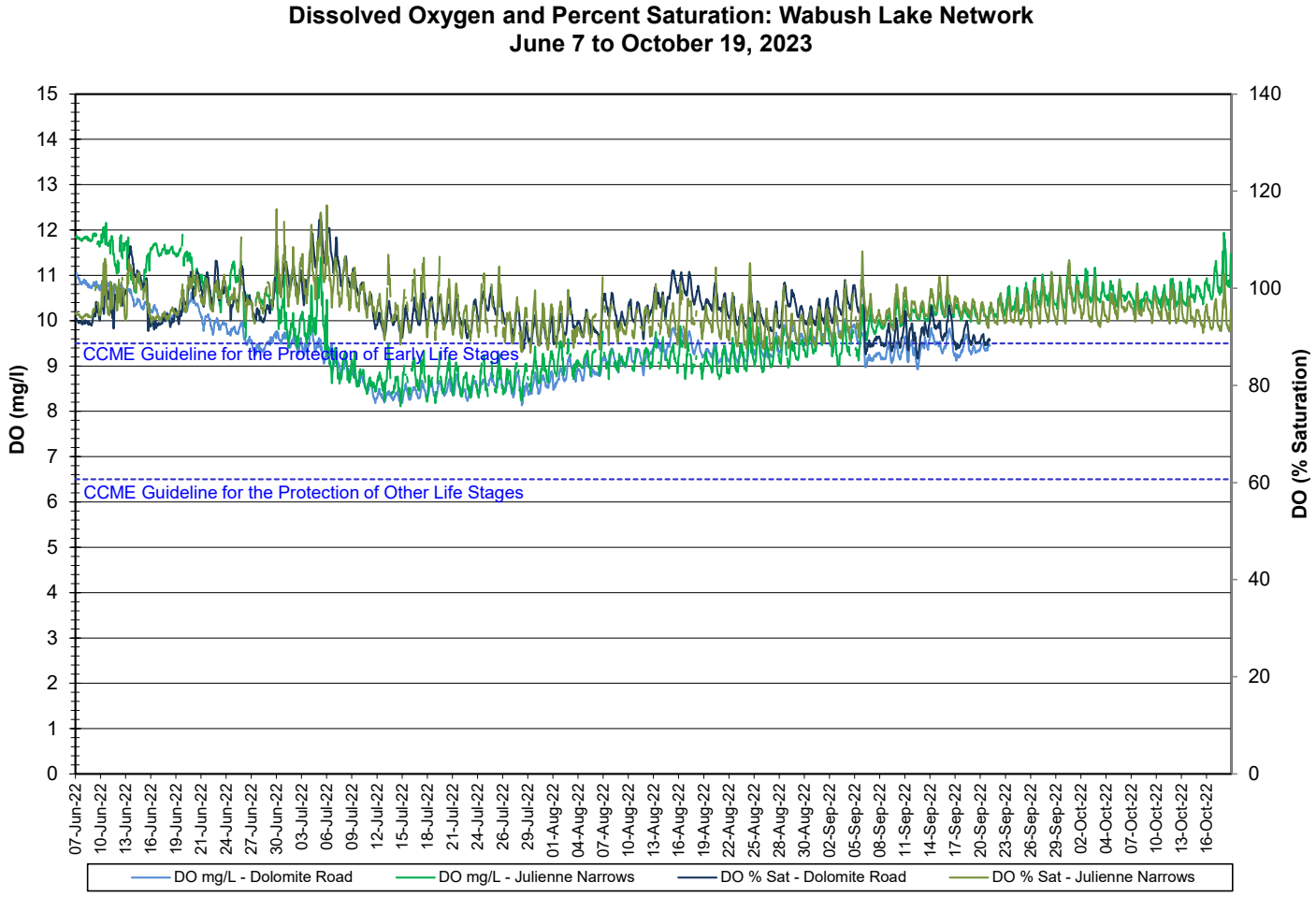

Figure 5: Dissolved Oxygen and Percent Saturation – Wabush Lake Network

- At the Julienne Narrows station, turbidity values ranged from 0.0 to 99.9 NTU with a median value of 0.0 NTU (Figure 6) indicating very low background turbidity.
- Turbidity decreases during the first few weeks of the deployment season. During the remainder of the season, there are occasional spikes in turbidity.

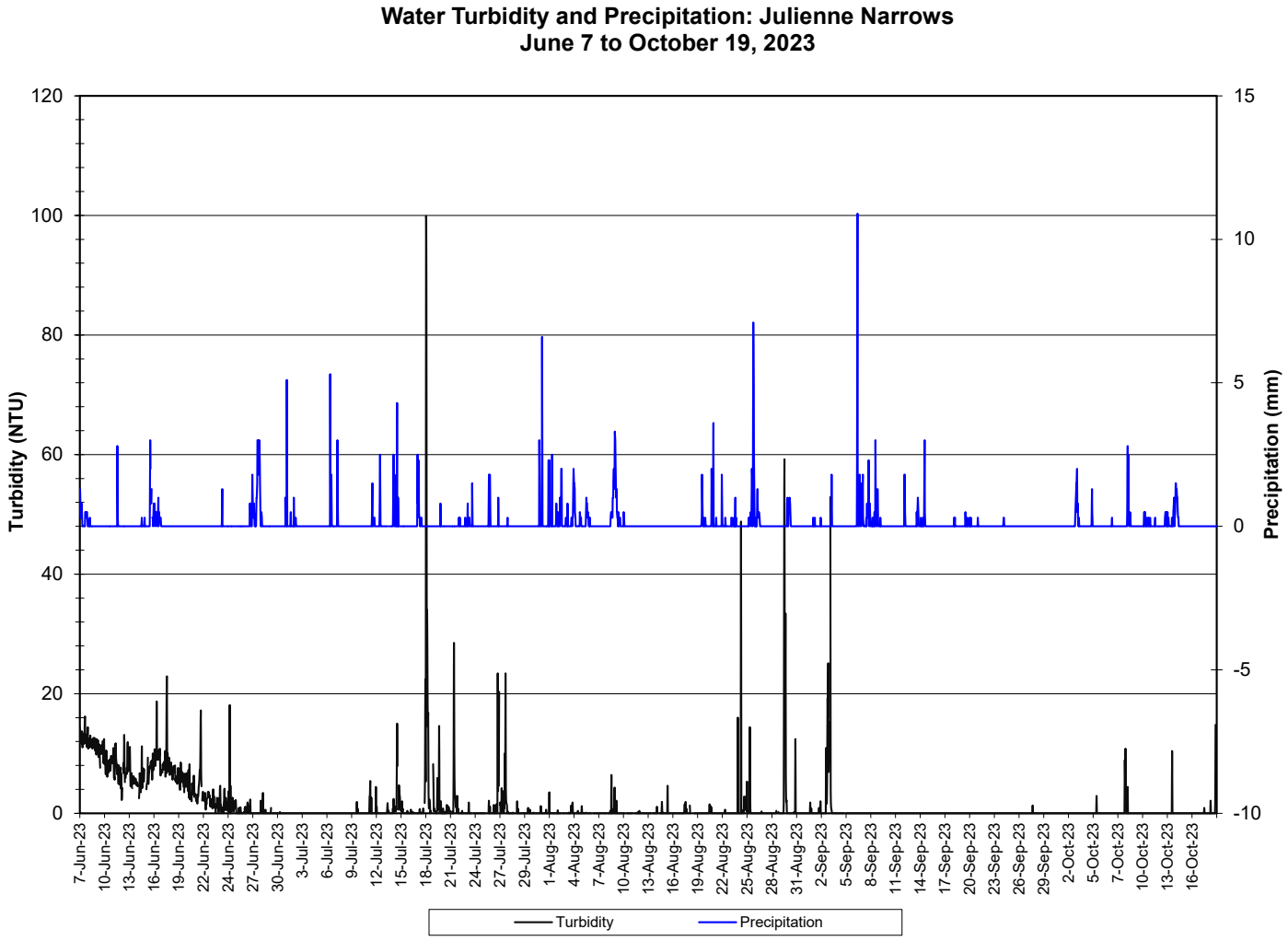

Figure 6: Water Turbidity and Precipitation: Julienne Narrows

- At the Dolomite Road station, turbidity values ranged from 0.0 to 29.8 NTU, with a median value of 0.0 NTU (Figure 7).
- Turbidity increases in August. There is a portion of data removed beyond this date due to biofouling. Data from September 21 to October 19 was not available due to instrument failure.

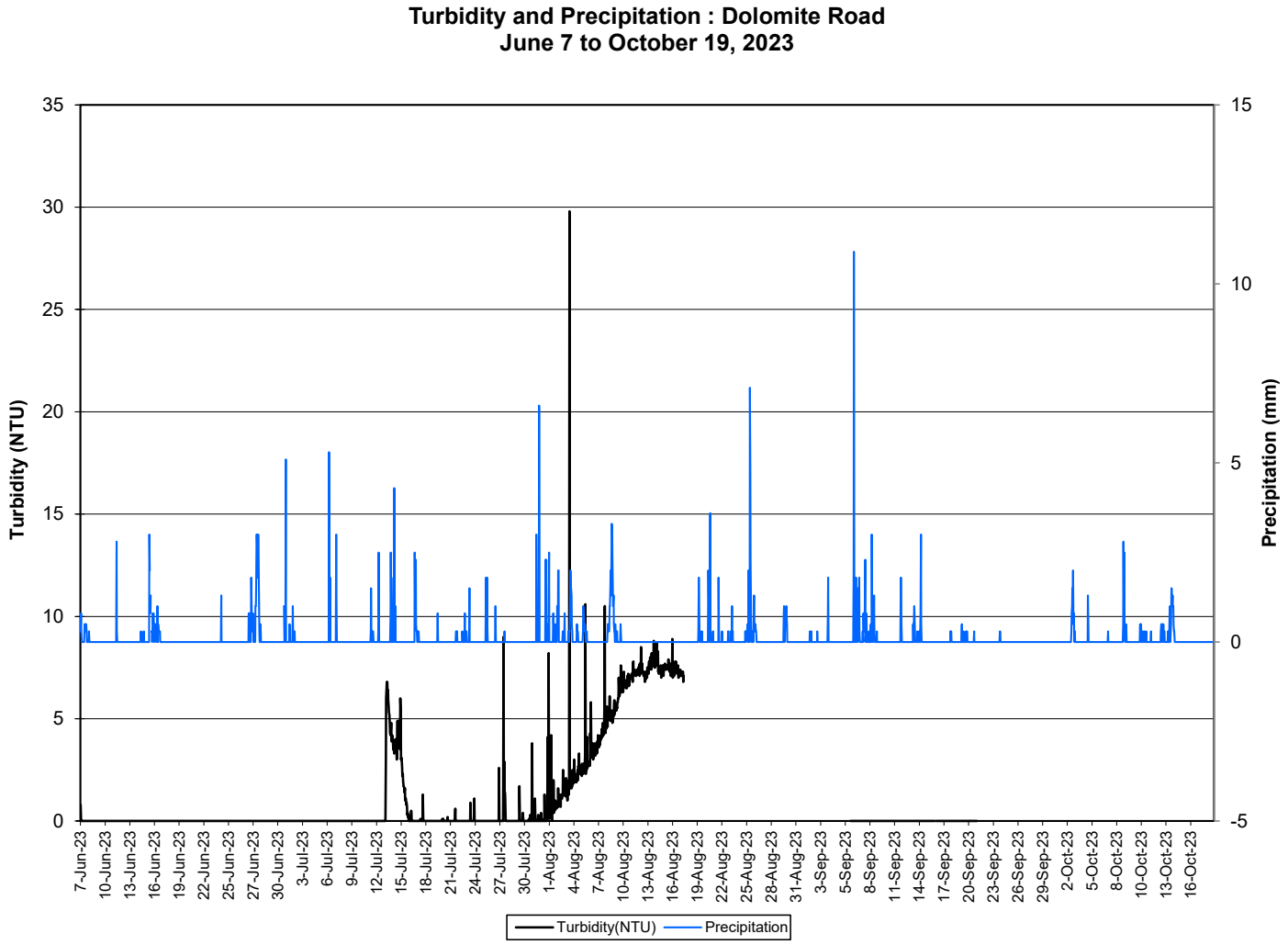

Figure 7: Turbidity and Precipitation: Dolomite Road

- Stage and precipitation are graphed below to show the relationship between rainfall and water level at Julienne Narrows and Dolomite Road (Figure 8).
- At Julienne Narrows, stage decreases until the first week of September, it then increases after a precipitation event, before slowly decreasing until the end of the deployment season.
- At Dolomite Road, stage decrease until the first week of August, with increases noted after precipitation events.
- With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion below adhere to this stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

