

**Adopted Regulation Strategy  
Lake of the Woods Control Board  
October 24, 2023**

The Lake of the Woods Control Board held a Regulation Meeting in Kenora and via teleconference on October 24, 2023, when it adopted a Regulation Strategy to guide operations through the end of March 2024. The strategy was formulated considering basin conditions, hydrological and meteorological forecasts, and the input of the various interests concerned with basin management. Input was provided in written and verbal reports as well as from the Board's Regulation Guide: (<http://www.lwcb.ca/regguide/index.html>).

For an update on current conditions, please refer to the Basin Data section of the Board's web site at <http://www.lwcb.ca/waterflowdata.html>. For regulation actions and directives taken under the strategy please see the Regulation Actions at <http://www.lwcb.ca/regulation/index.html>.

At the time of the Regulation Meeting, flows and levels across the Winnipeg River basin were below normal and the basin was in a moderate to severe drought. The dry conditions had worsened over the summer and early fall, with precipitation below normal since mid-May. From July to the end of September, inflow to Lake of the Woods and Lac Seul was very low, between 5<sup>th</sup> and 10<sup>th</sup> percentile. Outflow from Lac Seul had not increased since April and was very low for late October. Outflow from Lake of the Woods had been gradually decreased over the summer and remained low into the fall to help maintain storage. The principal concerns heading into the winter are the availability of flow for hydropower production and plant heating, as well as the lake drawdown and spring level targets in case of continued drought conditions next year.

The strategy covers the period from freeze up to March 2024. It specifies key aims and how the Board intends to balance these under a range of possible flow conditions should they develop during the strategy period. The goal of balancing conditions across the entire basin is a complex task given the diverse nature of the different, and sometimes conflicting, interests and the largely unpredictable nature of the hydrology that drives the system.

## **Lac Seul**

### ***A) Seasonal Considerations***

Ideal or desirable regulation objectives for the next several months, based on input provided to the Board, include the following:

- Operate Lac Seul primarily as a hydropower reservoir to meet winter operation requirements of downstream hydropower plants and provide core winter power demands in Ontario and Manitoba, but with consideration of other interests.
- To the extent possible, limit winter drawdown on Lac Seul to provide good spring spawning conditions and protect eggs of fall spawning fish (i.e. to minimize whitefish egg exposure and mortality).
- Regulate Lac Seul outflow to assist in providing satisfactory freeze-up conditions on the English and Winnipeg Rivers (for both level concerns and to avert frazil ice problems) as well as on Lac Seul.

- Use Lac Seul storage to offset Lake of the Woods high/low outflow for the benefit of users of the Winnipeg River in Manitoba.
- Avoid closing the Lake St. Joseph diversion with resulting spill down the Albany River.

### ***B) Adopted Strategy***

The Secretariat recommends that the regulation of Lac Seul over the winter balance low inflows and the supply of water for core winter flow requirements along the English River and Winnipeg River in Manitoba. Although Lac Seul outflow was limited as early as June, levels on Lac Seul remain below normal and dry conditions are expected to persist. With the potential for low outflow from Lake of the Woods over the winter, Lac Seul outflow will be required to provide the balance of flow for minimum hydropower demands. As such, spring levels on Lac Seul could be lower than in recent years.

Minimum flows for hydropower production and plant heating during the winter on the English River are: 240 m<sup>3</sup>/s at Ear Falls, 220 m<sup>3</sup>/s at Manitou Falls for cold temperatures and 330 m<sup>3</sup>/s for extremely cold temperatures, and 200 m<sup>3</sup>/s at Caribou Falls. Manitoba Hydro requires 170 m<sup>3</sup>/s until mid-November, 340 m<sup>3</sup>/s from mid to end of November and mid-February to mid-March, as well as 625 m<sup>3</sup>/s during the core winter period from December to mid-February at Slave Falls. These flows should be achievable even under very low inflow conditions and March 1 targets have been adjusted to account for very low inflows. Should inflows increase between now and freeze-up, this outlook could change.

#### **i) Short-term Regulation Strategy (until freeze-up; which is typically mid to end November)**

- Maintain lower outflows to preserve storage to provide desirable winter outflows.
- Maintain outflow no lower than 100 m<sup>3</sup>/s.
- The Lac Seul freeze-up level should preferably be no higher than 356.5 m (1169.6 ft) with outflow no higher than 400 m<sup>3</sup>/s and Winnipeg River flows in Manitoba below 1400 m<sup>3</sup>/s (to avoid frazil ice problems).
- Combined with Lake of the Woods regulation, maintain minimum Winnipeg River flows above 170 m<sup>3</sup>/s until mid-November and then above 340 m<sup>3</sup>/s until end of November at Slave Falls in Manitoba.
- The usual end-of-October target level between 356.0 and 356.2 m (1168.0 ft and 1168.6 ft) (25<sup>th</sup> to 35<sup>th</sup> percentile) is realistic and should be reasonably attainable under expected conditions. Avoid reducing outflow below 100 m<sup>3</sup>/s even if the lake level dips below the lower target of 356.0 m.
- If inflow rises, increase outflow as appropriate to provide a reasonable balance between increased outflow and higher lake level, with due consideration of impacts on the English and Winnipeg Rivers given current low flows and levels.
- Should high inflow conditions develop, Lac Seul should be regulated to target for an end of October water level below 356.35 m (1169.1 ft) and outflow should remain below 600 m<sup>3</sup> /s. The Lake St. Joseph diversion outflow should be reduced to the extent necessary before Lac Seul outflow is increased above 500 m<sup>3</sup> /s. (The Lake St Joseph Diversion falls under LWCB authority when Lac Seul level is above 356.62 m (1170 ft) during the period of July through December.)

