

**YUKON WATER BOARD  
EMERGENCY AMENDMENT OF LICENCE**

**LICENSEE:** Yukon Energy Corporation

**LICENCE:** HY99-012

**APPLICATION NUMBER:** HY99-012-4                      **AMENDMENT NUMBER:** Three (3)

Pursuant to the *Waters Act*, Water Licence HY99-012, is hereby amended as follows:

**The following clauses are hereby amended as follows:**

***Part C- Operating Conditions***

23. The following flows shall be maintained:

- a. The channels downstream of the Mayo Lake Dam shall maintain a minimum instantaneous flow of 2.8 cubic meters per second (100 cubic feet per second).
- b. In the channels downstream of the Mayo A Powerhouse, a minimum instantaneous flow of 6 cubic meters per second (212 cubic feet per second) from May 1 to September 30 and minimum flow of 5 cubic meters per second (177 cubic feet per second) for the remainder of the year;
- c. In the channels downstream of the Mayo B Powerhouse, a minimum instantaneous flow of 11 cubic meters per second (388 cubic feet per second) from May 1 to September 30;
- d. Notwithstanding clause 23(c) the Licensee is authorized to maintain a minimum instantaneous flow of 6 cubic meters per second (212 cubic feet per second) in the channels downstream of the Mayo B Powerhouse from August 14, 2019 until September 30, 2019 and from May 1, 2020 until June 30, 2020; and
- e. The instantaneous flow rate in the channels downstream of the Mayo Lake Dam, including the channels downstream of the Mayo A and Mayo B Powerhouses, may be reduced below the minimum levels specified in clauses 23 (a) through (d) from August 14, 2019 until June 30, 2020, if and to the extent that is not possible to maintain those flow rates as a result of the surface elevation of Mayo Lake decreasing below 662.900 meters (2201.853 feet).

24. The mean daily water surface elevation of Mayo Lake must be maintained between a controlled minimum of 663.249 meters (2203.000 feet) and a controlled maximum of 665.840 (2211.500 feet) as measured from Yukon Energy Corporation's datum at the site.

- a. From August 14, 2019 until June 30, 2020, the mean daily water surface elevation of Mayo Lake may be reduced below 663.249 meters (2203.000 feet), if and to the extent that the Licensee determines such a measure to be necessary for the purpose of maintaining the minimum instantaneous flow rates specified in clause 23 (d) and (e).

The following clauses are hereby added as follows:

**Part F- Programs and Studies**

*Low Water Level Response Plan*

48. By December 31, 2020, the Licensee shall submit to the Board a Low Water Level Response Plan. The plan shall include the development of thresholds and development of adaptive management actions to be taken in response to low water conditions resulting from drought.

*Fish Mitigation and Monitoring Plan*

49. By December 31, 2020, the Licensee shall submit to the Board a Fish Mitigation and Monitoring Plan which highlights the low-water response for all fish species within the Mayo Lake-Stewart River hydrologic system. The report shall summarize possible adaptive management mitigations and/or responses, and an analysis of the impacts on fish bearing watercourses as a result of channel flow being less than 2.8 cubic meters per second (100 cubic feet per second) above Wareham Lake or 6 cubic meters per second (212 cubic feet per second) below Wareham Lake.

**Part G- Notification**

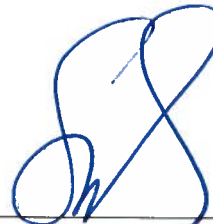
50. The Licensee shall inform the Village of Mayo immediately when the decision is made to lower the flow in the Mayo River downstream of the Mayo B Powerhouse to 6 cubic meters per second (212 cubic feet per second), or lower.

Approved this 15 day of

August, 2019.



Witness



Minister, Executive Council Office  
Government of Yukon

Issued this 15 day of

August, 2019.



Witness



Chairperson  
Yukon Water Board

## YUKON WATER BOARD

Pursuant to the *Waters Act* and *Waters Regulations*, the Yukon Water Board hereby grants a Type A Water Use Licence for a power undertaking to:

Yukon Energy Corporation  
P.O. Box 5920  
Whitehorse, Yukon Y1A 5L6

**APPLICATION:** HY10-056                      **LICENCE NUMBER:** HY99-012

**AMENDMENT:** This licence shall be deemed to be amendment 2 of licence number HY99-012.

**LICENCE TYPE:** A

**UNDERTAKING:** Power, Class 3

**LOCATION:** Mayo River and Mayo Lake

**PURPOSE:** Operation of the Mayo Generating Station and the Mayo Lake Dam as proposed in Water Use Application HY99-012, and the Mayo B Generating Station with modified operation of the Mayo A Generating Station as proposed in Water Use Application HY10-056.