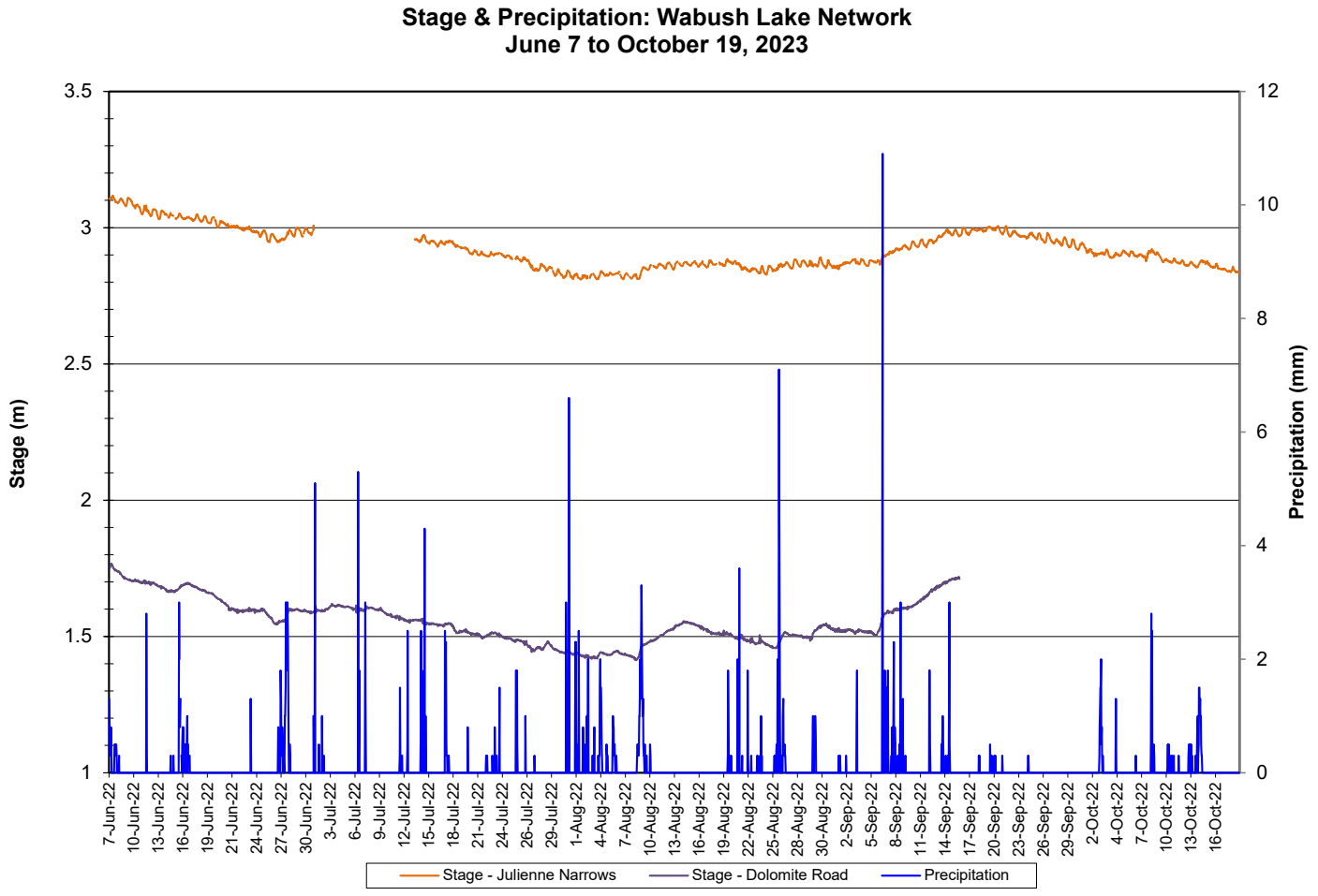

Figure 8: Stage and Precipitation: Wabush Lake Network

Dumbell Stream

- Water temperature ranged from 2.73 to 9.15ºC at Dumbell Stream during the 2023 deployment season. The median value was 4.88 ºC (Figure 9).
- Water temperature at this station remains within a small range throughout the season and is influenced less than the other stations by air temperature values. It decreased slightly during the last few weeks of the season as Fall approached.

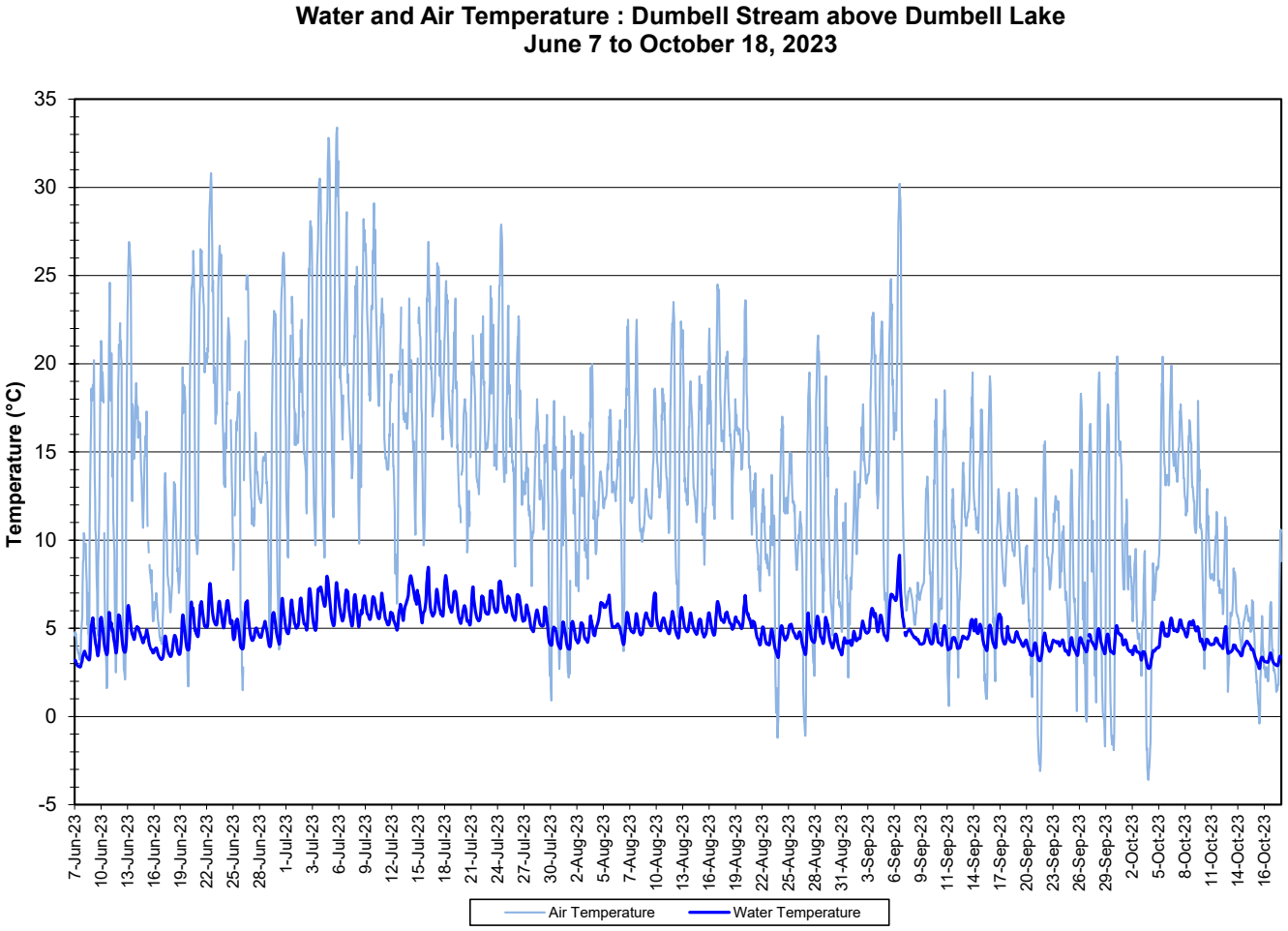

Figure 9: Water and Air Temperature – Dumbell Stream above Dumbell Lake

- pH ranges from 7.30 to 7.82 pH units at Dumbell Stream (Figure 10). The median pH is 7.61 units.
- pH fluctuates daily. Peaks are observed during late afternoon and into early evening.
- All values during the deployment are within the CCME Water Quality Guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units).
- The pH sensor drifts in the first and second deployment period, thus some data was removed.

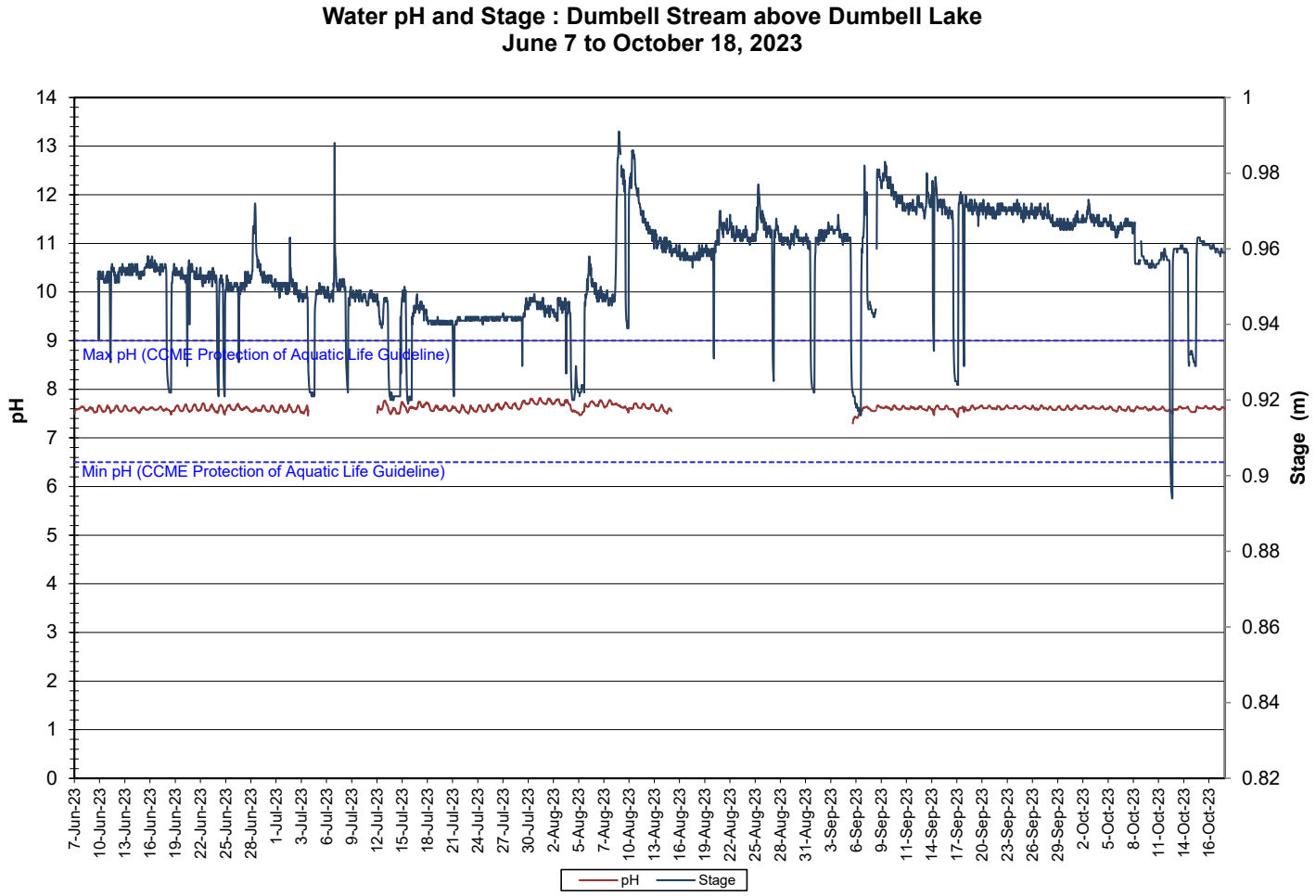

Figure 10: Water pH and Stage – Dumbell Stream above Dumbell Lake

- Throughout the 2023 deployment season, specific conductivity ranged from 134.2 to 412.0 µs/cm at Dumbell Stream (Figure 11).
- Specific conductivity increased in July for an extended period. Other increases are for short durations of time.
- With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion below adhere to this stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

