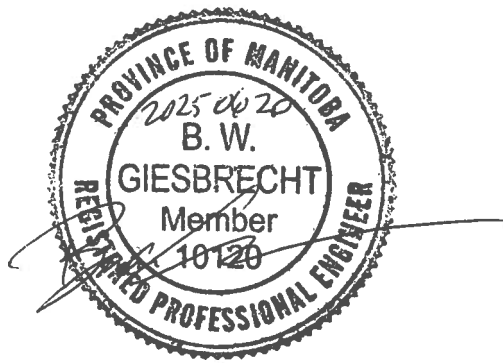


WATER POWER ACT & ENVIRONMENT ACT LICENCES 2024 ANNUAL WATER LEVEL COMPLIANCE REPORT FOR WUSKWATIM GENERATING STATION



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PREPARED BY:


K. PEACOCK

REVIEWED BY:


B.W. GIESBRECHT

APPROVED BY:

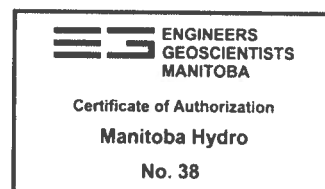

W.V. PENNER

DATE:

2025-06-20

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EXECUTIVE SUMMARY

Manitoba Hydro operates the Wuskwatim GS on behalf of Wuskwatim Power Limited Partnership in accordance with the Water Power Act and Environment Act licences issued by the Province of Manitoba. These licences constrain the water level on Wuskwatim Lake, and the rate of change in water level on Birch Tree Lake.

Environment Act Licence No. 2699 for Wuskwatim GS requires an annual water level report for each calendar year. This report addresses all water level constraints imposed by both the Water Power Act and Environment Act licences and contains information on data collection, validation, and reporting, as well as a summary of licence limit exceedances during the year.

There were eleven Birch Tree Lake licence limit exceedances during 2024. Investigations into these events concluded that operations alone at Wuskwatim GS did not cause a water level change greater than 0.10m, the licence limit on Birch Tree Lake, on three separate occasions. Reasons for all events are explained in Sections 5.2, 5.3 and Appendix I. A summary of Wuskwatim compliance is provided below.

Location	Constraint	Variable	Exceedances Attributed to Wuskwatim Operations	Number of Readings	% Compliance
Wuskwatim Lake	Max/Min Elevation	Mean Daily Water Level	0	366	100 %
Wuskwatim Lake	Max/Min Elevation	Hourly Water Level	0	8784	100 %
Birch Tree Lake	Water Level Variation	Mean Daily Water Level	8	366	97.8%

Manitoba Hydro continues to investigate and refine operating procedures to reduce the number of licence limit exceedances on Birch Tree Lake.

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1.0 INTRODUCTION

1.1 Background

Wuskwatim Power Limited Partnership (WPLP) is a legal entity involving Nisichawayasihk Cree Nation (NCN) and Manitoba Hydro, which developed and now owns the Wuskwatim Generating Station (GS). Manitoba Hydro operates the station as part of the Manitoba power grid on behalf of WPLP.

WPLP received licences under The Water Power Act and The Environment Act for the development of the Wuskwatim GS. The Interim Water Power Act licence stipulates a maximum and minimum allowable water level on Wuskwatim Lake. Environment Act Licence No. 2699 stipulates a maximum and minimum water level on Wuskwatim Lake, a maximum daily change in water level on Birch Tree Lake, as well as monthly and annual reporting requirements. This report fulfills the annual reporting requirement of Environment Act Licence No. 2699.

Manitoba Hydro prepared the Wuskwatim GS Licence Implementation Guide for Water Levels to establish and document the water regime terms specified by the Wuskwatim licences. The guide was reviewed and approved by the Province of Manitoba and is available at:

https://www.gov.mb.ca/sd/pubs/water/licensing/licence_implementation_guide_latest_2016.PDF

The Licence Implementation Guide forms the basis for the content of this report and provides the following details:

- calculation methodology to be used for determining critical levels,
- protocol for reporting to meet licence requirements, and
- manner in which compliance will be defined and assessed

1.2 Objective

This report documents Wuskwatim GS licence compliance by summarizing the Water Power Act and Environment Act licence requirements and providing the relevant water level data for the 2024 reporting period. In the case of any licence limit exceedance, this report provides the reason for the exceedance, actions taken to prevent such an event from occurring in the future, and proof of regulator notification.

1.3 Outline

Section 1.0 contains the introduction to the report, including background information on licence and reporting requirements, objective and outline of the report. Following the introduction is section 2.0, which provides the Wuskwatim GS project location and description. Section 3.0 summarizes the water level data collection process including

data transfer, storage and validation. Section 4.0 includes information about data sources, definition of compliance, and compliance reporting. Section 5.0 describes the data analysis used to prepare this report, includes a summary of deviations from licence constraints during the 2024 calendar year, and provides reasons for any licence deviations. Section 6.0 summarizes major system upgrades or changes during the 2024 calendar year, and Section 7.0 summarizes 2024 dam safety activities. Finally, Section 8.0 provides conclusions and closure to the report.

Appendix II provides a list of dam safety activities completed in 2024.

2.0 WUSKWATIM GENERATING STATION

2.1 Project Location

The Wuskwatim Generating Station is located on the Burntwood River, in the Nelson House Resource Management Area, approximately 56 km southwest of Thompson, 35 km southeast of Nelson House, or approximately 830 km north by road from Winnipeg. The geographical location of the station is shown in Figure 1. A photograph of the station is shown in Figure 2. A general arrangement of the site is shown in Figure 3.

2.2 Project Description

The Wuskwatim Generating Station consists of a 3-unit powerhouse with a nameplate capacity of 209 MW, gravity dams and embankment structures, and a 3-bay spillway with heated gates. Tables 1 and 2 summarize the operating parameters and construction specifications of the Wuskwatim Generating Station.

Table 1: Construction Specifications and Operating Parameters of the Wuskwatim Generating Station

Construction Period	2006 to 2012
Licensed Capacity	210 MW
2024 Generation	1,055 million kW-h
Waterfall Drop (head)	21.4 m
Maximum Licence Forebay Elevation	234.0 m
Minimum Licence Forebay Elevation	233.75 m

Table 2: Principal Structures for the Wuskwatim Generating Station

Powerhouse	Number of Units	3
	Length	75 m
	Discharge Capacity (at full gate)	1,100 m ³ /s
	Power Production	3 units @ 69.7 MW/unit TOTAL = 209 MW
Spillway	Number of Bays	3
	Total Length	43.0 m
	Discharge Capacity (Wuskwatim L. @ 234.0 m)	2,310 m ³ /s
Dams	Material	Impervious fill and granular fill
	Crest Elevation	236.69 – 237.08 m

The reservoir at Wuskwatim Generating Station has a total area of 88.41 km² and a fetch length of approximately 1.88 km. There is typically a 0.1 m drop between the reservoir level on Wuskwatim Lake and the forebay level of the station. The reservoir normal maximum water level is 234.0 m while the forebay normal maximum water level is 233.9 m. The incremental flooded area due to the project is 0.37 sq. km allowing the majority of the reservoir and forebay to be contained by natural river banks and minimizing the need for dykes.

Inflow to Wuskwatim is largely dependent on the Churchill River Diversion, as controlled by the Notigi Control Structure. The generating station operates in a daily cycling mode within the allowed 0.25 m water level range on Wuskwatim Lake.

The operators and maintenance personnel of the Wuskwatim Generating Station are located on site. Support and technical services are located in the nearby city of Thompson.

3.0 DATA COLLECTION

3.1 Water Level Gauges

Waterway Approvals and Monitoring staff compiled data from three remote water level gauges located on Wuskwatim Lake, and two remote water level gauges located on Birch Tree Lake to evaluate licence compliance for the 2024 reporting period. The locations of the water level gauges as well as the gauge description sheets are contained in Appendix A of the Licence Implementation Guide which is available at:

https://www.gov.mb.ca/sd/pubs/water/licensing/licence_implementation_guide_latest_2016.PDF

Manitoba Hydro uses the recorded water level data to measure compliance with the licence conditions as they apply to hourly and mean daily water levels (with wind and wave effects eliminated) on Wuskwatim Lake, and daily average water level changes on Birch Tree Lake.

3.2 Data Transmission and Storage

Manitoba Hydro remote gauges on Wuskwatim and Birch Tree lakes use pressure transducers to record water levels and data loggers with transmitters to store and send this information through GOES satellites to ground based receivers both of which are operated by the National Oceanic and Atmospheric Administration (NOAA). Manitoba Hydro then retrieves the data via satellite rebroadcast from NOAA (with backup data sources being via internet data sources offered by NOAA and United States Geological Survey) as well as directly from the loggers during a site visit. Manitoba Hydro uses software applications that retrieve, decode and send the data to the HyDams database that is accessible to interested parties within Manitoba Hydro.

Water level data is collected and published according to the procedures and Quality Control Assurance processes established by Water Survey of Canada. Near real-time data is available but it is not recognized as official. Final data, or published data is generated through several levels of reviews to verify compliance with applicable standards and includes recognition of the impact of other related environmental and contextual factors.

Figure 4 shows the data transmission and storage process for remote gauge water level data used in the preparation of this report.

4.0 WATER POWER ACT AND ENVIRONMENT ACT DATA REPORTING

4.1 Monitoring & Reporting Process

As required by Clause 33 of Environment Act Licence No. 2699, an annual water level report for each calendar year, must be provided to Manitoba Environment and Climate Change. This report uses final data from the required water level gauges based on three levels of internal review. It also contains any compliance reports issued in the 2024 reporting period. As directed by Manitoba, this report is issued by June 30 of the following year.

4.2 Data Sources

The water level data used in preparing this report was obtained from the Manitoba Hydro hydrometric database which contains water level data of various time steps including near real-time (5-minute interval), hourly, daily average and mean daily (with wind and wave effects eliminated) data. Hourly water level and flow data from

Wuskwatim can be used in determining the operational impact of the project on Birch Tree Lake in case the Birch Tree Lake daily change in water level exceeds the licence limit.