**EFFECTIVE DATE:** The effective date of this licence shall be the date on which the signature of the Chairperson of the Yukon Water Board is affixed.

**EXPIRY DATE:** December 31, 2025

This licence shall be subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the *Waters Act* and the *Waters Regulations* made thereunder.

Approved this 12<sup>th</sup> day of

May, 2011



Witness



Minister, Executive Council Office  
GOVERNMENT OF YUKON

Issued this 16<sup>th</sup> day of

May, 2011

  
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Witness

  
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Chairperson

YUKON WATER BOARD

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**PART A - DEFINITIONS**

"Act" means the *Waters Act* and any amendments thereto.

"Regulations" means the Regulations made under the *Act*.

"Board" means the Yukon Water Board.

"Application" and "Water Use Application" mean Water Use Application HY99-012, HY07-016, and HY10-056, including any additional submissions and/or revisions, submitted to the Board by the Licensee.

"Deleterious Substance" means deleterious substance as defined in Section 34(1) of the *Fisheries Act*.

**PART B - GENERAL CONDITIONS**

Other Laws

1. No condition of this water use licence limits applicability of any statutory authority.
2. All construction or installation of works authorized by this licence shall occur on property that the Licensee has the right to enter upon and use for that purpose.

Correspondence

3. Where any direction, notice, order, or report under this licence is required to be in writing, it shall be given:
  - a. To the Licensee, if delivered, faxed to, or mailed by registered mail to the following address:

Yukon Energy Corporation  
P.O. Box 5920  
Whitehorse, Yukon  
Y1A 5L6  
Fax: (867) 393-5323

and shall be deemed to have been given to the Licensee on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

- b. To the Board, if delivered, faxed to, or sent by registered mail to the following address:

Yukon Water Board  
Suite 106, 419 Range Road  
Whitehorse, Yukon  
Y1A 3V1  
Fax: (867) 456-3890

and shall be deemed to have been given to the Board on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

- c. The Board or the Licensee may, by notice in writing, change its address for delivery.

#### Non-Compliance

4. In the event that the Licensee fails to comply with any provision or condition of this licence, the Board may, subject to the Act, cancel the licence.

#### Term of Licence

5. The term of this licence is from the effective date to December 31, 2025.

#### Reports

6. All reports required to be submitted to the Board will be unbound and reproducible by standard photocopier, accompanied by one electronic copy on a CD/DVD.
7. The Licensee shall provide to the Board 5 additional copies of all reports. The additional copies may be either 5 bound paper copies or 5 electronic copies on individual CDs/DVDs.
8. Electronic copies shall be IBM compatible in one of the following formats: Word 97 – 2003, Excel 97 – 2003 workbooks, or Adobe pdf format. Water quality results must be presented in Excel 97 – 2009.xls format.

#### Annual Reports

9. Annual reports shall be submitted to the Board by the Licensee. The reports shall cover the period from April 1 to March 31 of each year and shall be submitted to the Board on or before May 31 in the year in which the reporting period ends.
10. Annual reports shall include the information required by this licence and by the Regulations, including, but not necessarily limited to:

- a. monthly maximum and minimum of the mean daily water levels on Mayo Lake and Wareham Lake;
- b. monthly maximum and minimum of the mean daily water flows through the gates of the Mayo Lake Dam;
- c. monthly maximum and minimum of the mean daily flows through the Mayo A Generating Station turbines and the Mayo B Generating Station turbines;
- d. monthly maximum and minimum of the mean daily flows through the Wareham Dam spillway;
- e. summaries of all data generated as a result of the monitoring requirements of this licence, including analysis and interpretation by a qualified individual or firm and a discussion of any variances;
- f. detailed results of the annual ice-jam occurrence monitoring;
- g. ramping protocol, associated monitoring results, and any proposed modifications to protocol;
- h. all reports as required by the Fisheries Act Authorization;
- i. information regarding the purpose, nature and extent of any significant maintenance work carried out; and
- j. any other information or reports required by this licence or the Regulations.