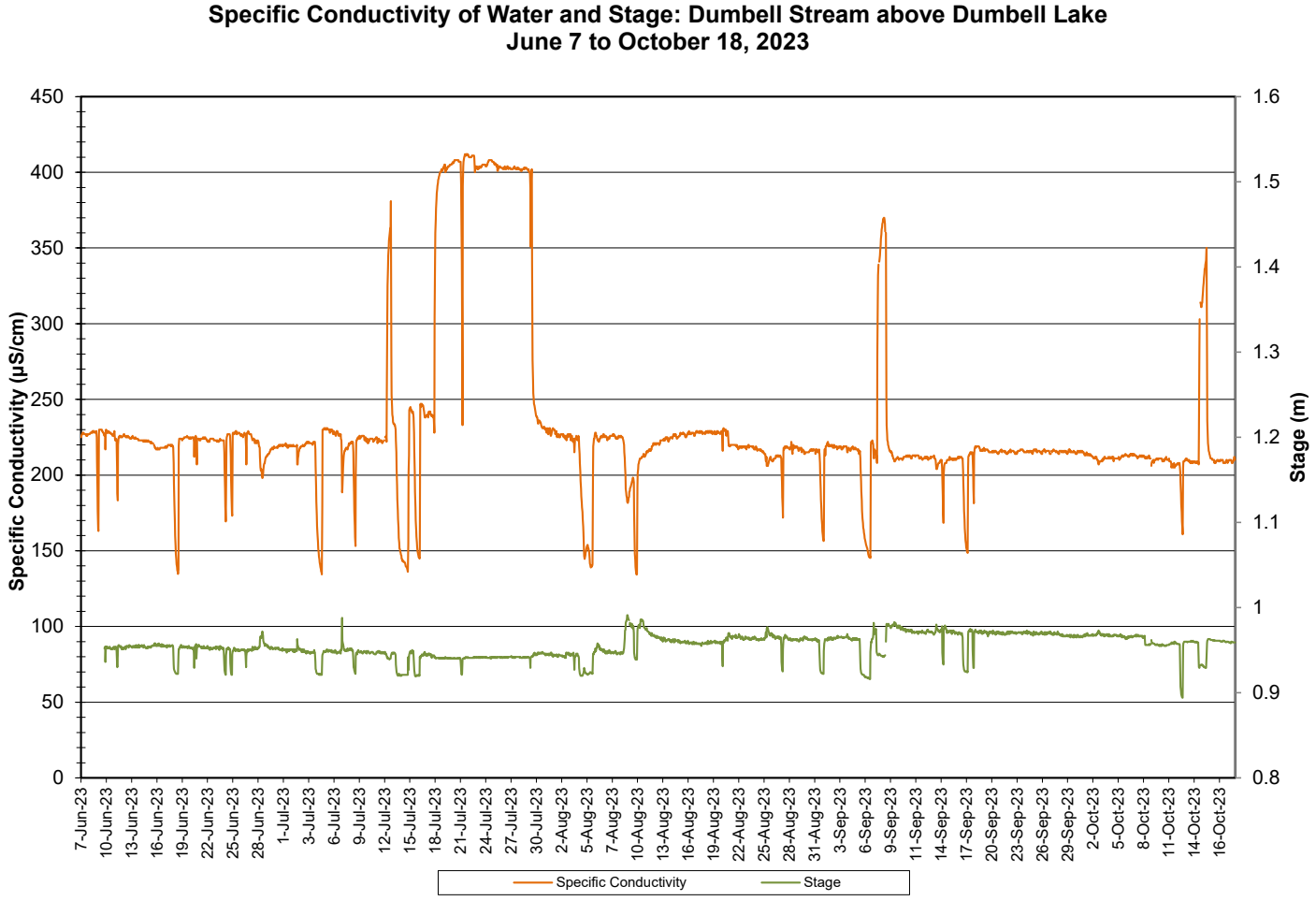

Figure 11: Specific Conductivity and Stage – Dumbell Stream above Dumbell Lake

- Dissolved oxygen ranged from 87.7 to 93.9% saturation and from 10.34 to 12.56 mg/l, with a median value of 11.73 mg/l (Figure 12).
- Dissolved oxygen fluctuated daily with decreases observed at night. Dissolved oxygen decreased slightly at the beginning of the deployment season when water temperature was increasing in the summer. It then increased slightly over the course of the remainder of the season, while water temperature gradually decreased.
- All values were above the CCME Water Quality Guidelines for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages (6.5 mg/l) and Early Life Stages (9.5 mg/l). The guidelines are indicated in blue on Figure 12.

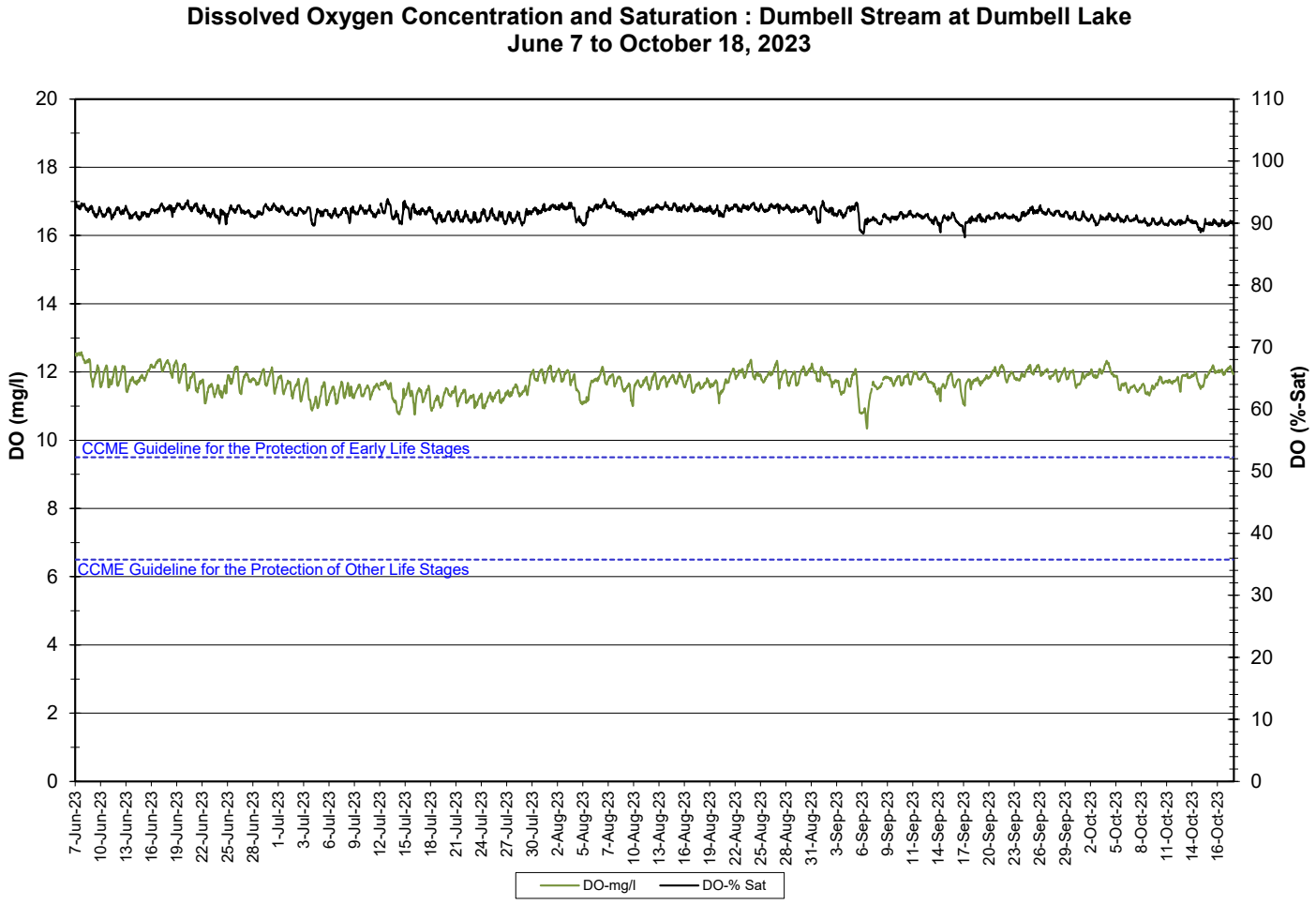

Figure 12: Dissolved Oxygen and Percent Saturation – Dumbell Stream above Dumbell Lake

- Turbidity values range from 0.0 to 774.0 NTU, with a median value of 0.0 NTU (Figure 13a) indicating low background turbidity.
- Most turbidity readings during this deployment season are less than 15.0 NTU. Figure 13b is included to give a better view of the background turbidity levels.

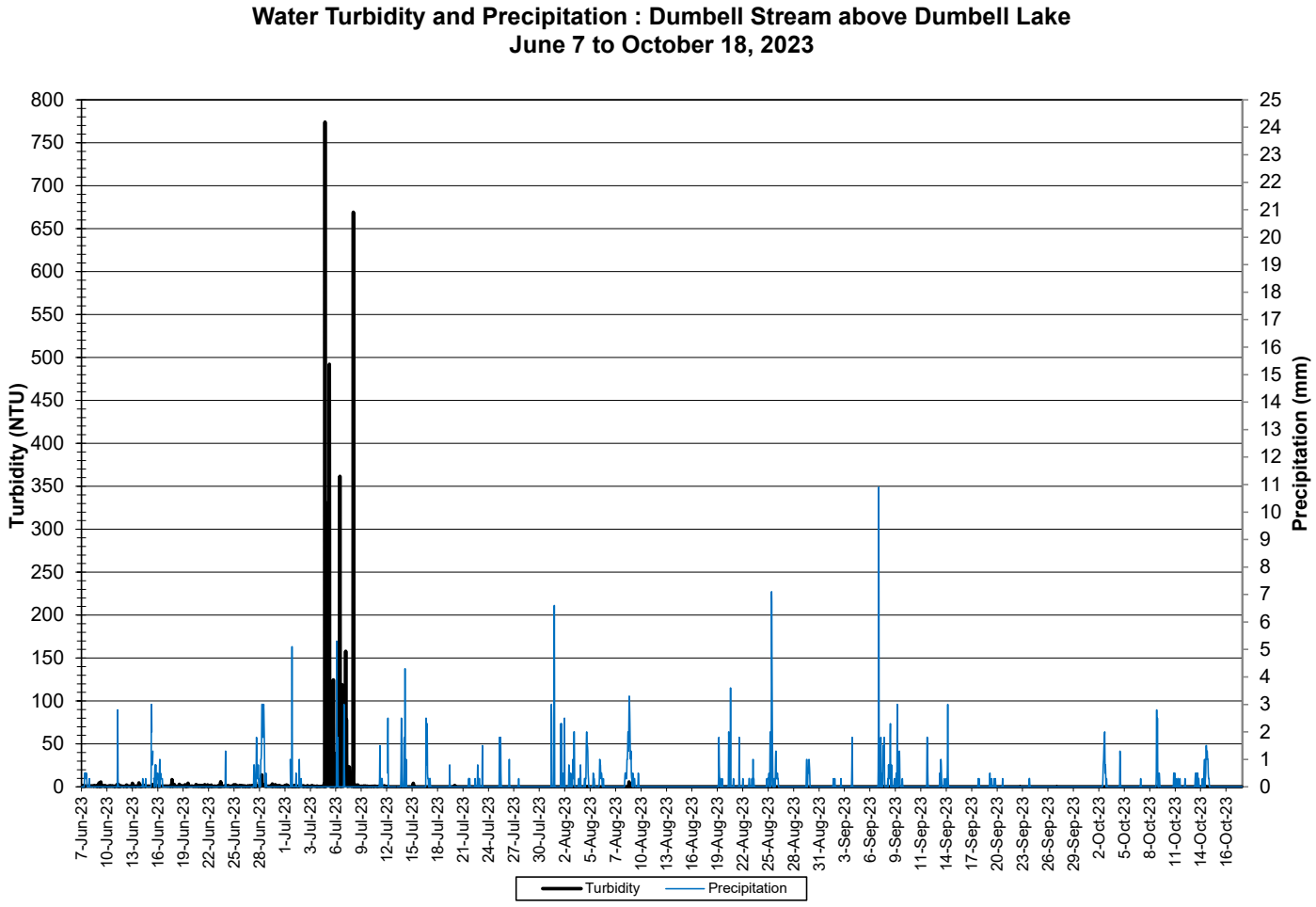

Figure 13a: Turbidity and Precipitation – Dumbell Stream above Dumbell Lake

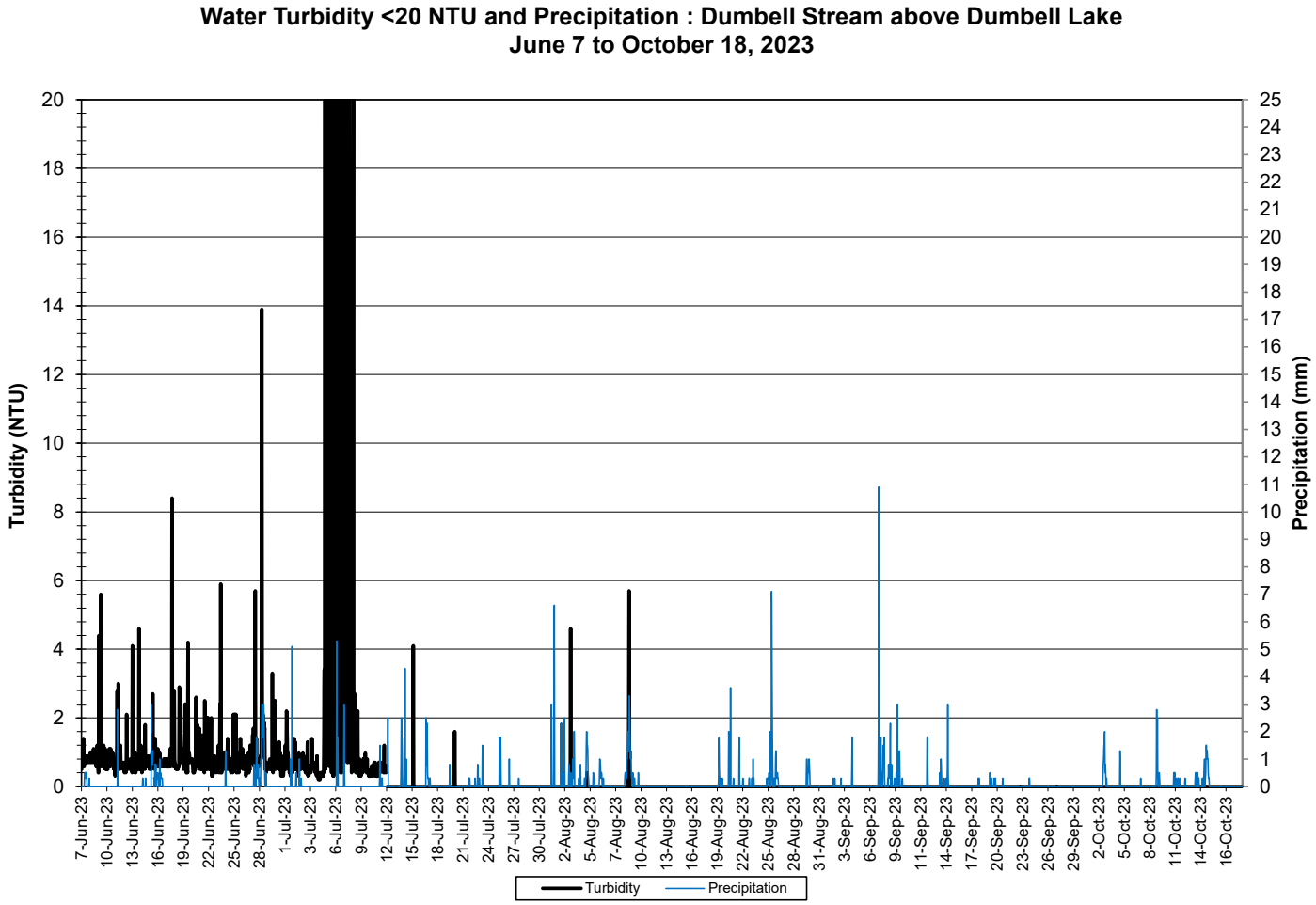

Figure 13b: Turbidity <20 NTU and Precipitation – Dumbell Stream above Dumbell Lake