4.3 Compliance

Section 4.2 of the Wuskwatim Interim Water Power Act licence states that:

The Licensee shall not raise the headwaters of its development above an elevation of 234.0 metres ASL as measured on Wuskwatim Lake, except as ordered by the Minister under Clause 72(b) of the Water Power Regulation or as fixed by the Minister under Clause 72(c) of the Water Power Regulation.

Clause 30(a) of Environment Act Licence No. 2699 states that the Licensee shall operate the Development within the following parameters:

Maintain the mean daily water level on Wuskwatim Lake (wind and wave effects eliminated) between 233.75 meters and 234.0 meters Above Sea Level (ASL), as determined by measurements from a minimum of three water level monitoring stations on Wuskwatim Lake.

Clause 30(b) of Environment Act Licence No. 2699 states that the Licensee shall operate the Development within the following parameters:

Maintain mean daily water levels on Birch Tree Lake such that the daily water level variations shall be less than 0.10 meters and 0.15 meters in open water and winter conditions (wind and wave effects eliminated) respectively. Any exceptions to these fluctuations shall be reported within one week to Manitoba Sustainable Development.

4.4 Compliance Reporting

Compliance for Wuskwatim GS has been defined and agreed upon with Manitoba Environment and Climate Change using the maximum and minimum water level limits stated by the Water Power Act and Environment Act licences. More precisely the Wuskwatim Lake water level shall be in compliance with the upper limit defined by both licences if:

1. The Wuskwatim Mean Daily Water Level (with wind and wave effects eliminated) does not exceed 234.0 metres, and
2. The Wuskwatim Hourly Water Level does not exceed 234.1 metres more than two times for two consecutive hours each time in any 24 hour period.

Furthermore, the Wuskwatim Lake water level is in compliance with the lower limit defined by both licences if:

1. The Wuskwatim Mean Daily Water Level (with wind and wave effects eliminated) does not recede below 233.75 metres, and
2. The Wuskwatim Hourly Water Level does not recede below 233.65 metres more than two times for two consecutive hours each time in any 24 hour period.

For the purpose of licence compliance at Birch Tree Lake, open water will refer to the period from May 1 to October 31 and winter will refer to the period from November 1 to April 30. The Birch Tree Lake Daily Change in water level is in compliance when:

1. The Birch Tree Lake Daily Change is below these seasonal limits, or
2. The Birch Tree Lake Daily Change is above these seasonal limits but the change attributable to Wuskwatim Generating Station is below these seasonal limits.

In the event that the Wuskwatim Lake or Birch Tree Lake water levels are not in compliance with the licence limits as described above, notification will be made to Manitoba Environment and Climate Change within one week of the incident. A follow up compliance report on causes contributing to the event and changes to operations, if any will also be provided.

WPLP publishes monthly and annual compliance reports on its web site at www.wuskwatim.ca.

5.0 SUMMARY OF FINDINGS

5.1 Data Analysis

Manitoba Hydro analyzed water level data to prepare charts outlining water conditions at Wuskwatim Lake and Birch Tree Lake during the 2024 reporting period. All readings were evaluated against licence limits to identify violations based on the definition of licence compliance given in Section 4.4.

Wuskwatim Lake Hourly Water Level, Wuskwatim Lake Mean Daily Water Level, and Birch Tree Lake Daily Water Level Change is shown in Figure 5, 6, and 7 respectively, for the 2024 reporting period.

5.2 Licence Exceedances

During the 2024 reporting period, there were eleven recorded instances of water levels outside of the licence limits. The maximum number of possible instances was calculated as the sum of instances pertaining to each licence constraint and was based on the station operating from January 1 to December 31. Each licence constraint yields the following number of possible instances:

- Maximum/Minimum Mean Daily Water Level on Wuskwatim Lake – 366 days of possible instances,

- Maximum/Minimum Hourly Water Level on Wuskwatim Lake – 366 days * 24 hours = 8784 possible instances, and
- Maximum Daily Water Level Change on Birch Tree Lake – 366 days

Table 3 shows a breakdown of licence limit exceedances for the 2024 reporting period. The Waterway Approvals and Monitoring Department investigated the incidents to determine the reason for the occurrence. Copies of correspondence notifying Manitoba Environment and Climate Change of the events are included in Appendix I of this report.

Table 3: Wuskwatim Generating Station, Water Power Act and Environment Act Licences: Summary of Events for the reporting period of 2024

Date	Location	Constraint	Variable
May 12, 2024	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
May 13, 2024	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
May 15, 2024	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
Jul 06, 2024	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
Jul 7, 2024	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
Aug 31, 2024*	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
Sep 10, 2024	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
Sep 11, 2024	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
Sep 12, 2024	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
Oct 15, 2024*	Birch Tree Lake	Water Level Variation	Mean Daily Water Level
Oct 24, 2024*	Birch Tree Lake	Water Level Variation	Mean Daily Water Level

**exceedance not attributable to Wuskwatim operation*

5.3 Licence Exceedances Explanation

The table below provides a brief explanation of the exceedance at Wuskwatim, which is further detailed in the correspondence included in Appendix I.

Table 4: Summary of Events and Explanation for the Reporting Period of 2024

Date	Location	Constraint	Explanation
May 12, 2024	Birch Tree Lake	Water Level Variation	Unplanned transmission outages required an immediate reduction in generation.
May 13, 2024	Birch Tree Lake	Water Level Variation	

May 15, 2024	Birch Tree Lake	Water Level Variation	Transmission system issues required an unplanned generation increase.
Jul 06, 2024	Birch Tree Lake	Water Level Variation	A change in cycling pattern coincided with rapidly rising flows on the Burntwood River.
Jul 7, 2024	Birch Tree Lake	Water Level Variation	
Aug 31, 2024*	Birch Tree Lake	Water Level Variation	Regular operations coincided with environmental factors.
Sep 10, 2024	Birch Tree Lake	Water Level Variation	A change in cycling pattern superimposed on declining Burntwood River that increased the lake's sensitivity to transient flows from cycling operations.
Sep 11, 2024	Birch Tree Lake	Water Level Variation	
Sep 12, 2024	Birch Tree Lake	Water Level Variation	
Oct 15, 2024*	Birch Tree Lake	Water Level Variation	Regular operations coincided with environmental factors.
Oct 24, 2024*	Birch Tree Lake	Water Level Variation	Regular operations coincided with environmental factors.

**exceedance not attributable to Wuskwatim operation*

Manitoba Hydro continues to investigate and refine operations to minimize license limit exceedances on Birch Tree Lake, resulting from unit cycling in combination with operational changes during low Burntwood River flow scenarios. Manitoba Hydro continues to assess the operating procedure at Wuskwatim Generating Station, utilizing a rolling 24-hour average flow change, to prevent similar instances from reoccurring.

6.0 MAJOR SYSTEM UPGRADES/CHANGES

The following maintenance and construction activities occurred during the 2024 calendar year:

- A leak through the deck into the electrical gallery below, near the Unit-3 transformer, was repaired.

7.0 DAM SAFETY

Manitoba Hydro operates and maintains the generating station and associated structures at Wuskwatim based on the Canadian Dam Association Dam Safety Guidelines. A summary of dam safety activities for 2024 is provided in Appendix I.

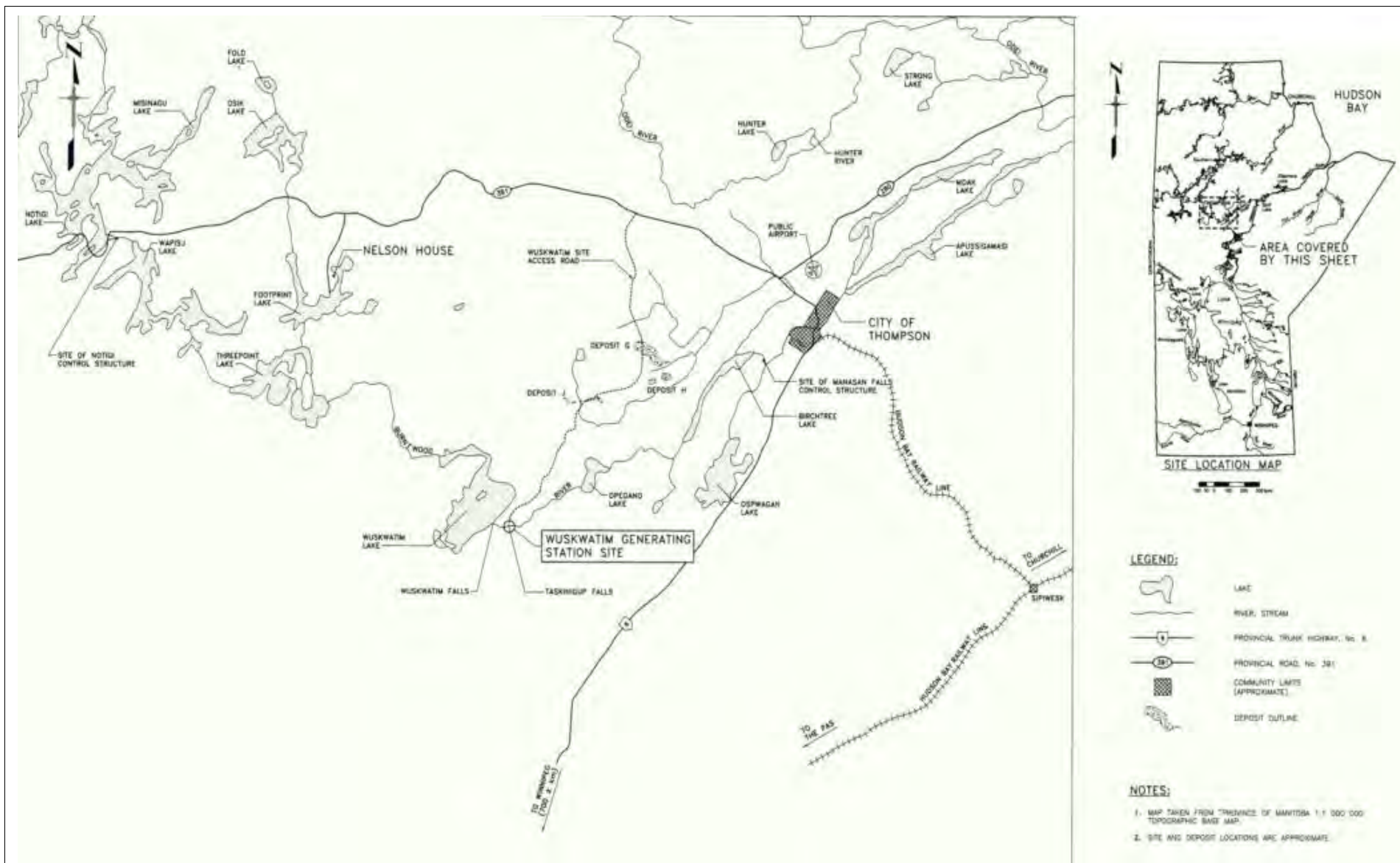
8.0 CONCLUSIONS & CLOSURE

During the January 1 to December 31, 2024 reporting period, there were eleven events where water levels deviated from the Water Power Act and Environment Act licence limits. Investigation into these events concluded that three of the Birch Tree Lake events were not attributable to Wuskwatim operations. Manitoba Hydro operated in compliance with the licences as shown in Table 5.