#### Quarterly Reports

11. Quarterly reports shall be submitted to the Board by the Licensee. The reports shall cover the periods ending March 31, June 30, September 30 and December 31 of each year and shall be submitted to the Board within 30 days of the end of each reporting period.
12. Quarterly reports shall include the information required by this licence and by the Regulations, including, but not necessarily limited to:
  - a) mean daily water levels on Mayo Lake and Wareham Lake;
  - b) mean daily flows through the gates of the Mayo Lake Dam;
  - c) mean daily flows through the Mayo A Generating Station turbines and the Mayo B Generating Station turbines;

- d) mean daily flows through the Wareham Dam spillway; and
- e) any other information or reports required by this licence or by the Regulations.

#### Dam Safety Monitoring Reports

13. An annual dam safety inspection and monitoring report for the Mayo Lake Dam, Wareham Lake Dam, Mayo A Generating Station and Mayo B Generating Station, and related structures shall be submitted to the Board by the Licensee. The report shall be submitted by November 30 of each year and shall contain the following information:
  - a) monitoring instrumentation readings for the previous year;
  - b) graphical and/or tabulated historic data for the monitoring instrumentation;
  - c) notes of visual observations;
  - d) analysis of the data and observations; and
  - e) recommendations for any additional monitoring or actions arising from the results of the monitoring.
14. Every five years, or more frequently if recommended as a result of any dam safety inspection, the Licensee shall submit a report detailing the results of a comprehensive dam safety review. Reports shall be submitted by November 30 of the year in which the inspection is carried out. The report shall contain the following information:
  - a) monitoring data;
  - b) notes of observations;
  - c) analysis of the data and observations; and
  - d) recommendations for actions arising from the analysis.

#### Spills and Unauthorized Discharges

15. Where a spill or an unauthorized discharge occurs, that is of a reportable quantity under the Yukon *Spills Regulations*, the Licensee shall immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the Spill Contingency Plan. A detailed written report on any such event including, but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than 10 days after the occurrence.



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16. The Licensee shall apply the relevant procedures in the Spill Contingency Plan. The Licensee shall review the Spill Contingency Plan annually and shall provide a summary of that review, including any revisions to the plan, as a component of the annual report.
  17. The Licensee shall maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the Yukon *Spills Regulations*. The log book shall be made available at the request of an Inspector. The log book shall include, but not necessarily be limited to:
    - a) date and time of the spill;
    - b) substance spilt or discharged;
    - c) approximate amount spilt or discharged;
    - d) distance between the spill or discharge and the nearest Watercourse; and
    - e) remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.
  18. The Licensee shall include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.
  19. All personnel shall be trained in procedures to be followed and the equipment to be used in the containment of a spill.
  20. The Spill Contingency Plan shall be posted on site for the duration of the operation.

#### Fuel Storage and Transfer

21. Fuel, lubricants, hydraulic fluids, coolants and similar substances shall be stored and/or transferred a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in or allowed to be deposited in waters.

### **PART C - OPERATING CONDITIONS**

#### Description of Water Use

22. Subject to the terms of this licence, the Licensee is hereby authorised to :

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- a) store the flow of the Mayo River, except for a minimum flow of 2.8 cubic metres per second (100 cubic feet per second), behind the Mayo Lake Dam for the purposes of a power undertaking;
  - b) store the flow of the Mayo River, except for the minimum flows specified in this licence, behind the Wareham Dam for the purposes of a power undertaking; and
  - c) construct, maintain, and operate the Mayo B generating station as proposed in application HY10-056. Any in stream activities, including alterations of the bed and banks of the Mayo River shall not be commenced or continued without a valid Fisheries Act Authorization from the Department of Fisheries and Oceans Canada authorizing the activities; and
  - d) divert the flow of the Mayo River, except for the minimum flows specified in this licence, through the Mayo A generating station and the Mayo B generating station for the purposes of a power undertaking.
23. A minimum instantaneous flow of 2.8 cubic metres per second (100 cubic feet per second) shall be maintained in the channels downstream of the Mayo Lake Dam. The following minimum instantaneous flows shall also be maintained:
- a) In the channels downstream of the Mayo A Powerhouse, a minimum instantaneous flow of 6 cubic metres per second (212 cubic feet per second) from May 1 to September 30 and minimum flow of 5 cubic metres per second (176.6 cubic feet per second) for the remainder of the year; and
  - b) In the channels downstream of the Mayo B Powerhouse, a minimum instantaneous flow of 11 cubic metres per second (388 cubic feet per second) from May 1 to September 30.
24. The mean daily water surface elevation on Mayo Lake shall be maintained between a controlled minimum of 2203.0 feet and a controlled maximum of 2211.5 feet as measured from Yukon Energy Corporation's datum at the site.
25. When the water surface elevation on Mayo Lake exceeds 2211.5 feet, all gates shall be open.
26. The mean daily water surface elevation on Wareham Lake shall be maintained between a controlled minimum of 1894.0 feet and a controlled maximum of 1901.5 feet as measured from Yukon Energy Corporation's datum at the site.