- Stage and precipitation are graphed below to show the relationship between rainfall and water level at Dumbell Stream (Figure 14). Precipitation has a direct effect on stage at this location.
- With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion below adhere to this stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

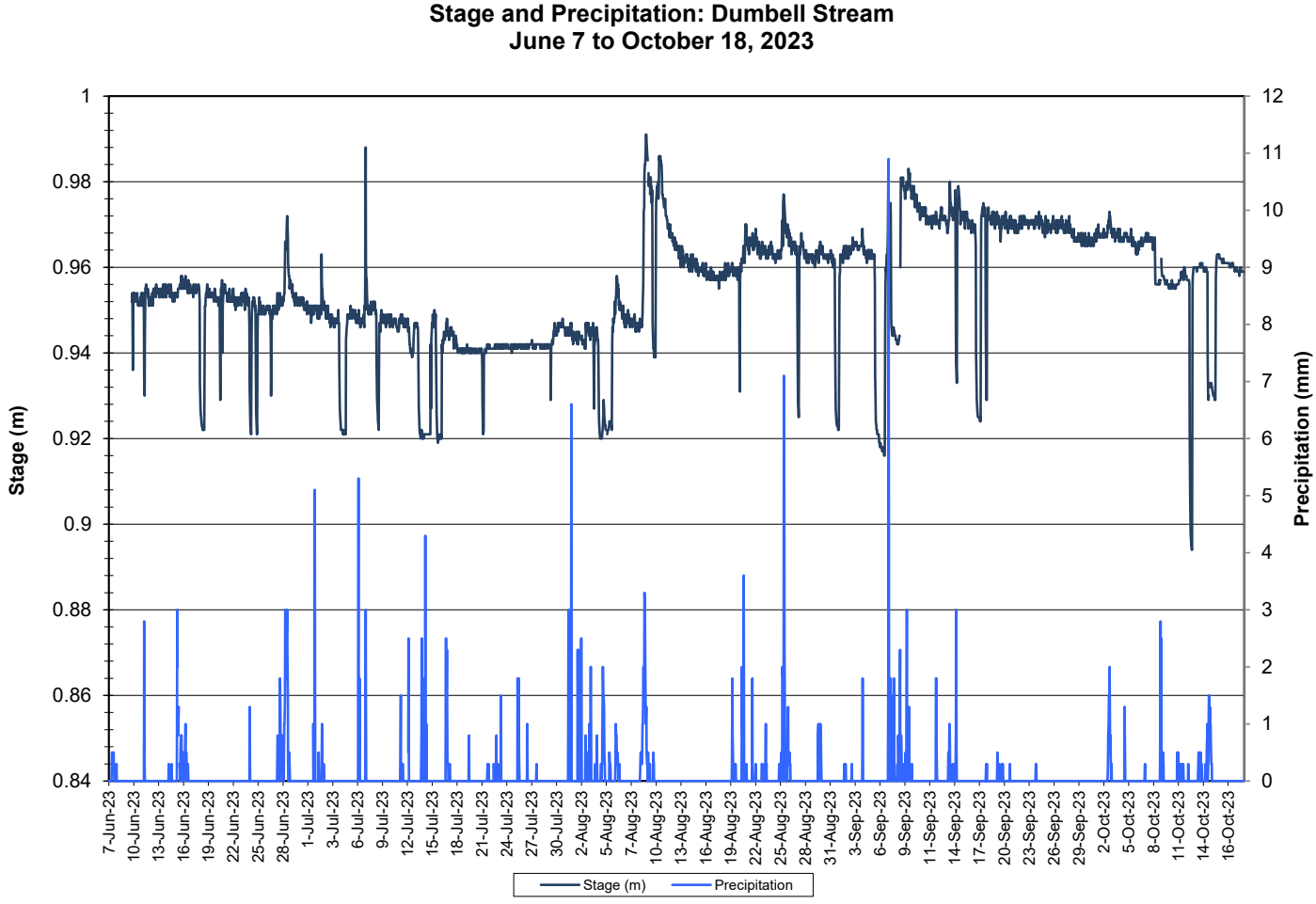

Figure 14: Stage and Precipitation – Dumbell Stream above Dumbell Lake

Pumphouse Stream

- Water temperature ranged from 4.10 to 21.30°C at Pumphouse Stream during the 2023 deployment season. The median value was 12.00°C (Figure 15).
- Water temperature corresponded closely with air temperature fluctuations. Water temperature decreased steadily after initial deployment. Increases were noted during periods of warm ambient air temperature.

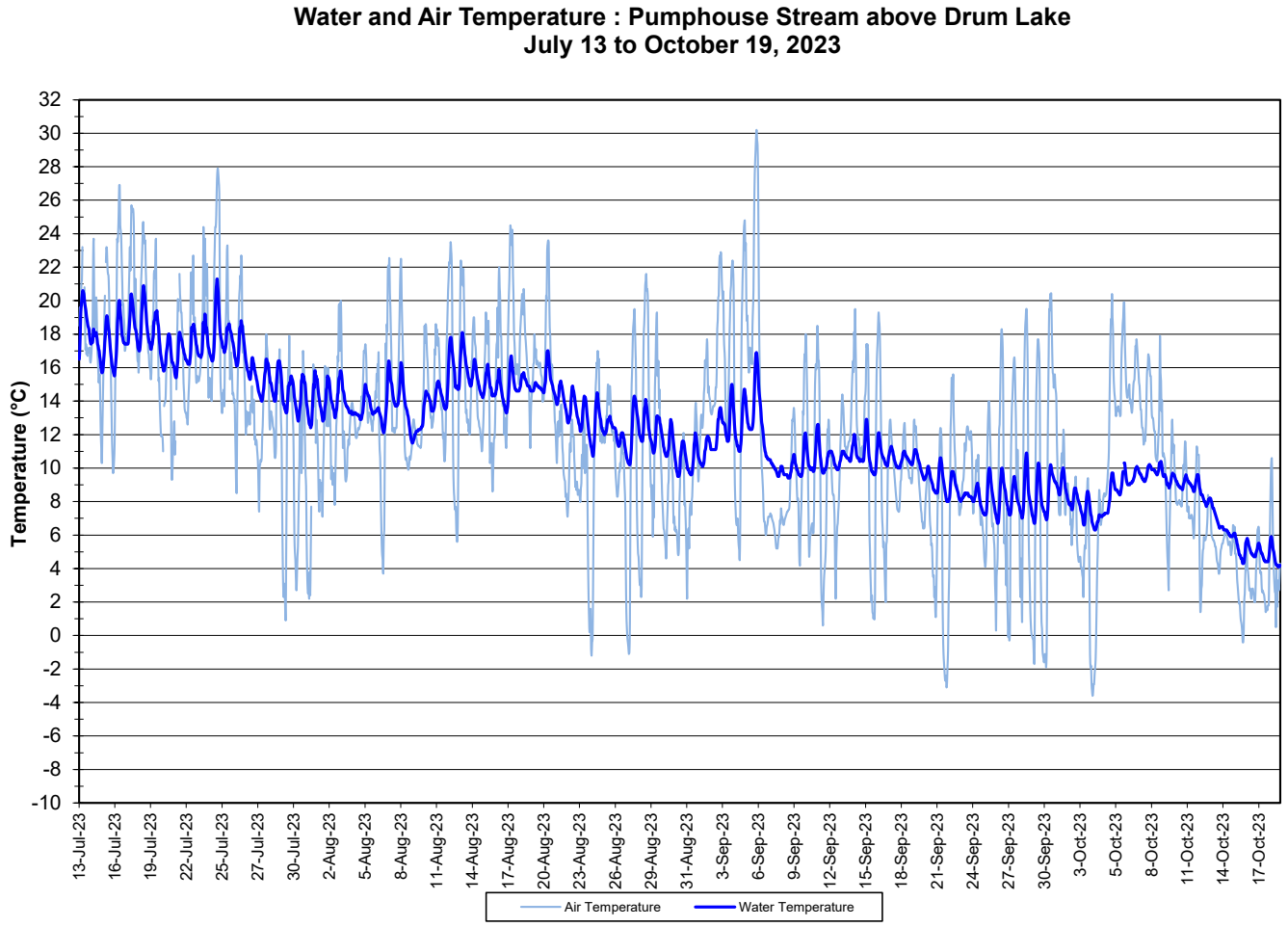

Figure 15: Water and Air Temperature – Pumphouse Stream above Drum Lake

- pH ranged from 7.33 to 8.01 pH units at Dumbell Stream (Figure 16). The median pH was 7.87 units.
- pH fluctuated daily. Peaks were observed during late afternoon and into the early evening. pH decreases during rainfall events.
- All values during the deployment are within the CCME Water Quality Guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units).

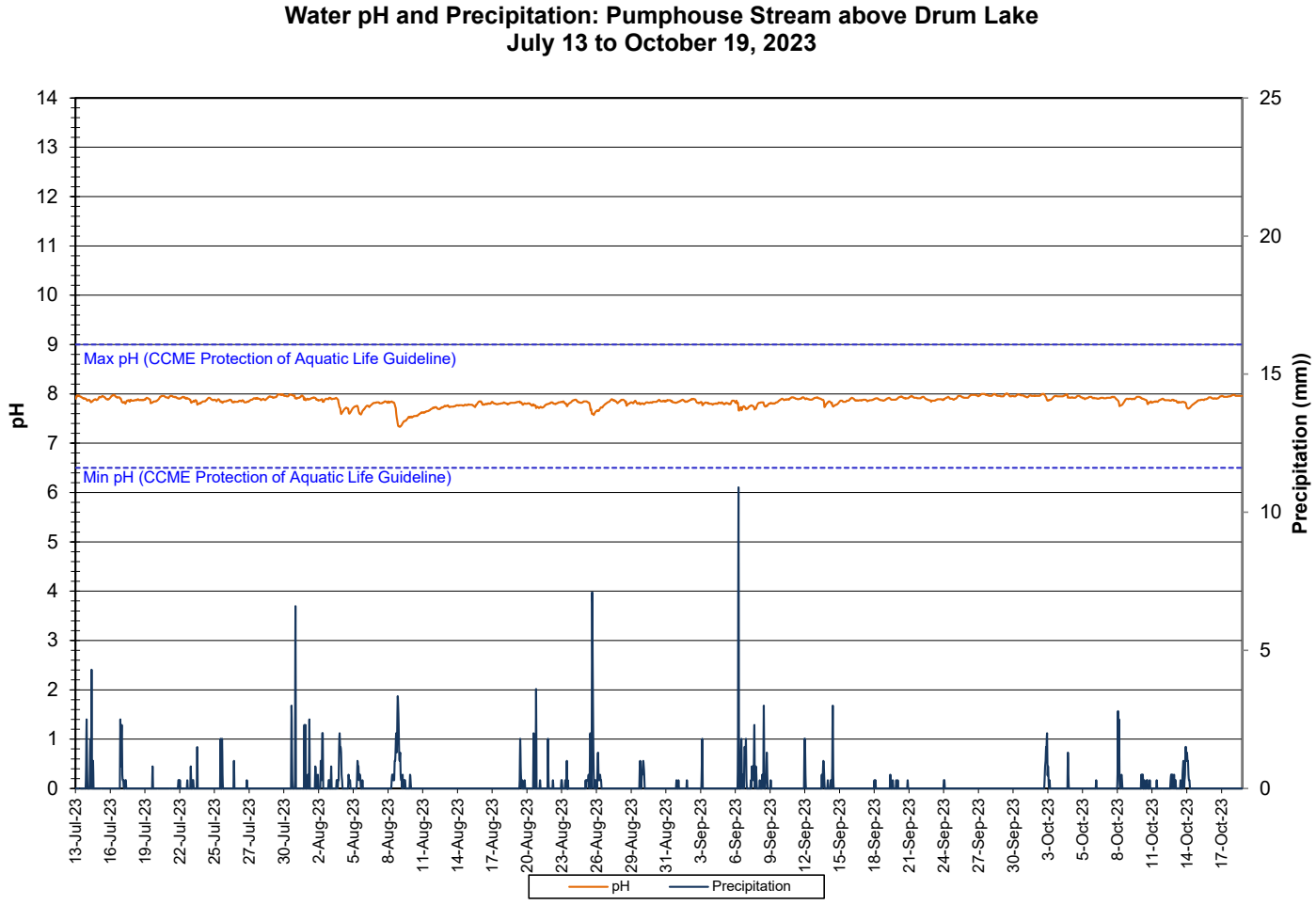

Figure 16: Water pH and Precipitation – Pumphouse Stream above Drum Lake

- Throughout the 2023 deployment season, specific conductivity ranged from 158.5 to 371.0 µs/cm at Pumphouse Stream (Figure 17).
- Drops in specific conductivity often coincide with rises in stage. When precipitation adds more water to the system, dissolved solids become diluted, leading to a decrease in conductivity.
- With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion below adhere to this stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