Table 5: Summary of 2024 Compliance

Location	Constraint	Variable	Exceedances Attributed to Wuskwatim Operations	Number of Readings	% Compliance
Wuskwatim Lake	Max/Min Elevation	Mean Daily Water Level	0	366	100 %
Wuskwatim Lake	Max/Min Elevation	Hourly Water Level	0	8784	100 %
Birch Tree Lake	Water Level Variation	Mean Daily Water Level	8	366	97.8 %

Manitoba Hydro continues to operate the Wuskwatim Generating Station in accordance with the Interim Licence under the Water Power Act for the Development of Water Power at the Wuskwatim Site on the Burntwood River and Environment Act Licence No. 2699.



	MANITOBA HYDRO	
	WATERWAY APPROVALS AND MONITORING	
	WUSKWATIM GENERATING STATION	
	LOCATION MAP	
	PROJECT	
	ANNUAL WATER LEVEL REPORT	FIGURE 1



MANITOBA HYDRO

WATERWAY APPROVALS AND MONITORING

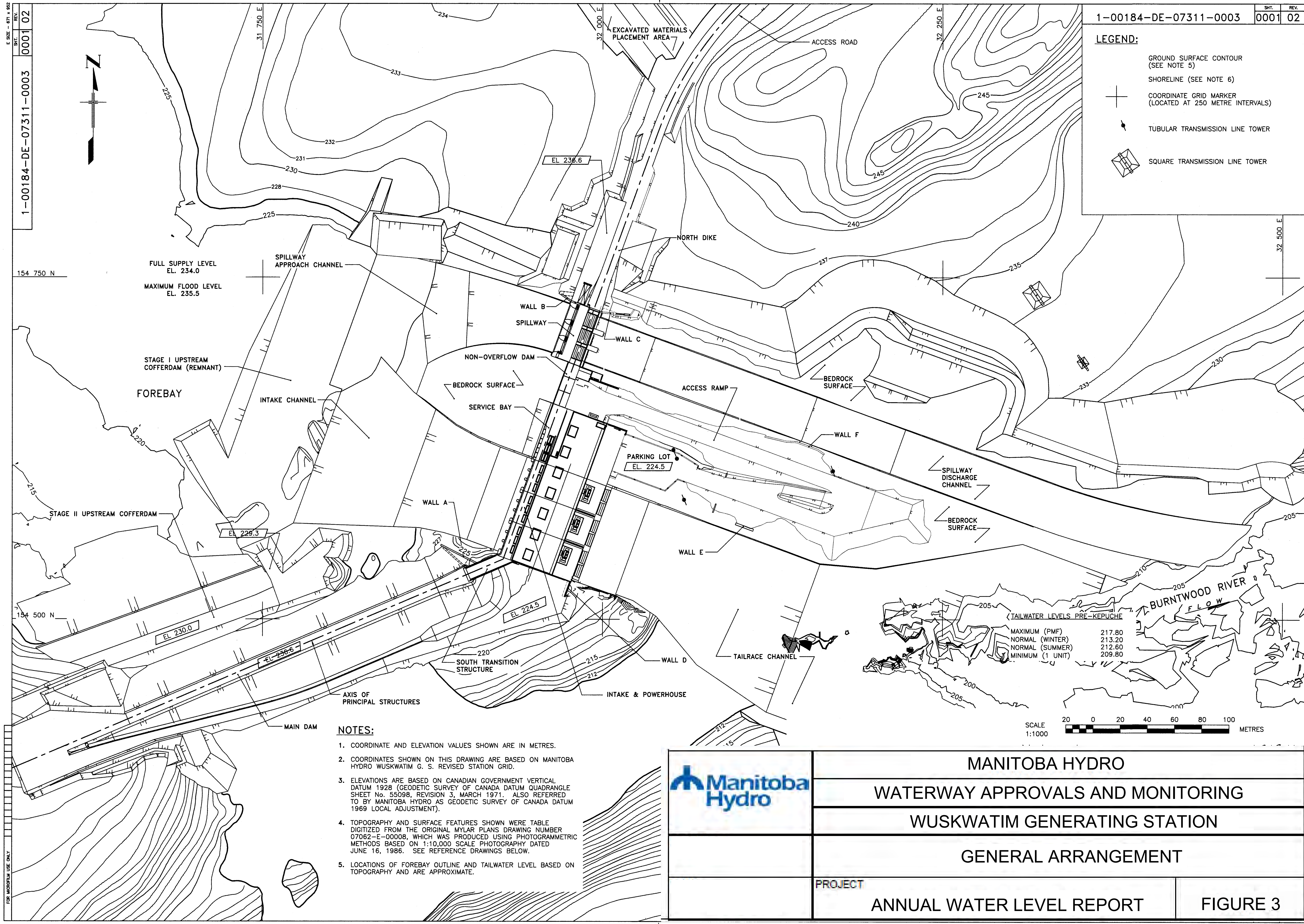
WUSKWATIM GENERATING STATION

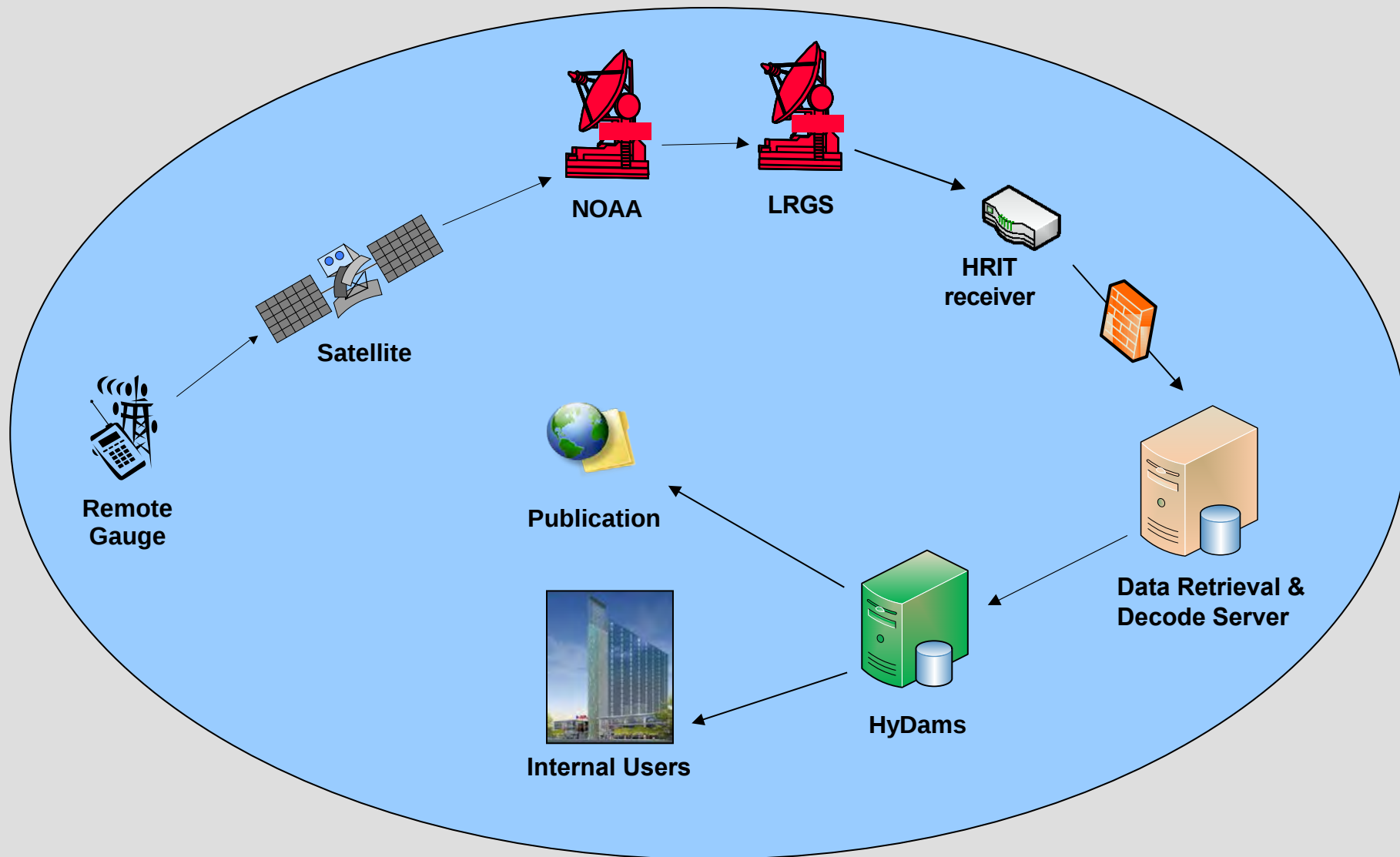