27. The Licensee shall implement the ramping protocol at the Wareham Dam and related monitoring, as required by the Fisheries Act Authorization, to minimize the potential for fish stranding downstream of control structures.
28. Annually, the Licensee shall carry out a dam safety monitoring inspection of all water management structures associated with the Mayo Lake Dam, Wareham Dam, Mayo A Generating Station and Mayo B Generating Station. The inspection shall be carried out by a qualified professional engineer licensed to practice in the Yukon, and shall follow the recommendations contained in the most current edition of the *Canadian Dam Safety Guidelines*.
29. Every five years, or more often if recommended as a result of any dam safety inspection, the Licensee shall engage an independent, qualified, Professional Engineer, who did not partake in the design or construction and does not normally participate in the annual inspections, to carry out a comprehensive dam safety inspection and review of all water management structures associated with the Mayo Lake Dam, Wareham Dam, Mayo A Generating Station and Mayo B Generating Station. The inspection and review shall be carried out in accordance with the recommendations contained in the most current edition of the *Canadian Dam Safety Guidelines*.
30. The Licensee shall implement the recommendations arising from the annual and 5-year inspections.
31. All works associated with this licence shall be maintained by the Licensee in good order, consistent with sound engineering and environmental practices.
32. The Licensee shall continue to implement the stream flow monitoring system downstream of the Mayo Lake and Wareham Dams as recommended in the *Dam Breach Flood Inundation Study for Wareham Dam*, dated 1999-01-08. For clarity, this is the study that was prepared for Yukon Energy Corporation by AGRA Monenco Inc., reference number YEC1100045, and which was submitted as exhibit 1.8.3 to water use application HY99-012. Data from the monitoring system shall be reported to the Board in each annual report.

**PART D – EFFLUENT QUALITY STANDARDS**

33. All water at sampling station D/S1 during instream construction activities shall not exceed the following limits:

Parameter	Maximum Concentration in a Grab Sample	
	Construction Activities with discharge duration > 24 hours (i.e. Tail Race)	All other Construction Activities
pH	6.5 to 9.0 pH Units	6.5 to 9.0 pH Units

Unionized Ammonia	0.019mg/L	0.019mg/L
Nitrite - N	13 mg/L	13 mg/L
Nitrate - N	0.06 mg/L	0.06 mg/L
Turbidity	2 NTU above background	8 NTU above background
Suspended Solids	5 mg/L above background	25 mg/L above background

34. Waste rock stockpiles from excavation activities related to the penstock, powerhouse, and other related construction shall be placed in waste rock storage facilities that enable the collection of any water run off from the waste rock. Runoff from the waste rock stockpiles shall be monitored according to the schedule and at the stations identified in Appendix A, and shall meet the following limits listed before being released to land where there is no direct discharge to surface waters.

Parameter	Maximum Concentration in a Grab Sample
Nitrite	10 mg/L
Aluminum (total)	5.0 mg/L
Arsenic (total)	0.025 mg/L
Cadmium (total)	0.080 mg/L
Chromium (total)	0.050 mg/L
Copper (total)	0.50 mg/L
Lead (total)	0.10 mg/L
Nickel (total)	1.0 mg/L
Zinc (total)	5.0 mg/L

#### PART E – MONITORING AND SURVEILLANCE

35. The Licensee shall comply with the Water Quality Surveillance Monitoring Program that is specified in Appendix A.
36. Within 30 days of determining the final sampling stations for waste rock stockpiles (WR1, WR2, and WR3), the licensee shall submit to the Board the location coordinates of the sampling stations.
37. The Licensee shall provide the Board with monthly reports regarding the water quality surveillance program, including all field and laboratory data, and each report shall be submitted to the Board no more than 30 days after the completion of the month being reported.
38. All data collection and analysis shall be conducted in accordance with the current edition of *Standard Methods for the Examination of Water and Waste Water*, prepared and published by the American Water Works Association and the Water Pollution Control Federation.