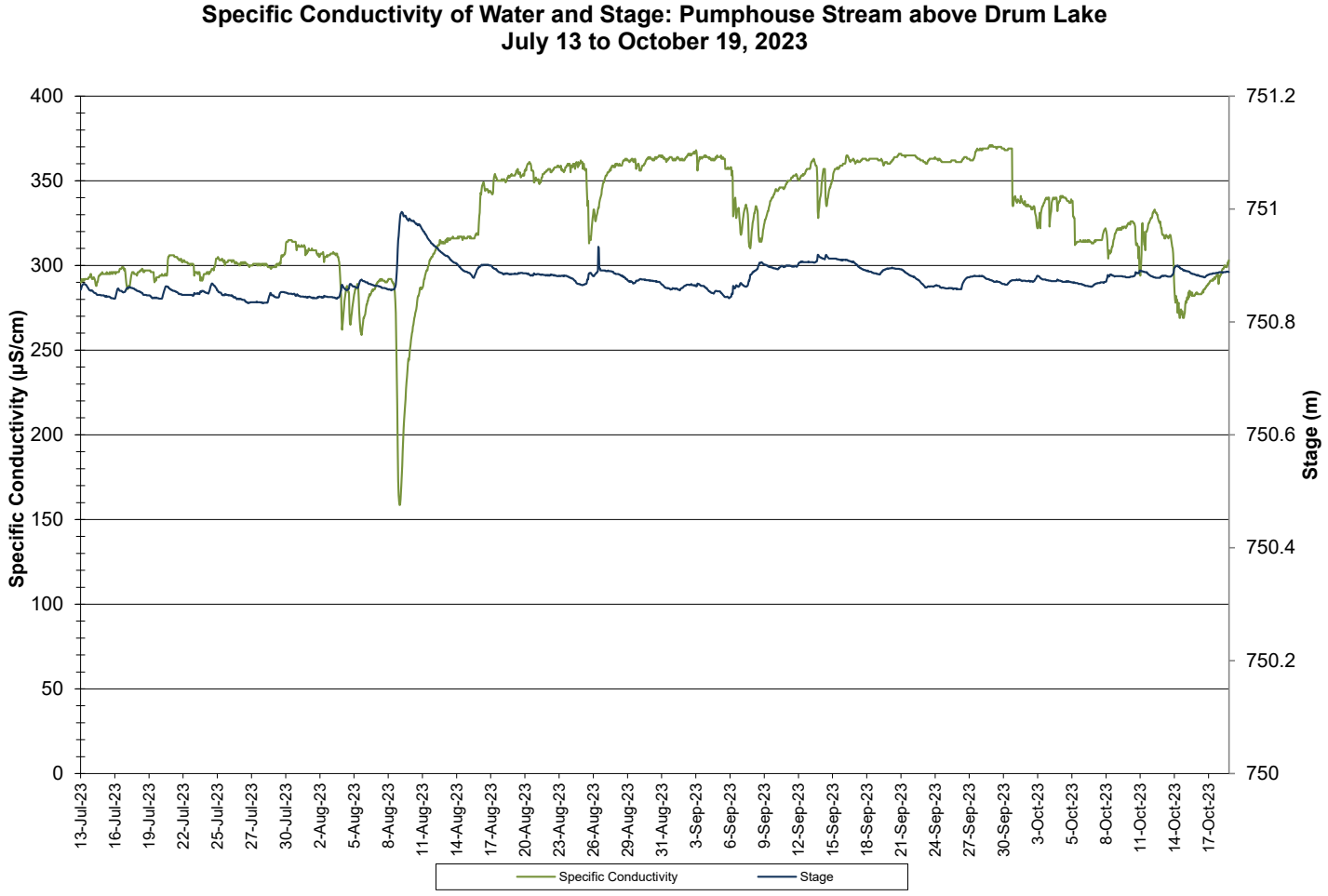

Figure 17: Specific Conductivity and Precipitation – Pumphouse Stream above Drum Lake

- Dissolved oxygen ranged from 73.7 to 91.5% saturation and 7.29 to 11.37 mg/l with a median value of 8.80 mg/l (Figure 18).
- Dissolved oxygen fluctuated diurnally with decreases observed at night.
- Dissolved oxygen displayed an inverse relationship to increases/decreases in water temperature.
- All values were above the CCME Water Quality Guideline for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages of 6.5 mg/l. Most values recorded were below the minimum guideline for early life stages of 9.5 mg/l until water temperatures decreased and oxygen levels began to rise in September. The guidelines are indicated in blue on Figure 18.

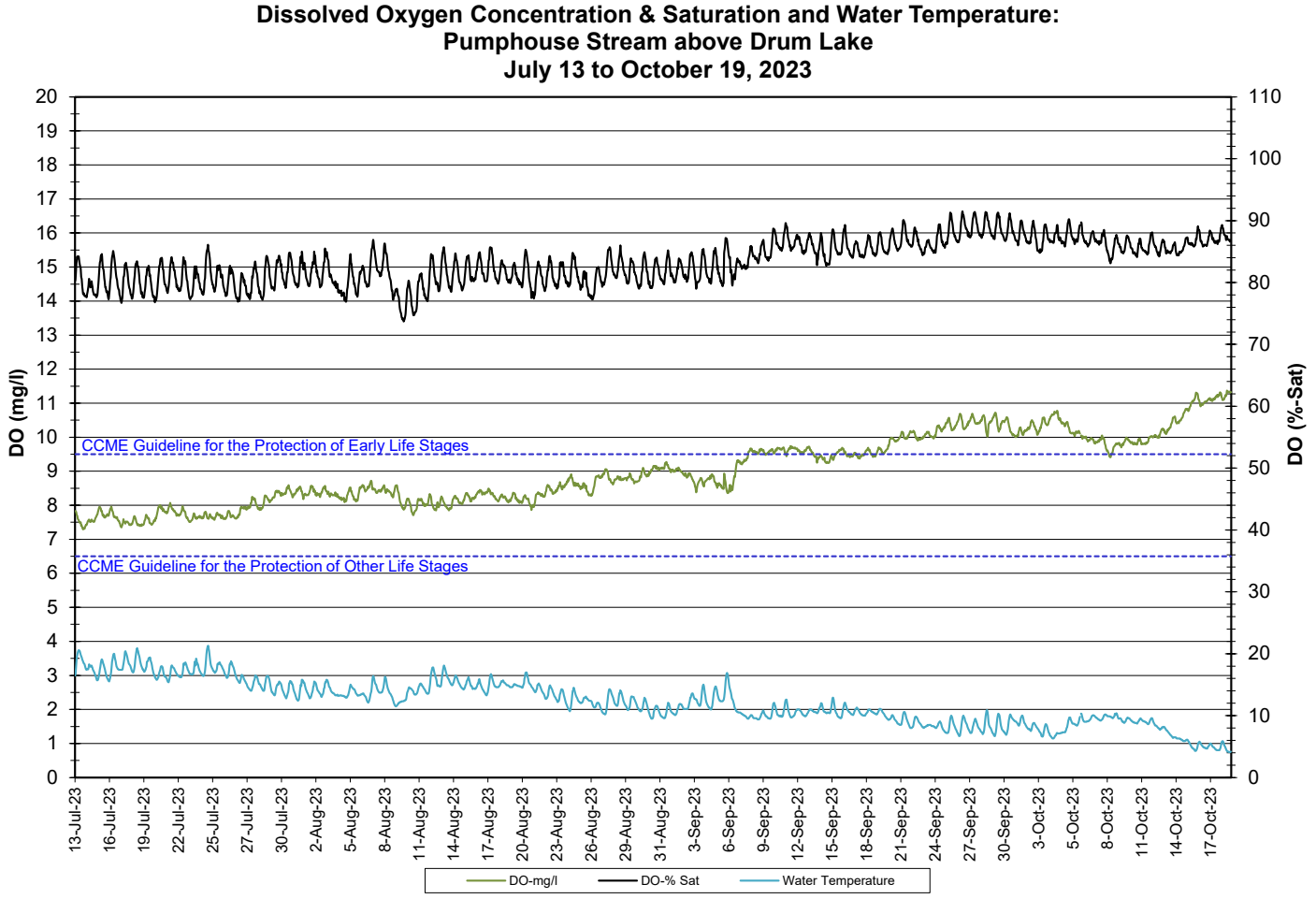

Figure 18: Dissolved Oxygen, Percent Saturation & Water Temperature – Pumphouse Stream above Drum Lake

- Turbidity values range from 0.0 to 1229.0 NTU (Figure 19a & 19b).
- The median turbidity value is 0.0 NTU, indicating that there is very low background turbidity. There are a few large spikes in August, but turbidity values greater than 25.0 NTU occur infrequently and for short periods.