PHOTOGRAPH OF GENERATING STATION

PROJECT

ANNUAL WATER LEVEL REPORT

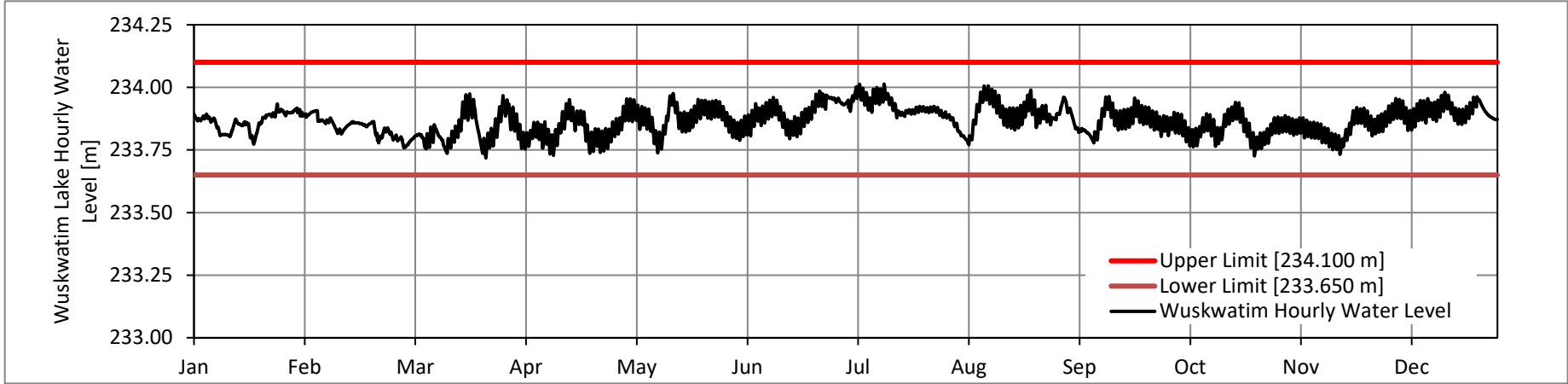
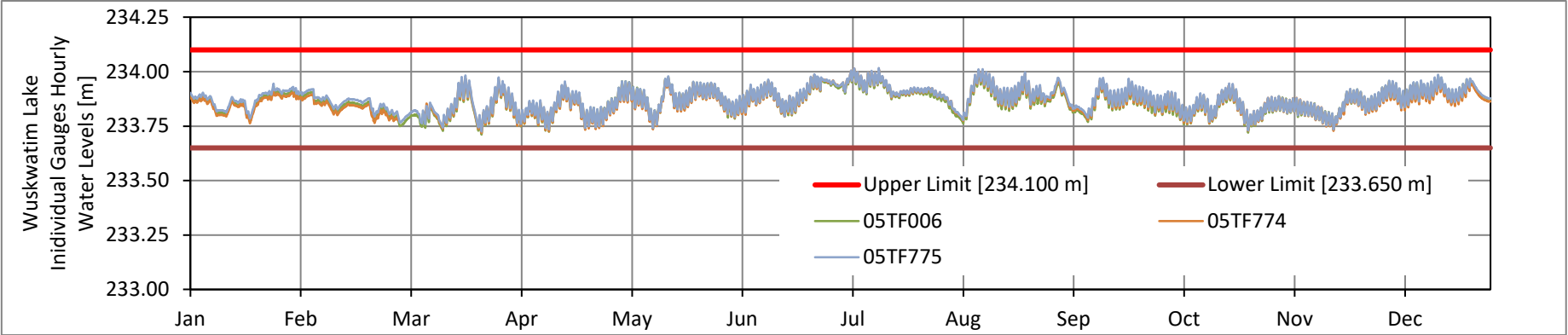
FIGURE 2





	MANITOBA HYDRO	
	WATERWAY APPROVALS AND MONITORING	
	HYDROLOGIC DATA ACQUISITION AND MANAGEMENT SYSTEM	
	REMOTE DATA PROCESS MAP	
	PROJECT	
	WATER LEVELS AND FLOWS REPORT	FIGURE 4

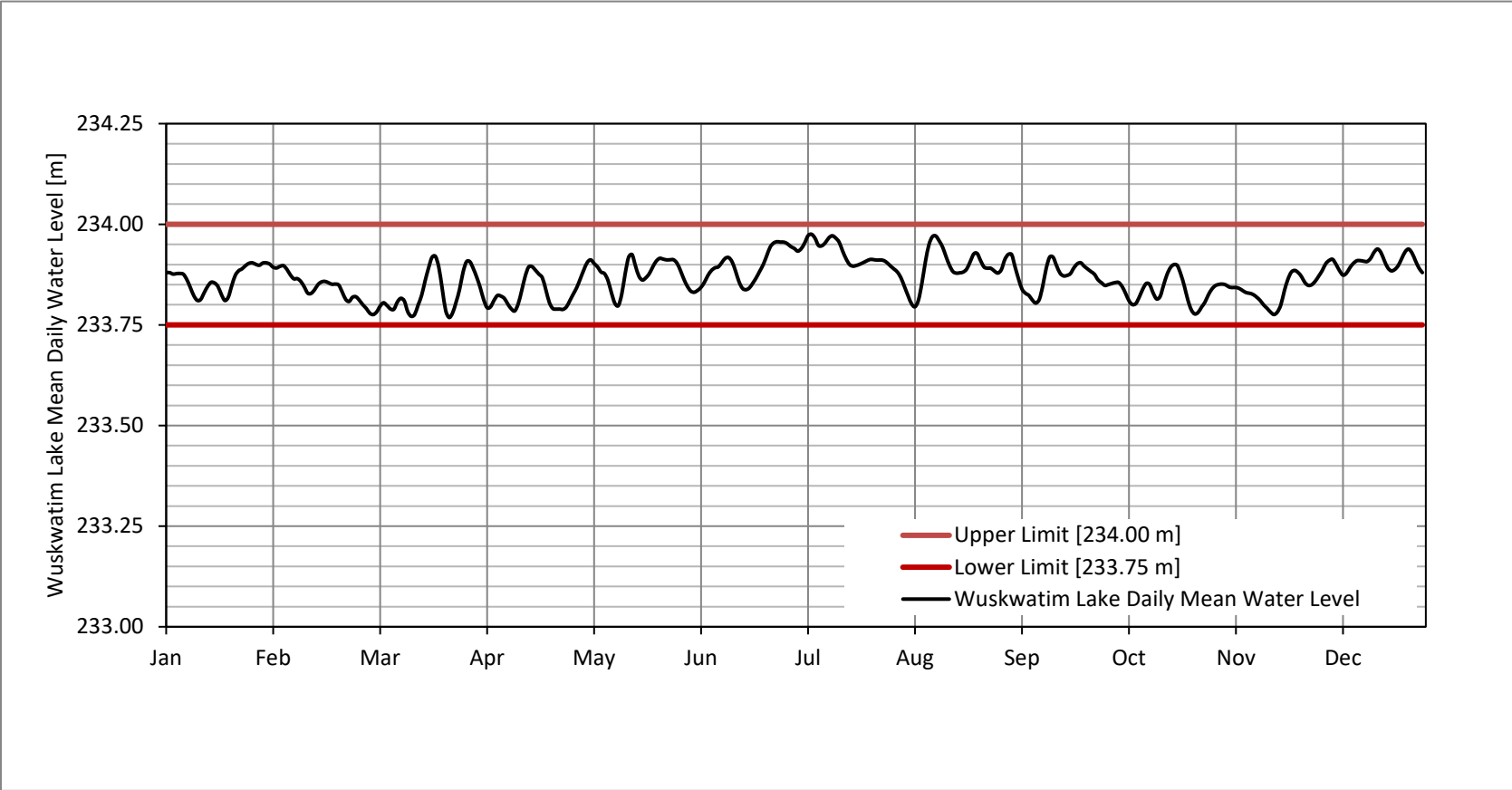
Wuskwatim Generating Station - Wuskwatim Lake Hourly Water Levels
Compliance Report for 2024



Note:
Wuskwatim Hourly Water Level is calculated using Wuskwatim Lake gauges
05TF006, 05TF774 & 05TF775.

	MANITOBA HYDRO	
	WATERWAY APPROVALS AND MONITORING	
	WUSKWATIM GENERATING STATION	
	WUSKWATIM LAKE HOURLY WL (2024)	
	PROJECT	
	ANNUAL COMPLIANCE REPORT	FIGURE 5

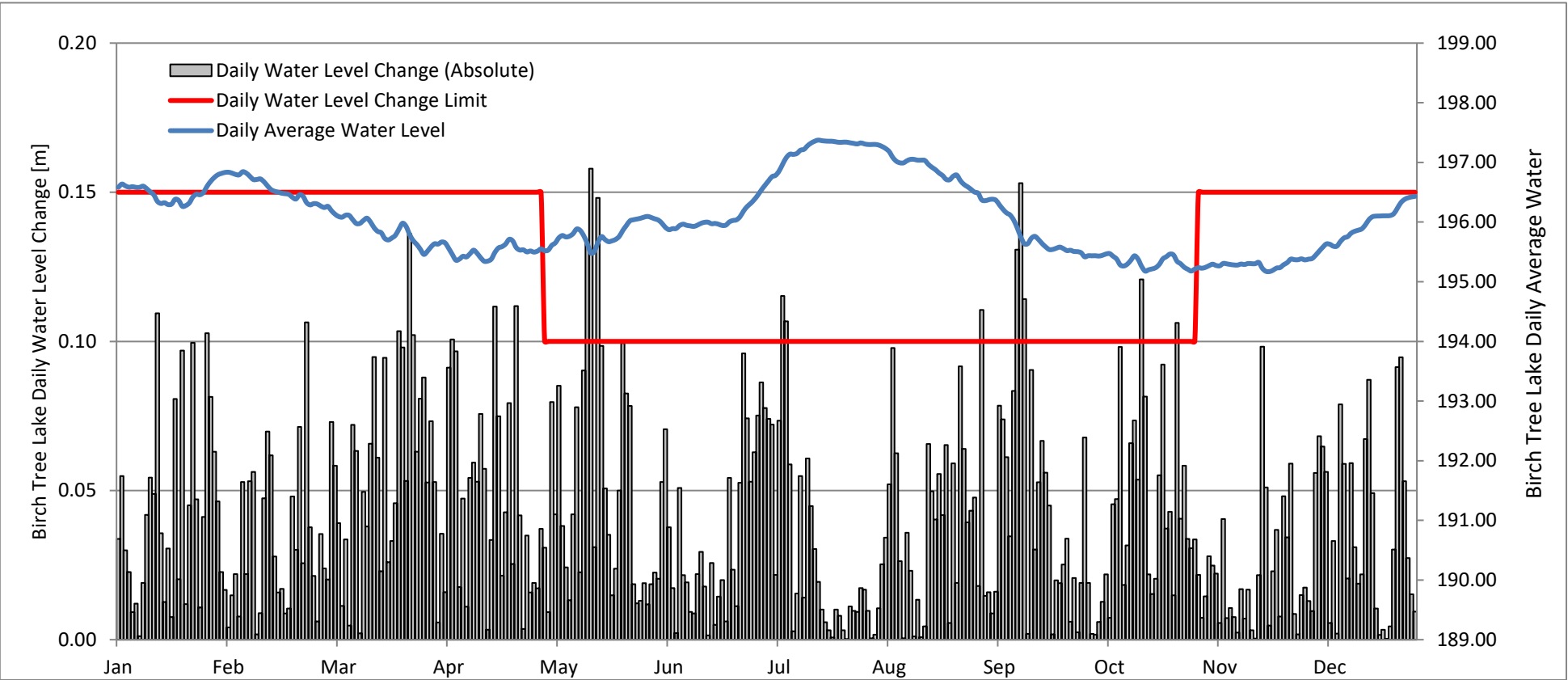
Wuskwatim Generating Station - Wuskwatim Lake Mean Daily Water Level
Compliance Report for 2024