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## PART F – PROGRAMS AND STUDIES

39. Within 60 days of the effective date of this licence, the Licensee shall submit to the Board a detailed assessment of the correlation between Total Suspended Solids and Turbidity in the Mayo River that will be used as the basis for the proposed on-site monitoring program for particulate matter.
40. Within 60 days of the effective date of this licence, the Licensee shall submit to the Board a detailed plan outlining the proposed contingencies for on-site and/or off-site treatment of non-compliant water.

### Flooding and Ice-Hydraulics Assessment Study

41. Within 90 days of the effective date of this licence, the Licensee shall submit to the Board, for review and approval, a Flooding and Ice Hydraulics Assessment Study Plan for a detailed assessment to evaluate flooding conditions and ice hydraulics in the Lower Mayo River. At a minimum, the plan shall include identification of any relationship between the Mayo B operational/water management regime and revised minimum flows and downstream flooding.
42. Upon receipt of approval from the Board, the Licensee shall implement the Flooding and Ice Hydraulics Assessment Study Plan and submit the results of the study to the Board by September 30, 2012.
43. Annual monitoring and documentation of ice-jam occurrence in the Lower Mayo River shall be carried out and the results, including any recommendations, shall be submitted to the Board as part of the Annual Report.

### Wareham Lake and Mayo Lake Water Level Assessment

44. Within 90 days of the effective date of this licence, the Licensee shall submit to the Board, for review and approval, a Wareham Lake and Mayo Lake Water Level Assessment Study Plan for a detailed assessment to evaluate the impacts on the revised minimum flow requirements on the water levels in Wareham and Mayo Lakes, including comparison to historical levels.
45. Upon receipt of approval from the Board, the Licensee shall implement the Wareham Lake and Mayo Lake Water Level Assessment Study Plan and submit the results of the study to the Board by September 30, 2013.

Post-Construction ARD/ML Monitoring Program

46. Within 90 days of the effective date of this licence, the Licensee shall submit to the Board, for review and approval, a post-construction monitoring plan for monitoring of acid rock drainage, metal leaching and blasting residuals from the rock stockpiles. The plan shall include, but not be limited to, a detailed monitoring program, including parameters, frequency and duration of the monitoring program.
47. Upon receipt of approval from the Board, the Licensee shall implement the Post-Construction ARD/ML Monitoring Program and submit the results as part of the annual report.

## Appendix A - Water Quality Surveillance Monitoring Program

Table A-1 Location of Monitoring Stations

Station	Description
U/S1	East bank of Mayo River 100m upstream of instream construction activities.
D/S1	East bank of Mayo River 100m downstream of instream construction activities.
WR1	Waste rock stockpile disposal area WR1
WR2	Waste rock stockpile disposal area WR2
WR3	Waste rock stockpile disposal area WR3

Table A-2 Sampling Locations and Parameters

Monitoring Location/Parameter	U/S1	D/S1	WR1	WR2	WR3
pH (in-situ and lab)	2D	2D	S/F	S/F	S/F
Temperature (in-situ)	2D	2D	S/F	S/F	S/F
Conductivity (in-situ and lab)	2D	2D	S/F	S/F	S/F
Dissolved Oxygen (in-situ)	2D	2D			
Turbidity (in-situ)	2D	2D			
Total Suspended Solids	2D	2D	S/F	S/F	S/F
Alkalinity			S/F	S/F	S/F
Hardness			S/F	S/F	S/F
Ammonia	2D	2D	S/F	S/F	S/F
Nitrate	2D	2D	S/F	S/F	S/F
Nitrite	2D	2D	S/F	S/F	S/F
Total Metals			S/F	S/F	S/F
Dissolved Metals			S/F	S/F	S/F

Table A-3 Sampling Frequency

Key	Frequency
2D	Twice daily during instream construction activities
S/F	Twice annually, during spring freshet and fall.