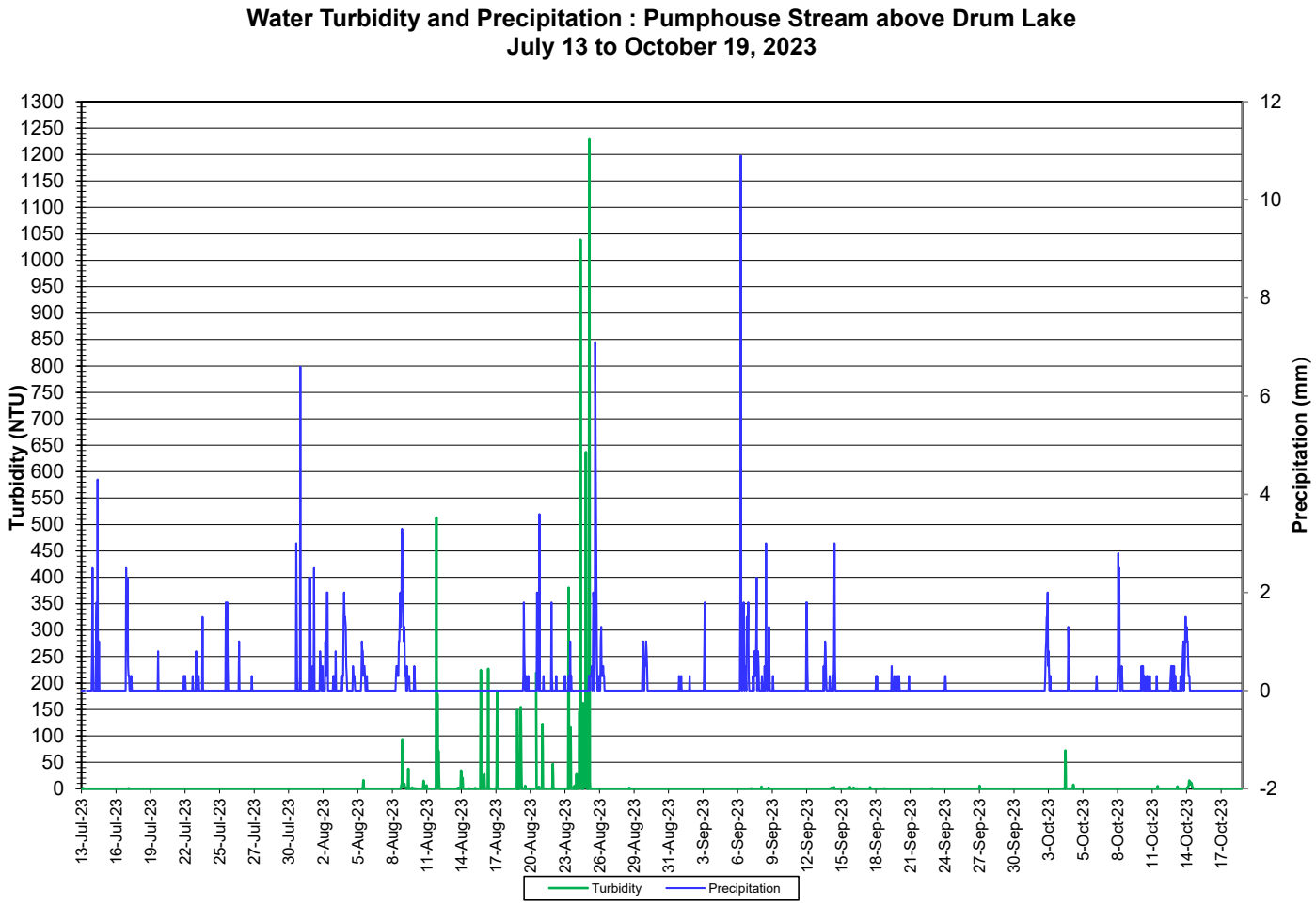

Figure 19a: Turbidity and Precipitation – Pumphouse Stream above Drum Lake

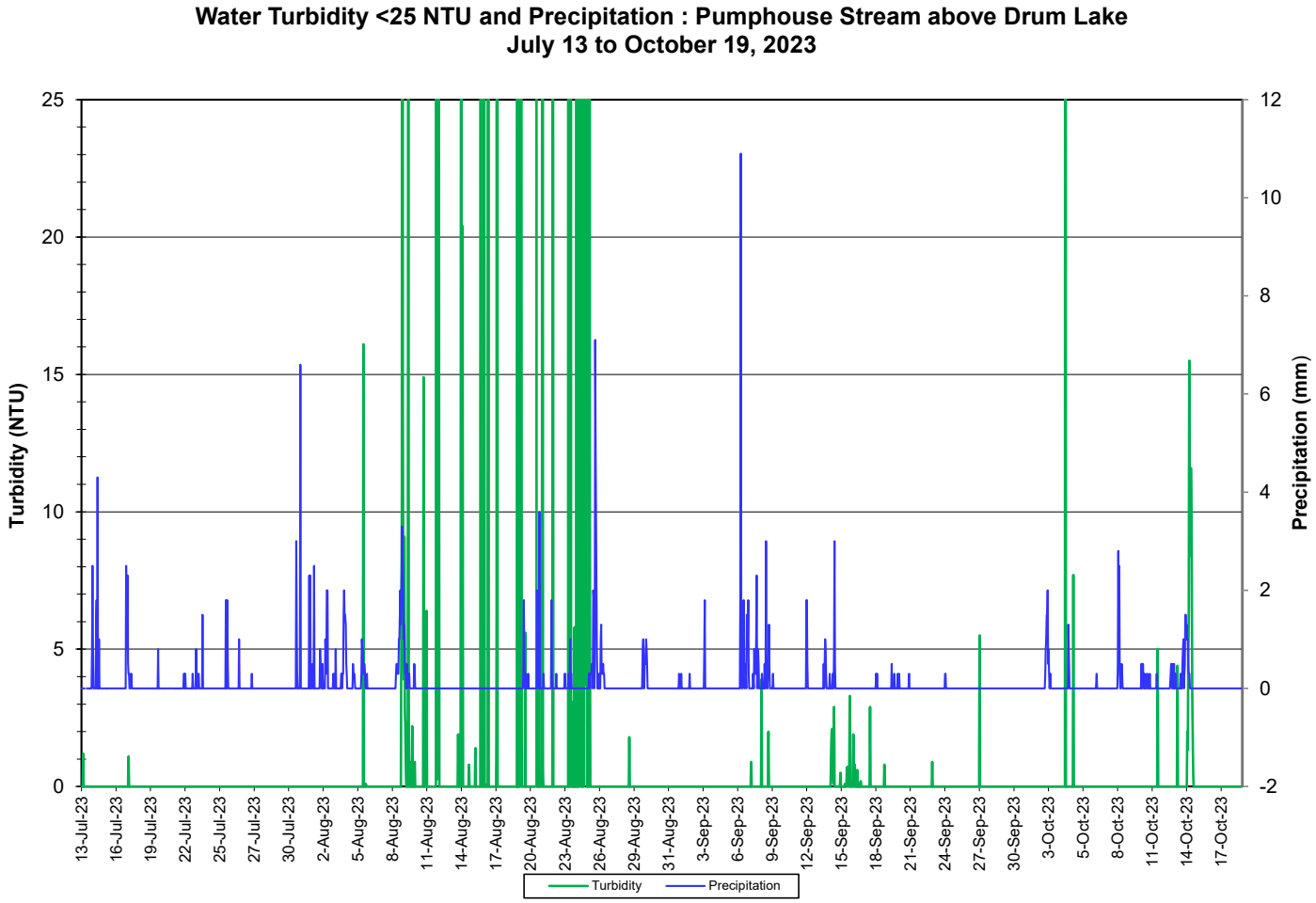

Figure 19b: Turbidity <25 NTU and Precipitation – Pumphouse Stream above Drum lake

- Stage and precipitation are graphed below to show the relationship between rainfall and water level at Pumphouse Stream (Figure 20).
- Stage data shows slight increases after precipitation events.
- With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion below adhere to this stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.

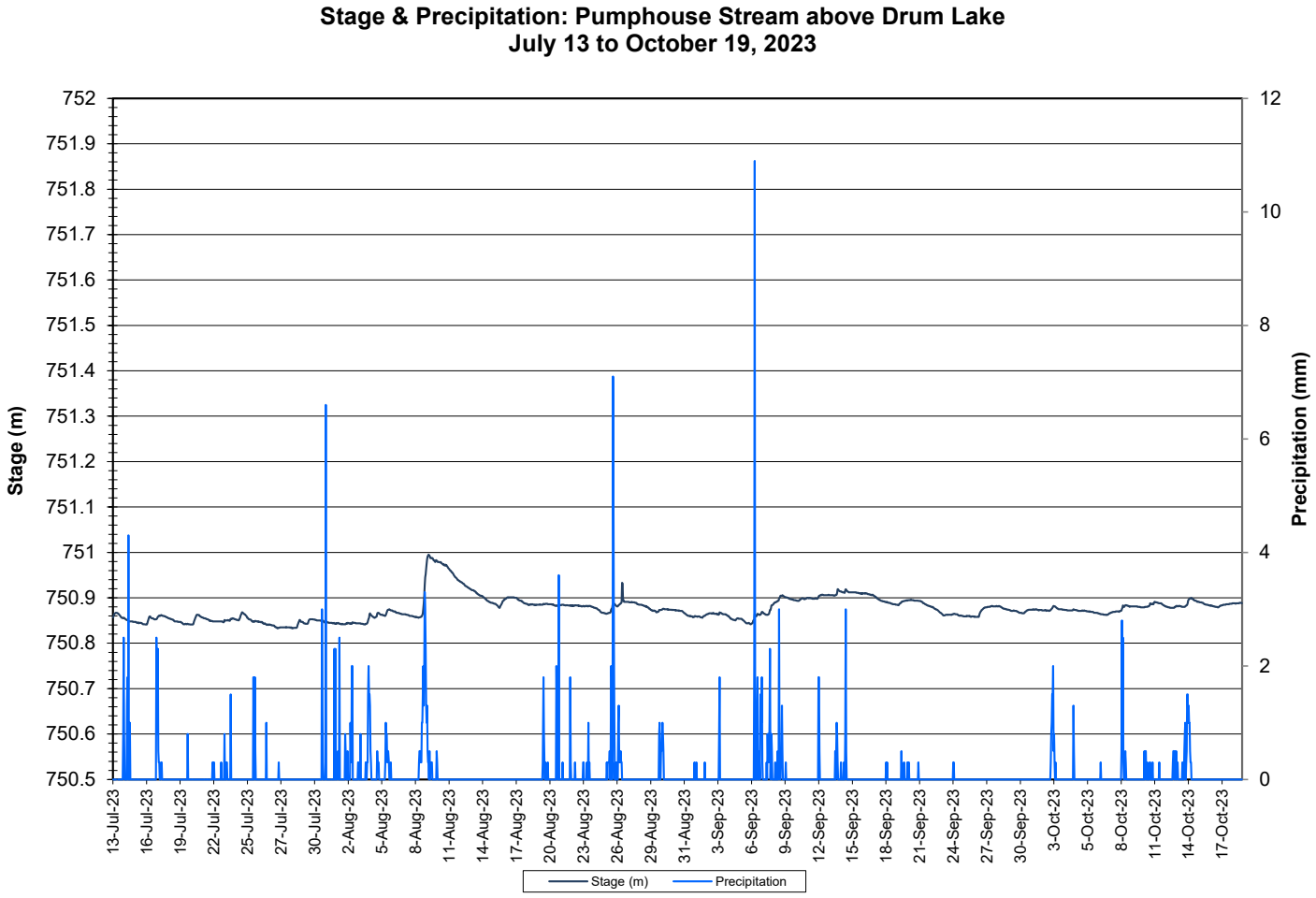

Figure 20: Stage and Precipitation – Pumphouse Stream above Drum Lake

Conclusions

- Instruments at three water quality monitoring stations in Labrador West were deployed on June 7th and the station at Pumphouse Steam was deployed on July 13th. All instruments were removed on October 18-19th, 2023 for the winter season.
- Instruments were deployed for periods of 35 to 55 days before maintenance and calibration.
- In most cases, weather related events or increases/decreases in water level could be used to explain the fluctuations.
- Most values recorded were within ranges as suggested by the CCME Water Quality Guidelines for the Protection of Aquatic Life.
- Water temperature followed the seasonal trend of increasing during the summer and decreasing into the fall. Water temperature was cooler at Dumbell Stream but increases/decreases followed the same trends as air temperature.
- All pH values were within the acceptable range of the CCME Water Quality Guidelines for Protection of Aquatic Life.
- Specific conductivity differed between the two Wabush Lake stations. This can be attributed to varying concentrations of iron ore tailings, which are deposited into Wabush Lake downstream of Dolomite Road and upstream of Julienne Narrows. Dumbell Stream and Pumphouse Stream are small streams in which conductivity values decreased in response to increases in stage. However, there were some odd increases in conductivity at Dumbell Stream. The reason for these is unknown.
- For the minimum dissolved oxygen CCME Water Quality Guideline for the Protection of Aquatic Life for Cold Water Biota at Early Life Stages of 9.5 mg/l, the majority of values at the two Wabush Lake stations were above the guideline. At Dumbell Stream, all values were above this guideline. At Pumphouse Stream, the majority of values were below this guideline.
- All values were above the CCME Water Quality Guideline for the Protection of Aquatic Life for Cold water Biota at Other Life Stages of 6.5 mg/l at all stations.
- Turbidity values varied greatly between the two Wabush Lake stations with values remaining lower at Dolomite road. Background turbidity levels at Julienne Narrows, Dolomite Road, Dumbell Stream and Pumphouse Stream were all low, with median values of 0.0 at all stations.

Path Forward

- New water quality monitoring instruments will be deployed at all stations in spring of 2024. The new station at Fraggle Rock will also start transmitting water quality data.
- ECC staff will deploy real time water quality instruments in spring 2024 when ice conditions allow and perform regular site visits throughout the 2024 deployment season for calibration and maintenance of the instruments.
- If necessary, deployment techniques will be evaluated and adapted to each site, ensuring secure and suitable conditions for RTWQ monitoring.
- ECC will update IOC staff on any changes to procedures with handling, maintenance and calibration of the real-time instruments.
- ECC will continue to work on its Automatic Data Retrieval System, to incorporate new capabilities in data management and data display.
- Open communication will continue to be maintained between ECC, ECCC and IOC employees involved with the agreement, in order to respond to emerging issues on a proactive basis.
- IOC will continue to be informed of data trends and any significant water quality events in the form of email and/or monthly deployment reports, when the deployment season begins. IOC will also receive an annual report, summarizing the events of the deployment season.