Note:
Wuskwatim Lake Mean Daily Water Level is calculated using Wuskwatim Lake gauges 05TF006, 05TF774 & 05TF775.

	MANITOBA HYDRO	
	WATERWAY APPROVALS AND MONITORING	
	WUSKWATIM GENERATING STATION	
	WUSKWATIM LAKE MEAN DAILY WL (2024)	
	PROJECT	
	ANNUAL COMPLIANCE REPORT	FIGURE 6

Wuskwatim Generating Station - Birch Tree Lake Daily Water Level Change
Compliance Report for 2024



Note:
The Birch Tree Lake Daily Water Level Change is calculated using Birch Tree Lake gauges 05TG701 & 05TG746.
The daily water level change limit is equal to 0.1 m in open water conditions (May 1 to October 31) and 0.15 m in winter conditions

	MANITOBA HYDRO	
	WATERWAY APPROVALS AND MONITORING	
	WUSKWATIM GENERATING STATION	
	BIRCH TREE LAKE DAILY WL CHANGE (2024)	
	PROJECT ANNUAL COMPLIANCE REPORT	FIGURE 7

APPENDIX I
CORRESPONDENCE WITH
MANITOBA ENVIRONMENT AND
CLIMATE CHANGE

2024 05 17

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On May 12, 13 and May 15, 2024, the mean daily water level variation on Birch Tree Lake was above the licence limit specified in clause 30 (b) of The Environment Act Licence No. 2699.

The Birch Tree Lake daily water level change was 0.14 metres on May 12, 0.16 metres on May 13 and 0.15 metres on May 15, 2024 (Figure 1). Clause 30(b) of The Environment Act Licence No. 2699 limits mean daily water level variations on Birch Tree Lake to 0.10 m under open water conditions. Waterway Approvals and Monitoring Department is investigating the incident and we will advise you of the outcome.

If you have any questions about this matter, please call me at (204) 360-3018.

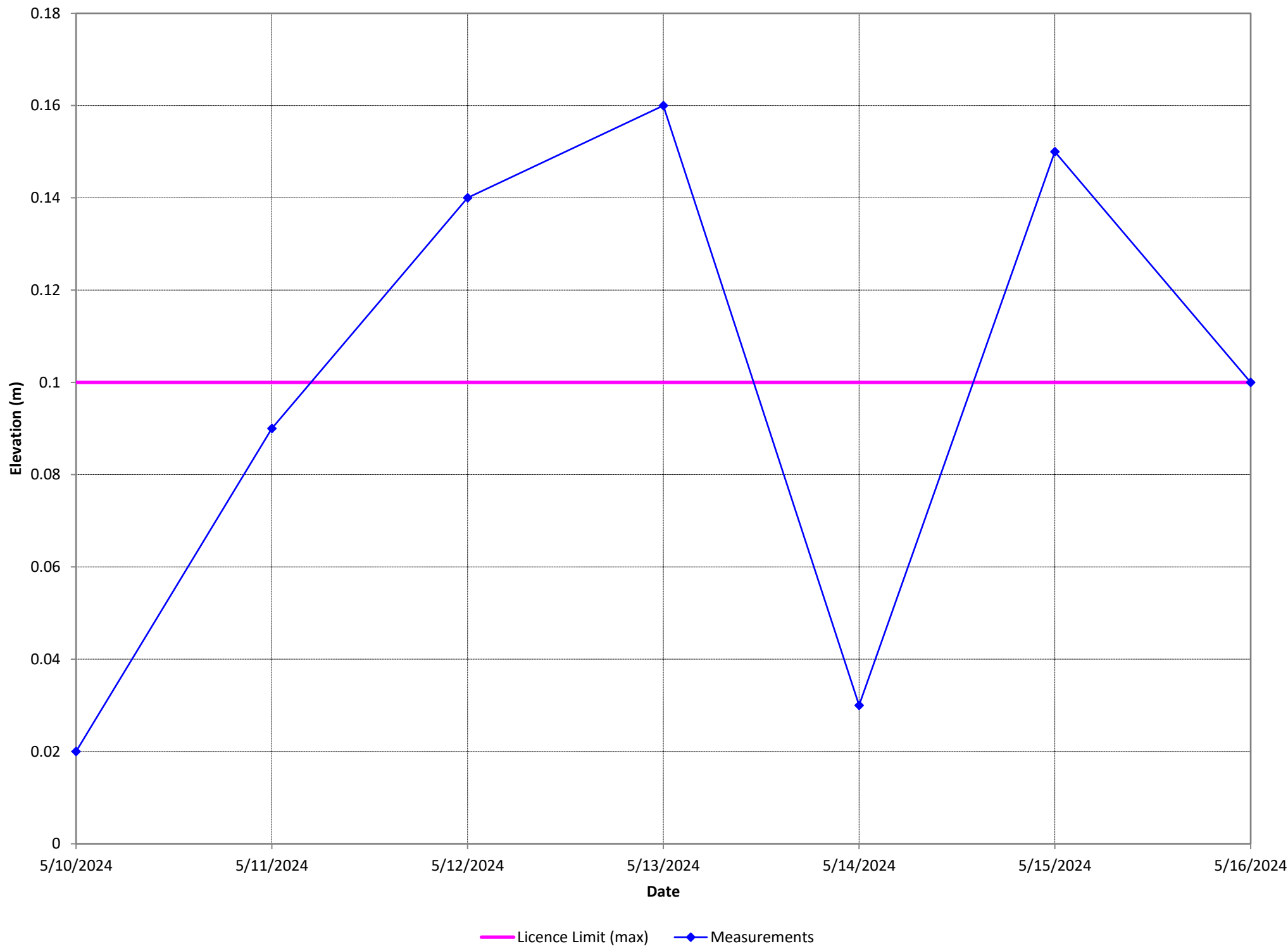
Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

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Birch Tree Lake Daily ROC -- 7 Day Elevation Licence Compliance



2024 06 07

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On May 12, 13 and 15, 2024, the mean daily water level variation on Birch Tree Lake was above the open water licence limit of 0.10 m specified in clause 30 (b) of The Environment Act Licence No. 2699. The Birch Tree Lake daily water level changes on these dates ranged from 0.14 m to 0.16 m. Hydraulic modelling shows that these exceedances were a direct result of the operation of the Wuskwatim Generating Station (G.S.).

In the days leading up to the incidents on May 12th and 13th 2024, operators reduced generation to raise the Wuskwatim G.S. forebay in preparation for peak demand to start the work week. The week started with unplanned transmission outages in the north that required Manitoba Hydro to reduce generation below what was planned and led to the change in daily water levels at Birch Tree Lake beyond the licence limit.

Separate issues along the northern transmission system required an unplanned increase in generation on May 15, 2023 that led to the change in daily water levels at Birch Tree Lake beyond the licence limit.

The issues along the northern transmission system were temporary, and we do not anticipate a recurrence of this type of licence exceedance in the future.

If you have any questions about this matter, please call me at (204) 360-3018.

Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

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2024 07 11

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On July 6, 2024 and July 7, 2024, the mean daily water level variation on Birch Tree Lake was above the licence limit specified in clause 30 (b) of The Environment Act Licence No. 2699.

The Birch Tree Lake daily water level change was 0.12 metres on July 6, 2024 and 0.11 metres on July 7, 2024 (Figure 1). Clause 30(b) of The Environment Act Licence No. 2699 limits mean daily water level variations on Birch Tree Lake to 0.10 m under open water conditions. Waterway Approvals and Monitoring Department is investigating the incident and we will advise you of the outcome.

If you have any questions about this matter, please call me at (204) 360-3018.