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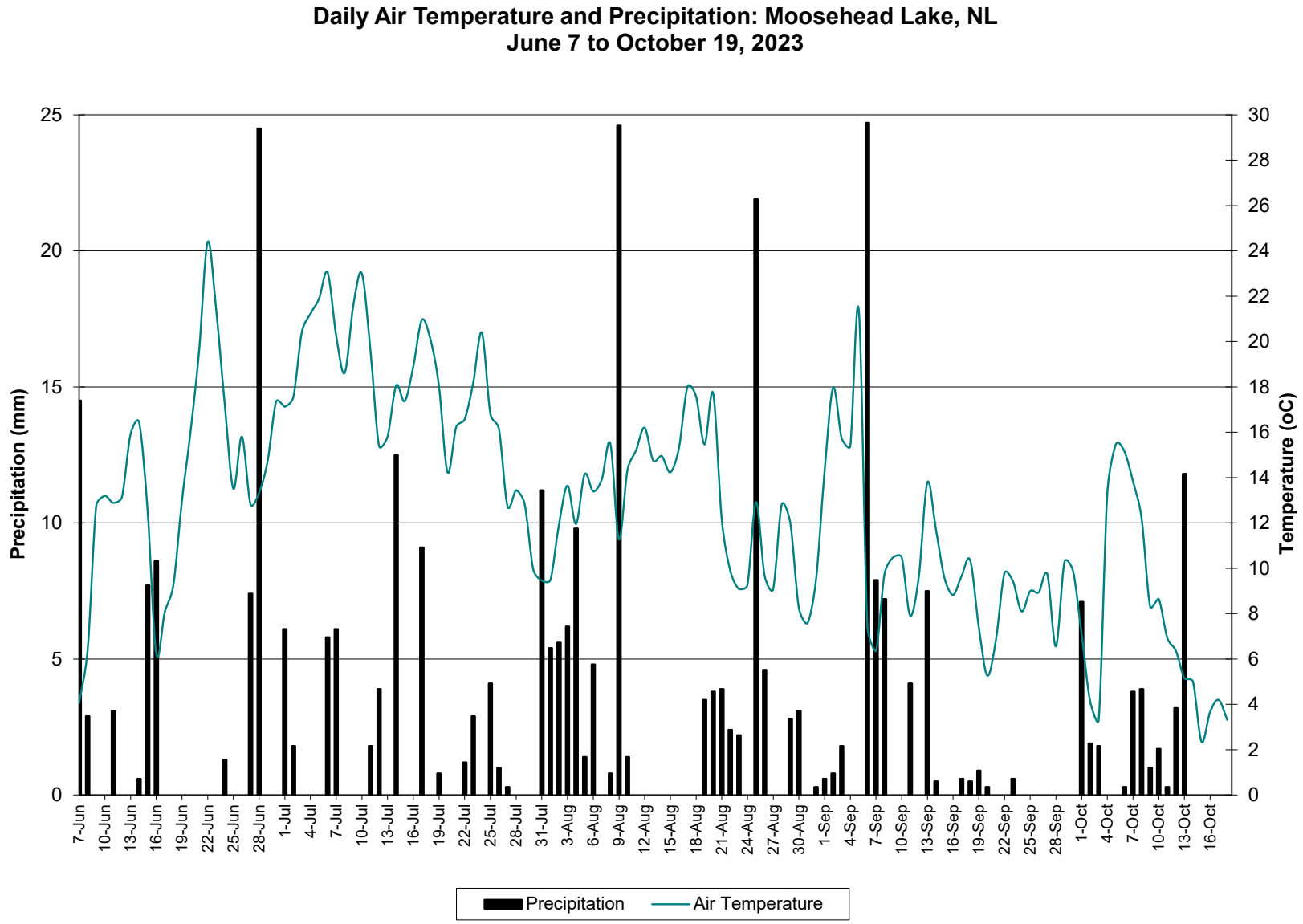
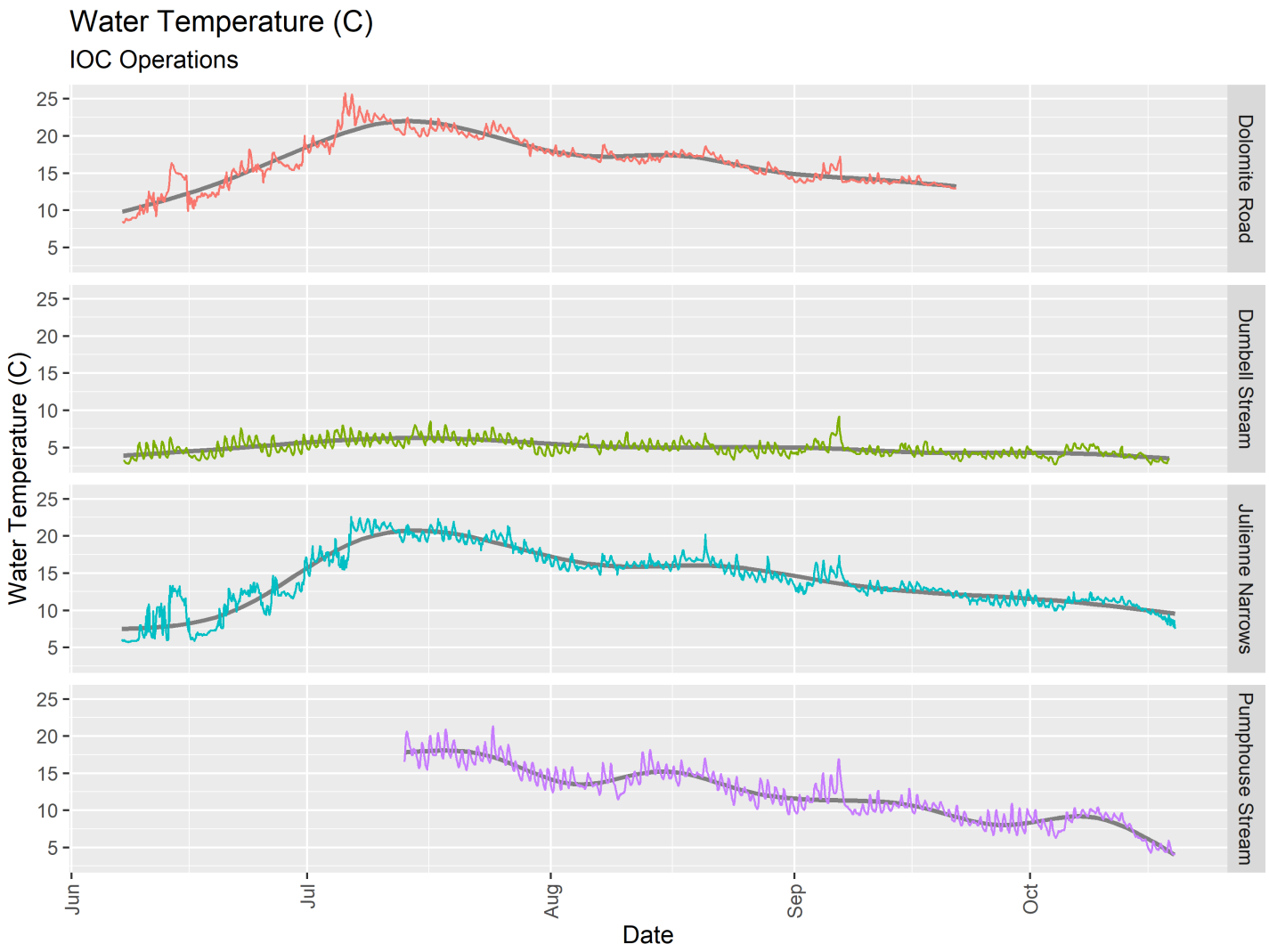
Appendix 1

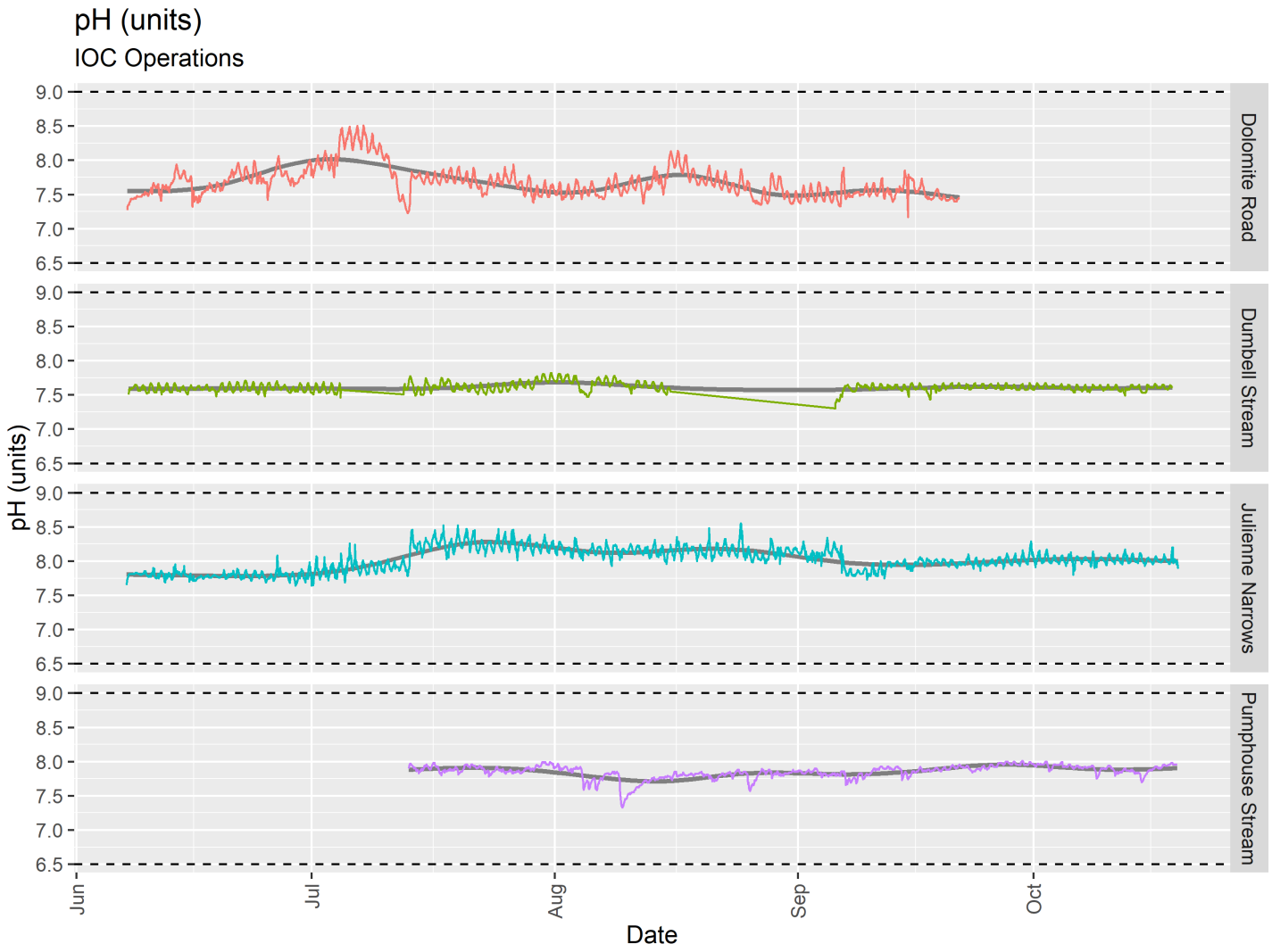

Daily Air Temperature and Precipitation: Moosehead Lake, NL
June 7 to October 19, 2023
Precipitation (mm)
Temperature (oC)
Precipitation
Air Temperature