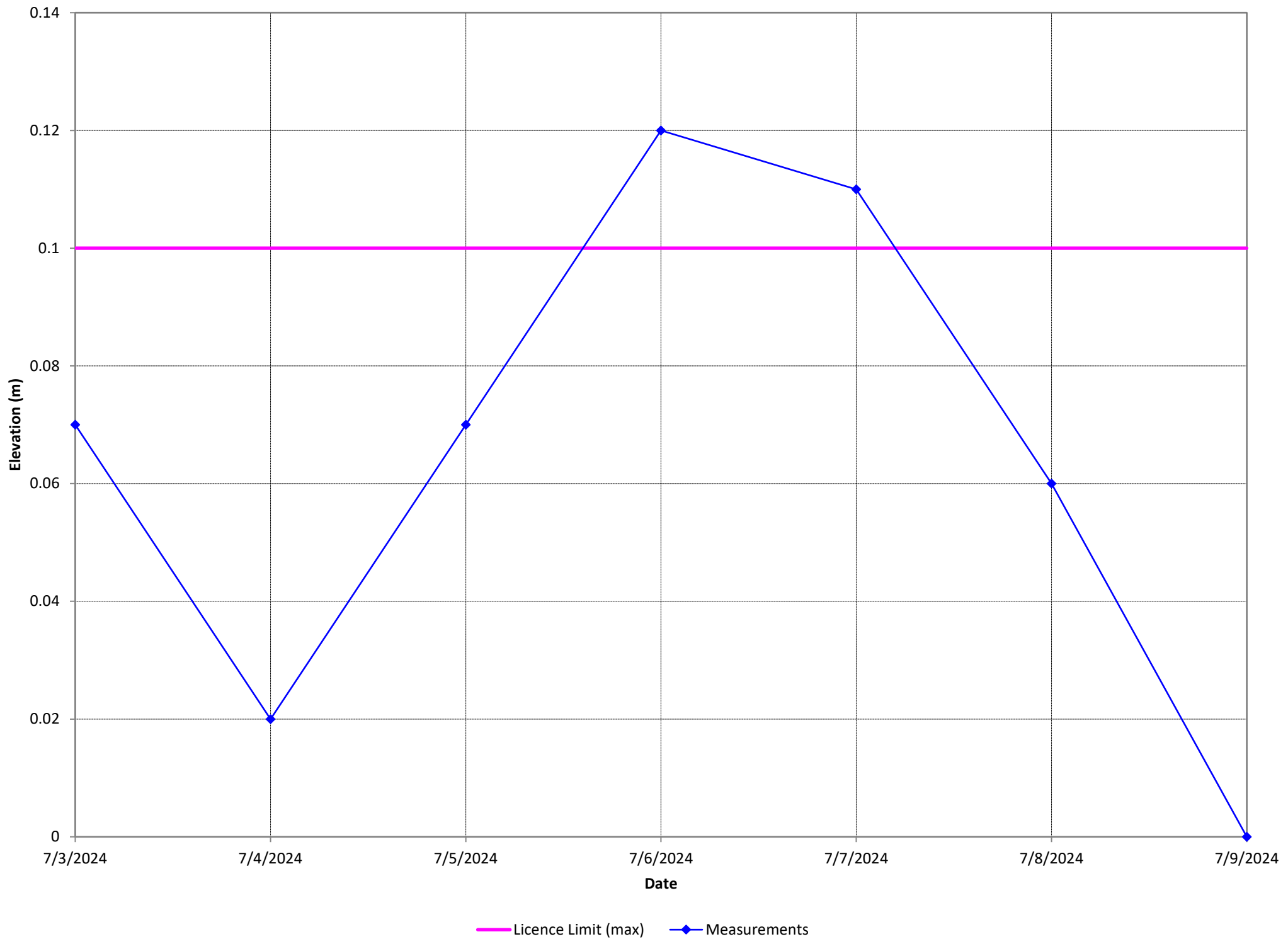
Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

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Birch Tree Lake Daily ROC -- 7 Day Elevation Licence Compliance



2024 07 25

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On July 6, 2024 and July 7, 2024, the mean daily water level variation on Birch Tree Lake was above the licence limit specified in clause 30 (b) of The Environment Act Licence No. 2699.

The Birch Tree Lake daily water level change was 0.12 metres on July 6, 2024, and 0.11 metres on July 7, 2024 (Figure 1). Clause 30(b) of The Environment Act Licence No. 2699 limits mean daily water level variations on Birch Tree Lake to 0.10 m under open water conditions. Both exceedances were a direct result of the operation of the Wuskwatim Generating Station (G.S.).

Hydraulic modelling indicates that the exceedances were caused by the Wuskwatim Generating Station (G.S.) during a change in its cycling pattern, coinciding with increased inflow to Wuskwatim Lake.

Due to elevated and rising Southern Indian Lake levels, Notigi outflow was increased over the last month, resulting in progressively higher inflows into Wuskwatim Lake. These dynamic hydraulic conditions overlapped with the operational need to shift from constant discharge to unit cycling. This transition caused water levels at Birch Tree Lake to increase, resulting in a daily water level change greater than 0.10 meters on July 6 and July 7, 2024.

Manitoba Hydro continues to investigate and refine operating procedures that may prevent a recurrence of this type of licence exceedance in the future.

If you have any questions about this matter, please call me at (204) 360-3018.

Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

2024 09 13

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate Change
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On August 31, 2024, the mean daily water level variation on Birch Tree Lake was 0.11 m (Figure 1). This is above the licence limit specified in clause 30 (b) of The Environment Act Licence No. 2699.

This incident occurred during the modest transition from two-unit best gate to two-unit full gate discharge, while adhering to internal daily flow change guidelines.

Hydraulic modelling determined that Wuskwatim Generating Station operations would have caused a Birch Tree Lake daily change of 0.10 m. For this reason, the August 31 incident is not considered a licence violation.

If you have any questions about this matter, please call me at (204) 360-3018.

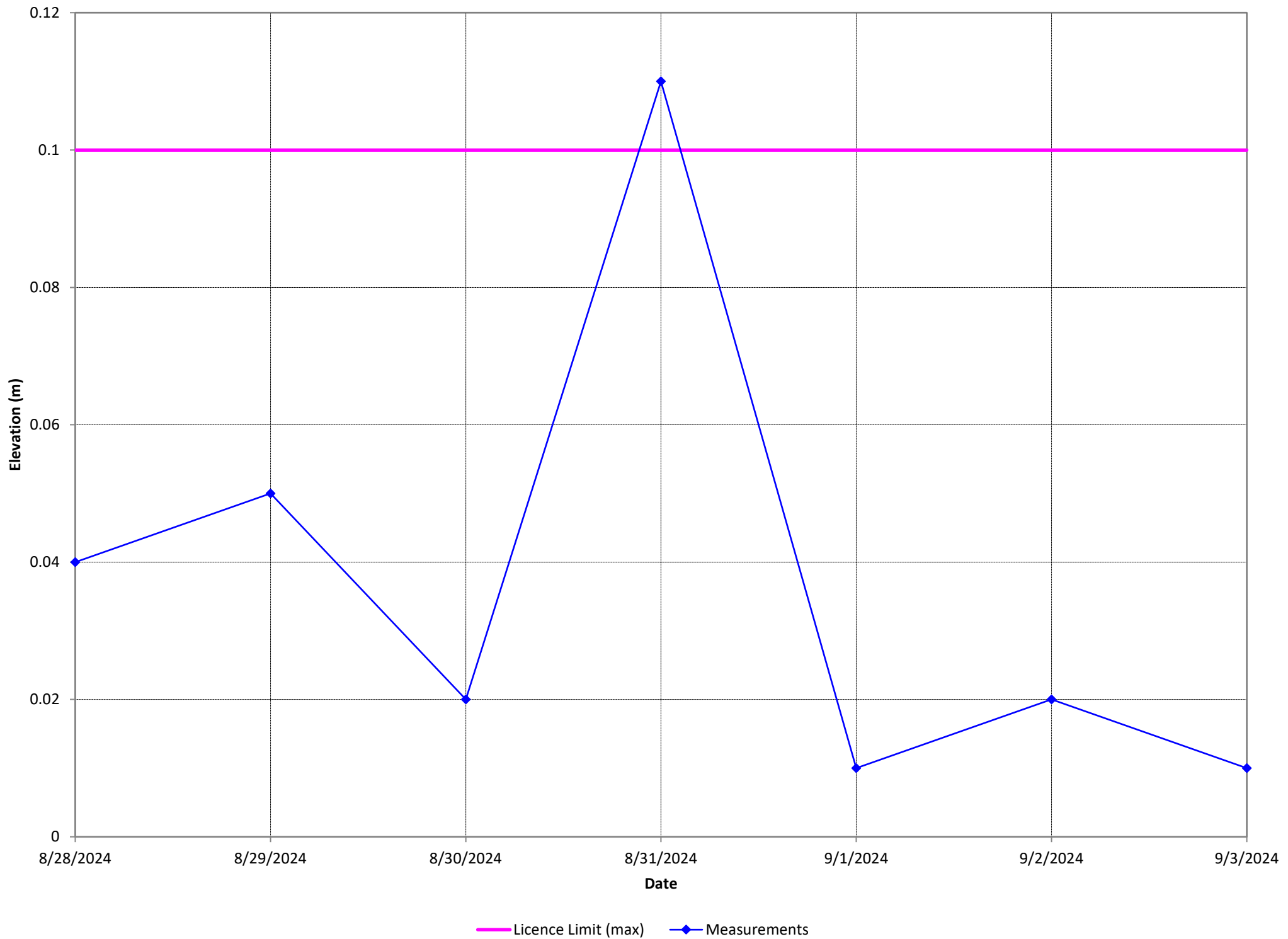
Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

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Birch Tree Lake Daily ROC -- 7 Day Elevation Licence Compliance



2024 09 20

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate Change
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On September 10, 2024, September 11, 2024, and September 12, 2024 the mean daily water level variation on Birch Tree Lake exceeded the licence limit specified in clause 30 (b) of The Environment Act Licence No. 2699.

The Birch Tree Lake daily water level change was 0.13 metres on September 10, 2024, 0.15 metres on September 10, 2024, and 0.11 metres on September 10, 2024 (Figure 1). Clause 30(b) of The Environment Act Licence No. 2699 limits mean daily water level variations on Birch Tree Lake to 0.10 m under open water conditions. Waterway Approvals and Monitoring Department is investigating the incident and we will advise you of the outcome.

If you have any questions about this matter, please call me at (204) 360-3018.

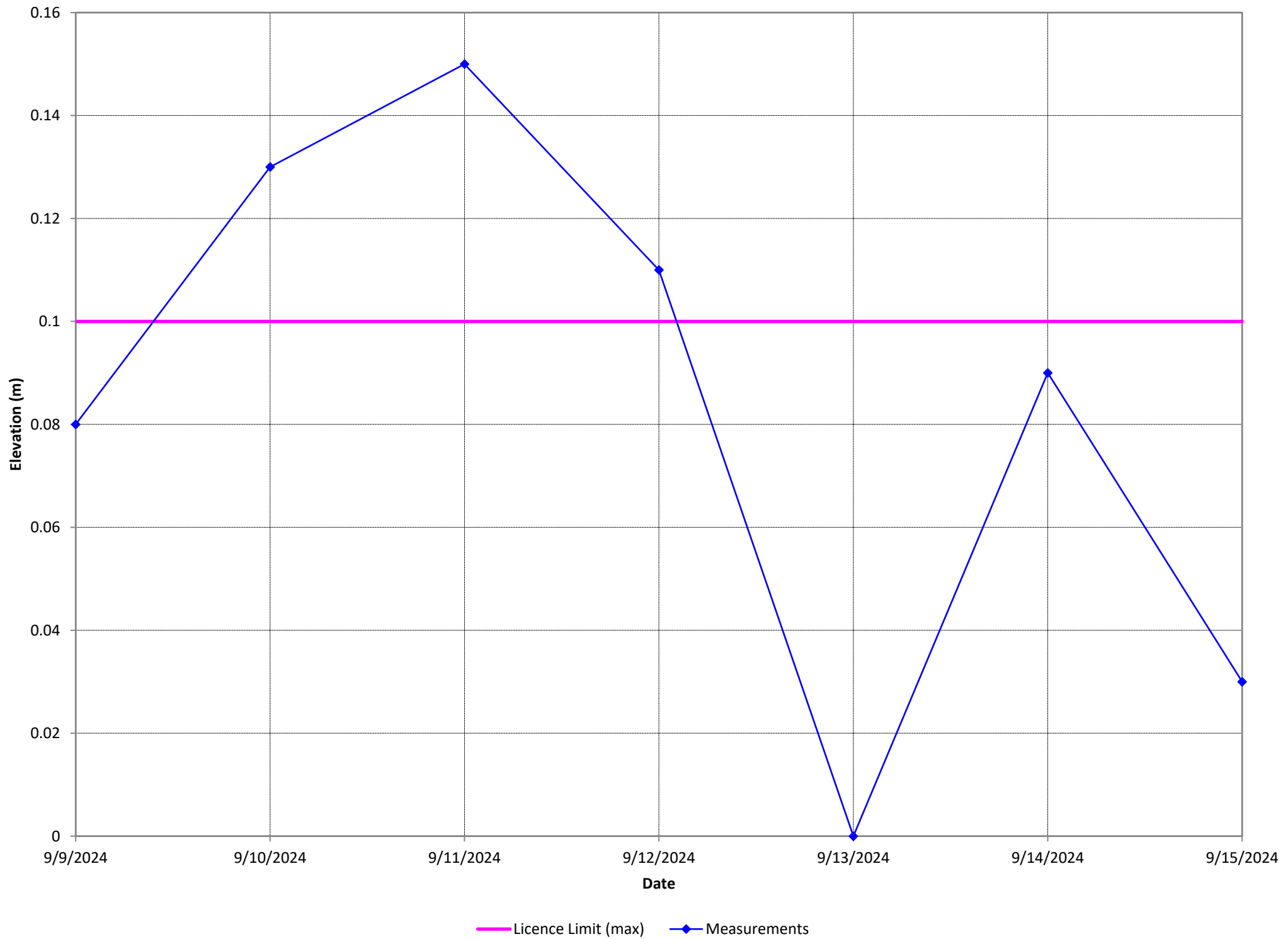
Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

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Birch Tree Lake Daily ROC -- 7 Day Elevation Licence Compliance



2024 10 22

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate Change
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On September 10, 2024, September 11, 2024, and September 12, 2024 the mean daily water level variation on Birch Tree Lake exceeded the licence limit specified in clause 30 (b) of The Environment Act Licence No. 2699.

The Birch Tree Lake daily water level change was 0.13 metres on September 10, 2024, 0.15 metres on September 11, 2024, and 0.11 metres on September 12, 2024 (Figure 1). Clause 30(b) of The Environment Act Licence No. 2699 limits mean daily water level variations on Birch Tree Lake to 0.10 m under open water conditions.

Hydraulic modelling indicates that the licence exceedance directly resulted from unit cycling operations at the Wuskwatim Generating Station superimposed on declining Burntwood River flows due to recent Notigi outflow reductions. Reduced flows on the Burntwood River significantly lowered the level of Birch Tree Lake, increasing the lake's sensitivity to the transient flows generated during the initial cycling operations. Once the water regime adapted to the new lower flows, the same Wuskwatim cycling operations continued without any licence compliance issues.

Manitoba Hydro is investigating operational limits during low flow conditions to help prevent similar exceedances in the future.

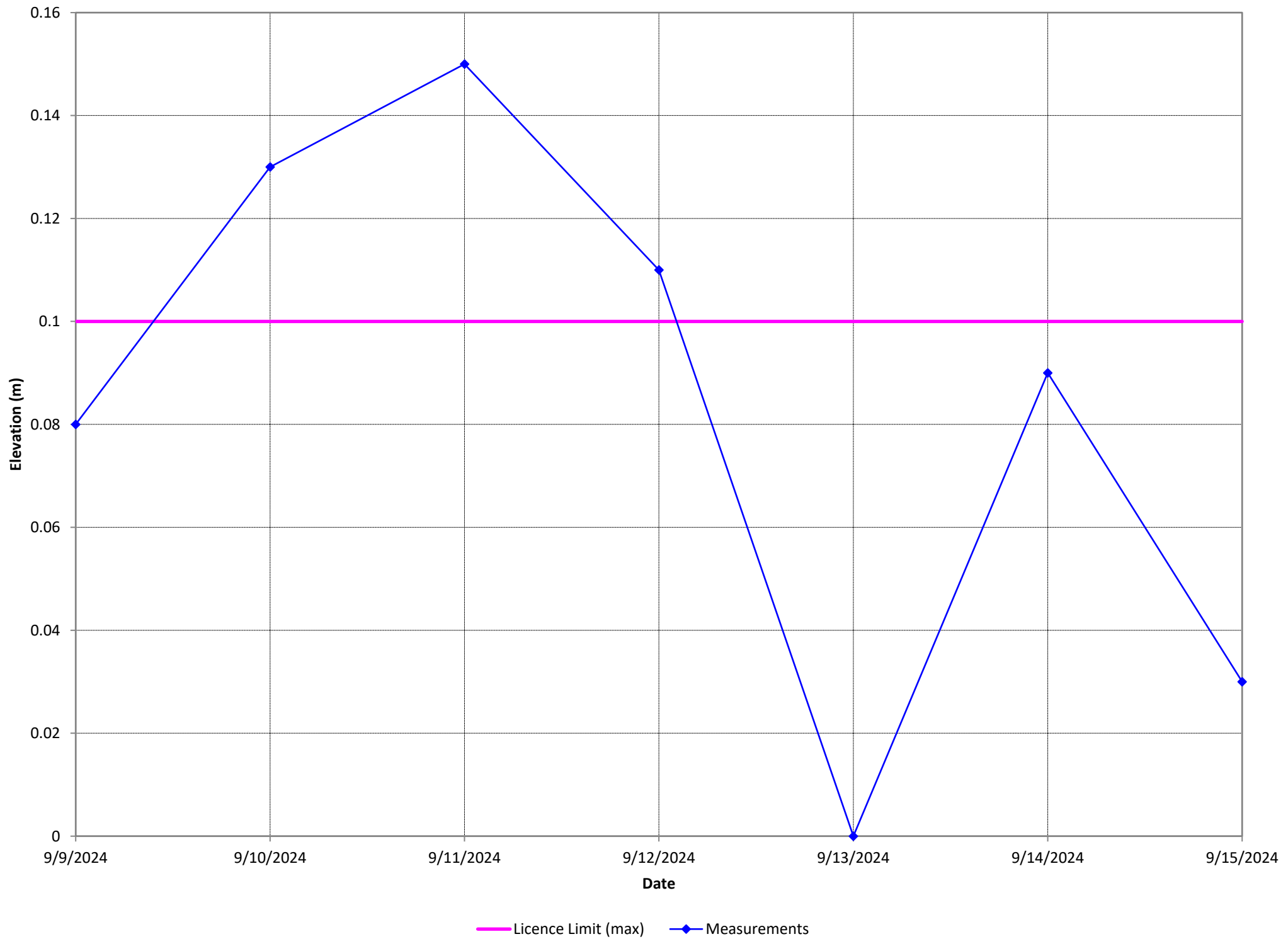
If you have any questions about this matter, please call me at (204) 360-3018.

Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

Birch Tree Lake Daily ROC -- 7 Day Elevation Licence Compliance



2024 10 23

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate Change
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On October 15, 2024, the mean daily water level variation on Birch Tree Lake was 0.12 metres (Figure 1). This is above the licence limit specified in clause 30 (b) of The Environment Act Licence No. 2699.

This incident occurred during a period of regular cycling operations, while adhering to internal daily flow change guidelines meant to prevent licence violations at Birch Tree Lake.

Hydraulic modelling determined that Wuskwatim Generating Station operations would have caused a Birch Tree Lake daily change of 0.10 m. For this reason, the October 15 incident is not considered a licence violation.

If you have any questions about this matter, please call me at (204) 360-3018.