Appendix 2

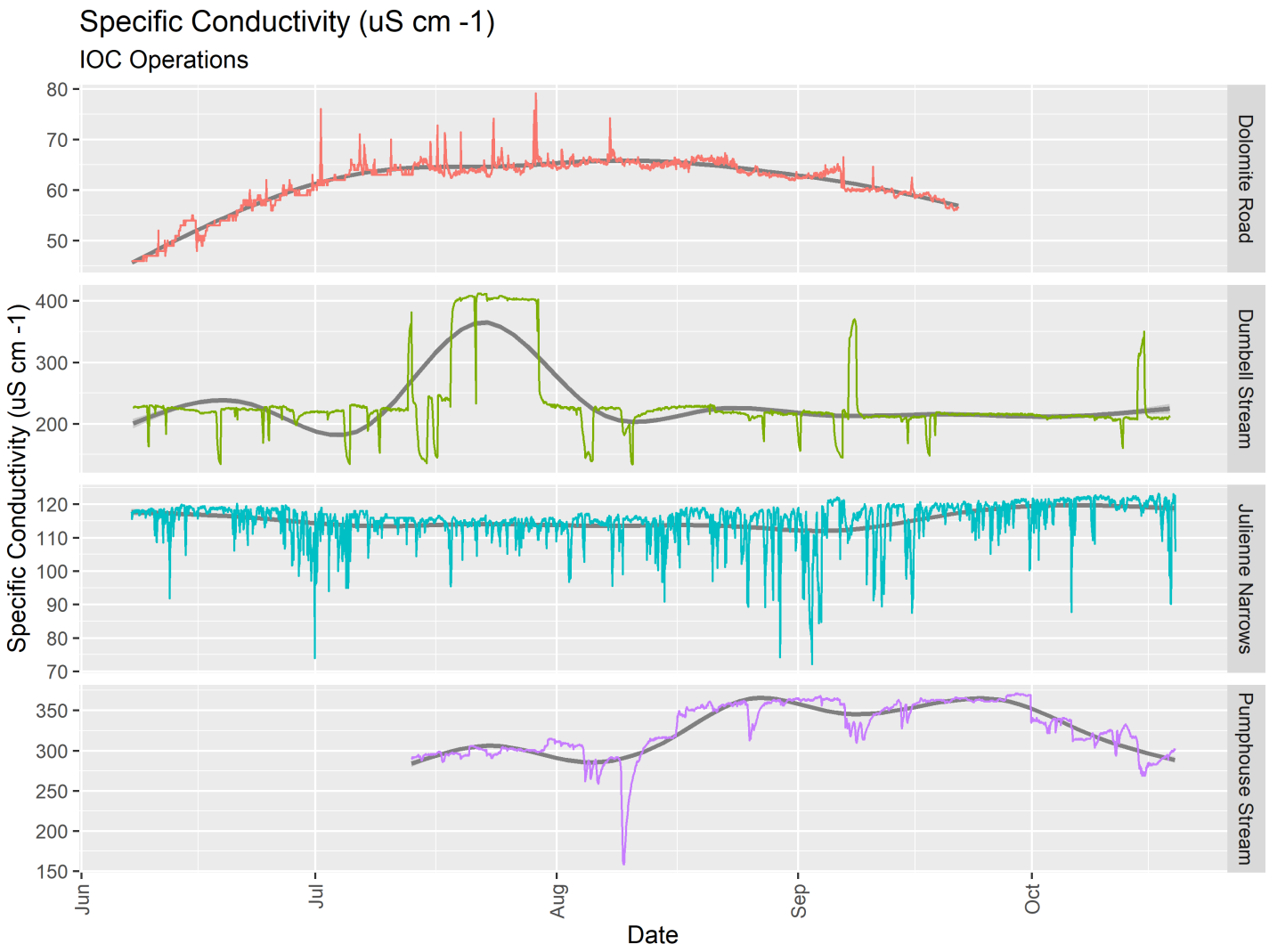
Station to Station Quick View



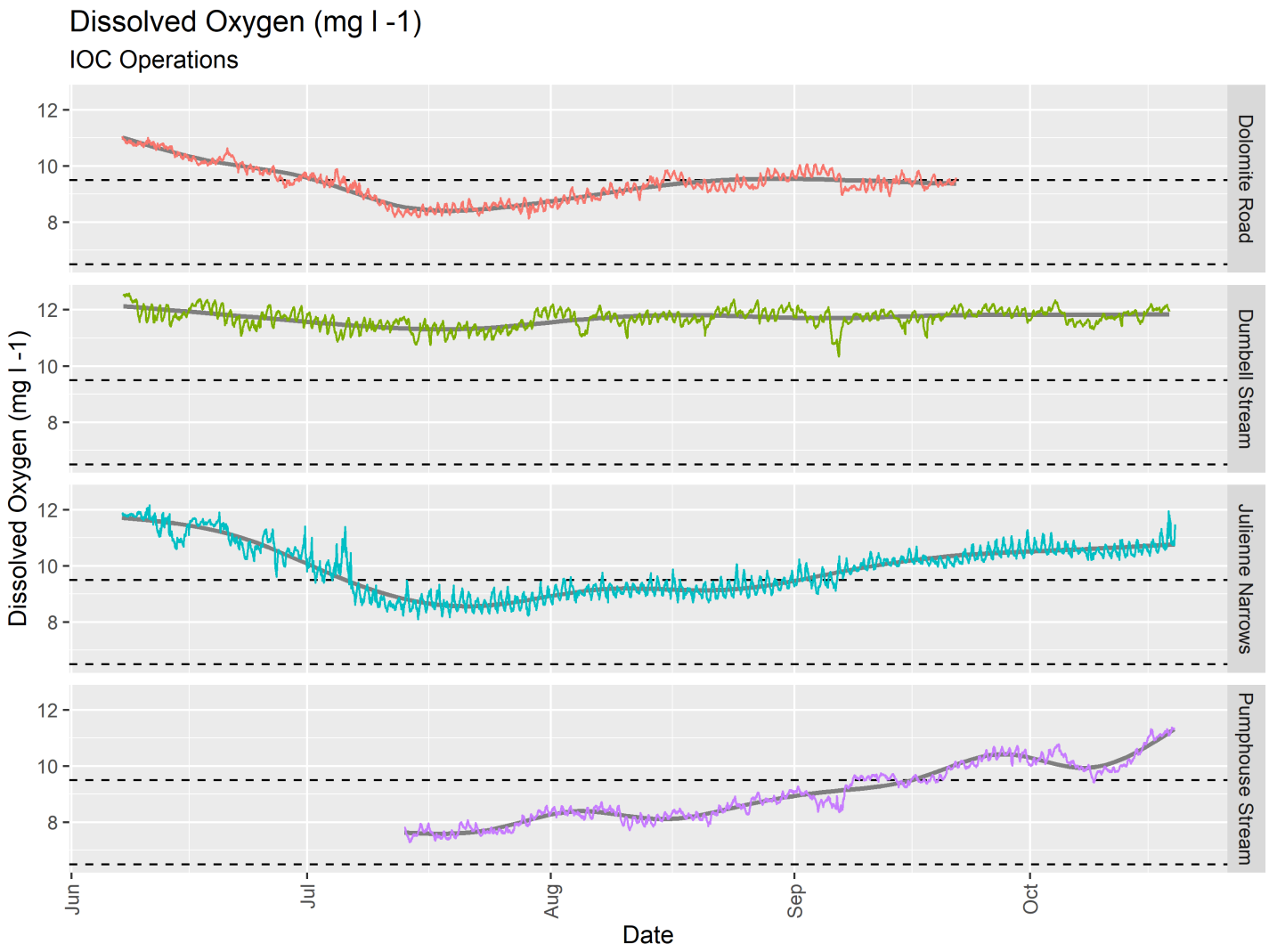
Temperature (°C)				
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**
Min	8.33	2.73	4.1	5.7
Max	25.71	9.15	21.3	22.56
Median	16.7	4.88	12	13.6



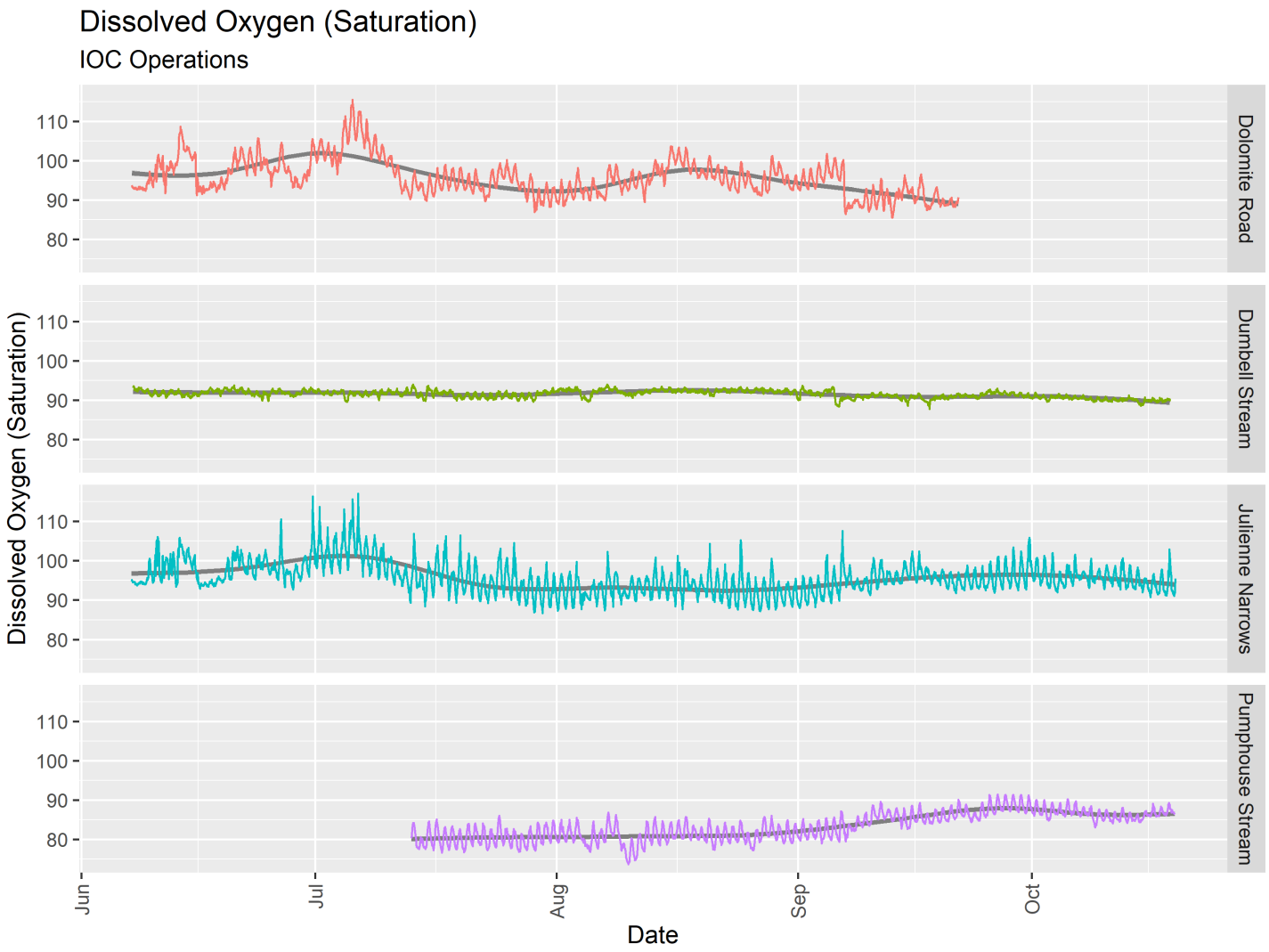
	pH			
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**
Min	7.17	7.3	7.33	7.64
Max	8.51	7.82	8.01	8.55
Median	7.64	7.61	7.8	8.01



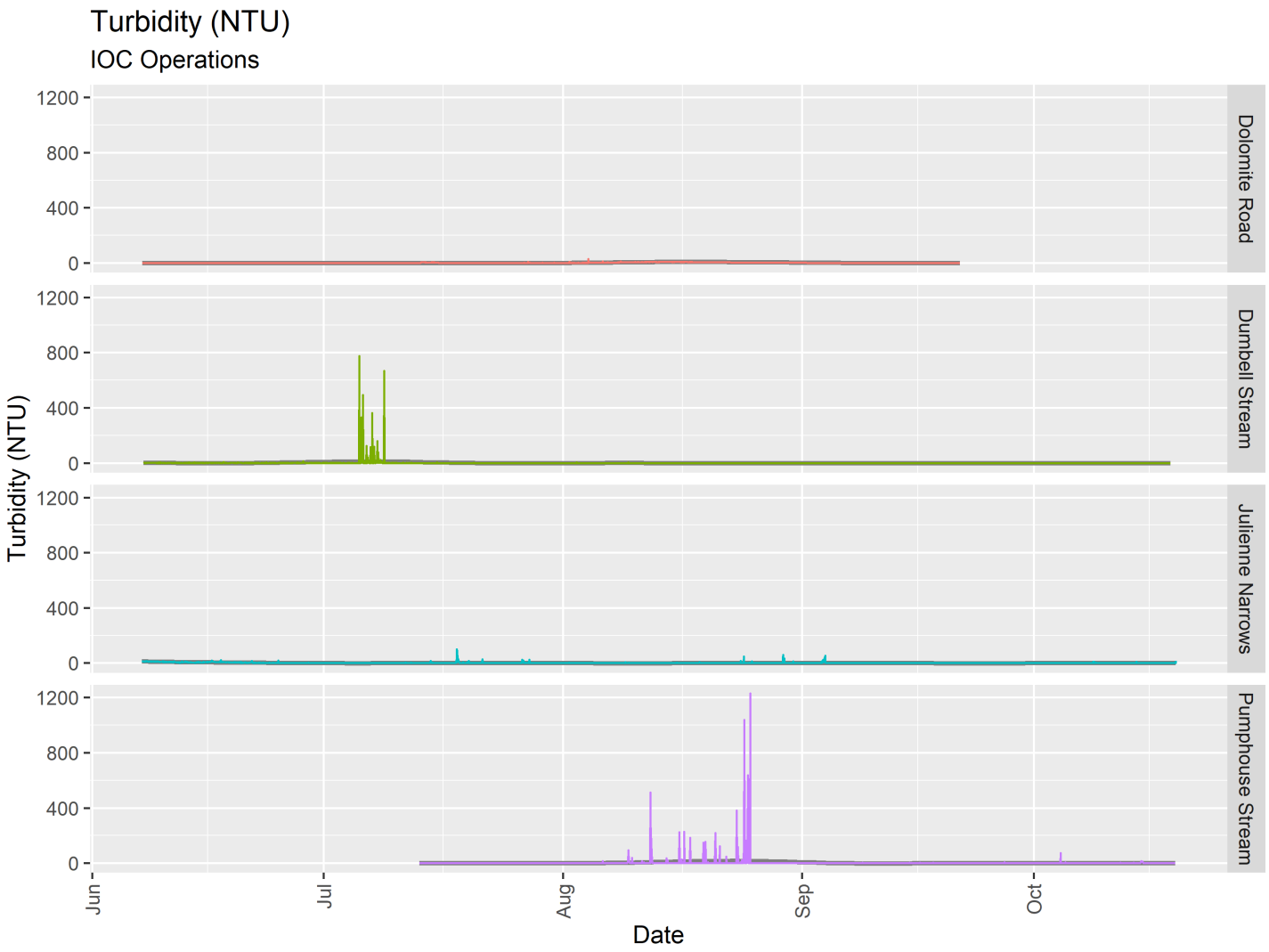
Specific Conductivity (µs/cm)				
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**
Min	46.0	134.2	158.5	72.1
Max	79.1	412.0	371.0	123.2
Median	63.0	219.0	328.0	116.2



Dissolved Oxygen (mg/l)				
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**
Min	8.13	10.34	7.29	8.11
Max	11.05	12.58	11.37	12.16
Median	9.34	11.73	8.80	10.03



Dissolved Oxygen (% Sat)				
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**
Min	85.5	87.7	73.7	86.7
Max	115.5	93.9	91.5	117.1
Median	95.1	91.6	83.5	95.3



Turbidity (NTU)				
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**
Min	0.0	0	0.0	0.0
Max	29.8	774.0	1229.0	99.9
Median	0.0	0.0	3.4	0.0