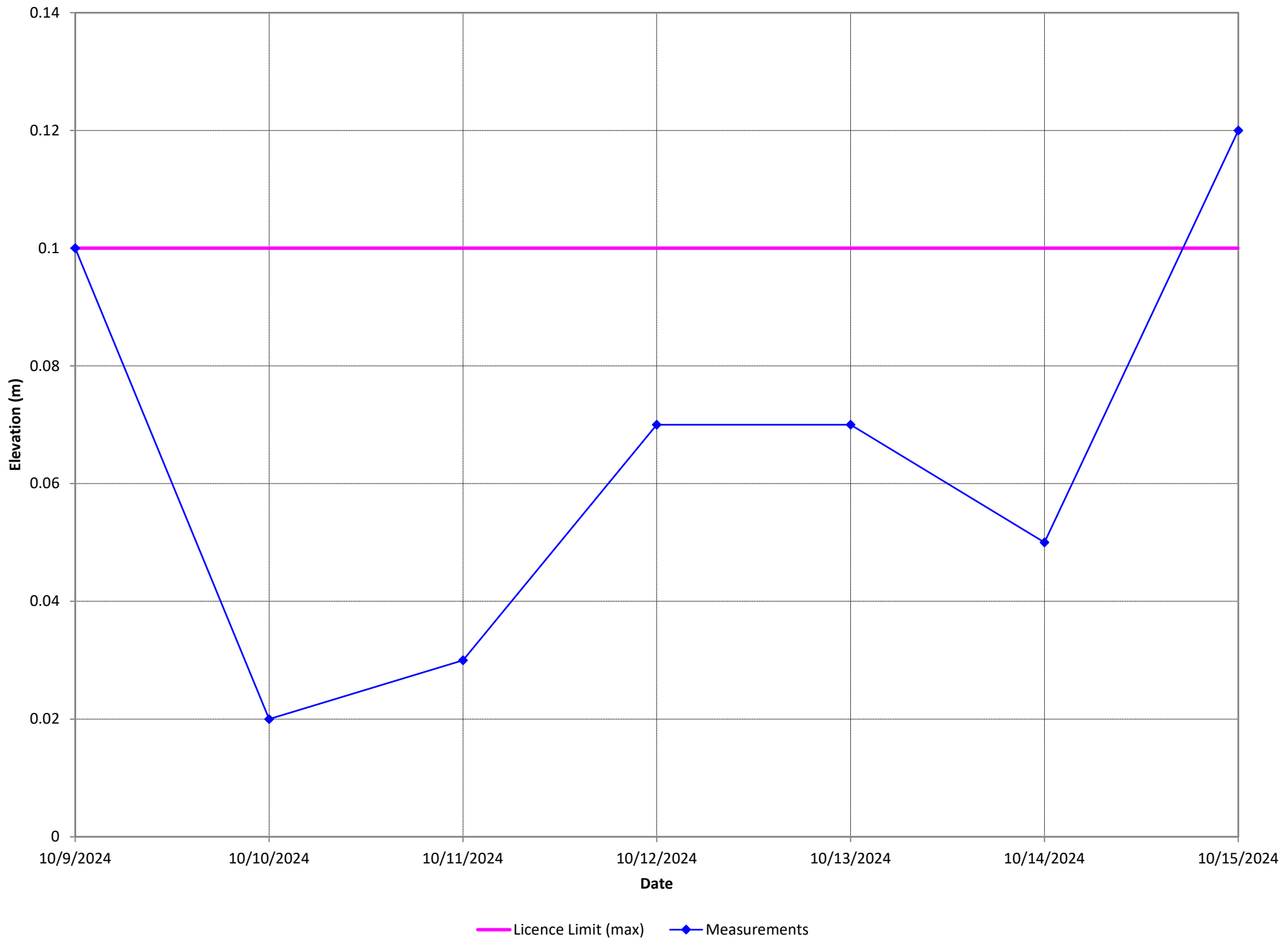
Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

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Birch Tree Lake Daily ROC -- 7 Day Elevation Licence Compliance



2024 11 08

Ms. Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate Change
EABDirector@gov.mb.ca

Dear Ms. Wittman:

**WUSKWATIM GENERATING STATION ENVIRONMENT ACT LICENCE – BIRCH
TREE LAKE – MEAN DAILY WATER LEVEL VARIATION ABOVE LICENCE LIMIT**

On October 25, 2024, the mean daily water level variation on Birch Tree Lake was 0.11 metres (Figure 1). This is above the licence limit specified in clause 30 (b) of The Environment Act Licence No. 2699.

This incident occurred during a period of regular cycling operations, while adhering to internal daily flow change guidelines meant to prevent licence violations at Birch Tree Lake.

Hydraulic modelling determined that Wuskwatim Generating Station operations would have caused a Birch Tree Lake daily change of 0.09 m. For this reason, the October 25 incident is not considered a licence violation.

If you have any questions about this matter, please call me at (204) 360-3018.

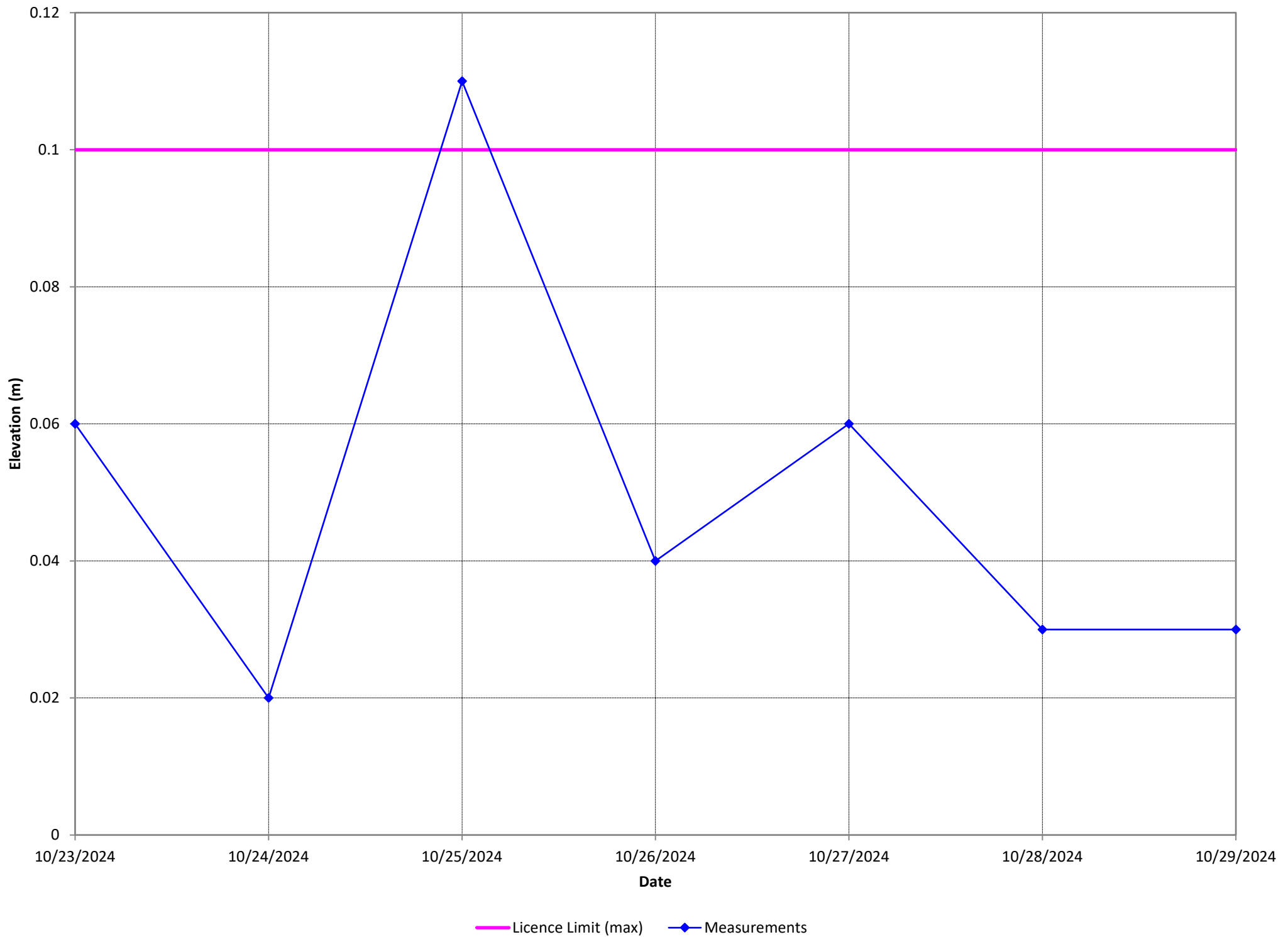
Yours truly,

Original signed by: *Wes Penner*

W.V. Penner, P.Eng
Manager, Waterway Approvals and Monitoring Department

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Birch Tree Lake Daily ROC -- 7 Day Elevation Licence Compliance



APPENDIX II
2024 WUSKWATIM DAM SAFETY ACTIVITIES LIST

Wuskwatim GS Dam Safety Activities List

	Activities	Performed By	Tasks Completed	Tasks Planned
Inspections	Concrete dams – engineering inspection	Dam Safety	1	1
	Concrete dams – condition survey unit inspection	Dam Safety	1	1
	Concrete dams – routine inspection	Site – Util	6	6
	Embankment dams - engineering inspection	Dam Safety	1	1
	Embankment dams – routine inspection	Site – Util	12	12
	Hydraulic condition - engineering inspection	Dam Safety	1	1
Instrumentation	Concrete dams – instrumentation basic review	Dam Safety	6	6
	Concrete dams – instrumentation comprehensive review	Dam Safety	1	1
	Embankment dams – instrumentation basic review	Dam Safety	6	6
	Embankment dams – instrumentation comprehensive review	Dam Safety	1	1
Engineering Analyses	Concrete dams - engineering analysis	Structural	0	0
	Embankment dams – engineering analysis	Geotechnical & Geological	0	0
	Hydraulic assets - engineering analysis	Hydraulic Asset Performance	0	0
Maintenance and Testing	Spillway - inspection	Site - Oper	51	52
	Spillway gate - functional test	Site - Elec/Mech	3	3 (1 per gate)
	Spillway gate - "full flow" test (5 Year)	Site - Elec/Mech	0	0
	Spillway gate - inspection	Site - Mech	3	3 (1 per gate)
	Spillway gate heater - maintenance	Site - Elec	3	3 (1 per gate)
	Spillway gate hoist - maintenance	Site - Elec	3	3 (1 per gate)
	Spillway gate hoist - maintenance	Site - Mech	3	3 (1 per gate)
	Spillway emergency generator - functional gate lift test	Site - Elec	0	1
	Spillway emergency generator - test run	Site - Oper	12	12
	Spillway emergency generator - maintenance	Site - Elec	0	1
	Spillway emergency generator - maintenance	Mechanical Services	0	1
	Forebay level - inspection	Site - Oper	12	12
	Tailrace level - inspection	Site - Oper	12	12
Program	Dam Safety Emergency Plan - updates	Dam Safety	1	1
	Dam Safety Reference Manual - revision	Dam Safety	0	0
	Delivered DS training - routine inspection	Dam Safety	0	As required
	Delivered DS training - emergency preparedness	Dam Safety	1	As required