ii) Early March Target Level

- Regulate the level of Lac Seul so that the level on March 1<sup>st</sup> is limited to a maximum of 355.5 m (1166.3 ft), and preferably no higher than 355.15 m (1165.2 ft) and no lower than 354.6 m (1163.4) ft.
- The end-of-winter (April 15) target level for Lac Seul should be evaluated in March at the LWCB Regulation meeting to account for conditions and forecasts at that time.

iii) Low Inflow Winter Conditions

- Winter outflow should be no lower than 150 m<sup>3</sup>/s, with a core winter flow no lower than 230 m<sup>3</sup>/s.
- Communicate with First Nation communities on Lac Seul and the English River, and with Grand Council Treaty #3 to keep communities informed of the low water conditions and to assist in the determination of an appropriate balance of upstream and downstream interests.
- Combined with Lake of the Woods regulation, winter core period flows on the Winnipeg River in Manitoba should be no lower than 625 m<sup>3</sup>/s to meet minimum winter peak power demands with a March 1<sup>st</sup> elevation preferably no lower than 354.6 m (1163.4 ft). This objective takes into consideration low outflow from Lake of the Woods.
- If flows are greater than 675 m<sup>3</sup>/s on the Winnipeg River in Manitoba, the March 1<sup>st</sup> elevation should not be allowed to decline lower than 354.8 m (1164.0 ft).

iv) Moderate Inflow Winter Conditions

- Winter outflow should be between 200 and 450 m<sup>3</sup>/s with a core winter flow of between 300 and 400 m<sup>3</sup>/s.
- The March 1<sup>st</sup> elevation should be no lower than 354.87 m (1164.4 ft) to meet Winnipeg River flow targets of winter core period flows between 675 and 960 m<sup>3</sup>/s at Slave Falls.
- If flows on the Winnipeg River in Manitoba are greater than 960 m<sup>3</sup>/s, (and subject to flood risk constraints), the end-of-winter target level should be the higher of these two options:
  - a. The level coinciding with a maximum drawdown of 1.5 m (4.9 ft) or
  - b. An elevation no lower than the fisheries spring target level of 354.8 m (1164.0 ft).
- If additional storage in Lac Seul is required, target for a March 1<sup>st</sup> level no higher than 355.6 m (1166.7 ft), and preferably no higher than 355.5 m (1166.3 ft), subject to flood risk constraints.

v) High Inflow Winter Conditions

- Regulate Lac Seul outflow to as high as 500 m<sup>3</sup>/s to prevent the lake exceeding a March 1<sup>st</sup> level of 355.6 m (1166.7 ft).
- Communicate with First Nation communities on Lac Seul and the English River, and with Grand Council Treaty #3 to keep communities informed of the potential for flooding and to assist in the determination of an appropriate balance of upstream and downstream interests.
- If 500 m<sup>3</sup>/s is insufficient outflow to stay below 355.6 m (1166.7 ft), aim to limit or close the diversion into Lac Seul whether or not the Lake St. Joseph diversion is under LWCB authority. (Note: The Board only has authority to restrict diversion flow when Lac Seul exceeds 356.62 m in November and December, and 356.31 m from January to March. However, Manitoba can restrict diversion flow when Winnipeg River flows in Manitoba)

exceed 963 m<sup>3</sup>/s and Ontario Power Generation (OPG) can also be requested to restrict diversion flow voluntarily.)

- Once the diversion is closed, increase outflow to the extent necessary to ensure that the March 1<sup>st</sup> lake level is no higher than 355.8 m (167.3 ft).
- Combined with Lake of the Woods regulation, strive to keep Winnipeg River flows in Manitoba at Slave Falls below 1600 m<sup>3</sup>/s through the winter.

## **Lake of the Woods**

### ***A) Seasonal Considerations***

General regulation objectives for the next several months, based on input provided to the Board, include the following:

- Adjust lake level and outflow to achieve a balance between upstream and downstream interests, as inflow dictates. Plan winter drawdown to provide the appropriate balance between the various interests.
- Regulate Lake of the Woods outflow to assist in providing satisfactory freeze-up conditions on the Winnipeg River to avoid frazil ice problems and a high freeze-up level.
- Limit winter drawdown on the lake to provide good spring spawning conditions and to protect the eggs of fall spawning fish.
- Limit winter drawdown to the extent possible to reduce potential damage from ice.
- Within the regulation parameters for Lake of the Woods, regulate outflow to assist in meeting targets/preferences for the Winnipeg River in Manitoba.

### ***B) Adopted Strategy***

The Secretariat recommends that the regulation of Lake of the Woods take into consideration preferences of all interest groups while recognising the potential for continued drought conditions and low inflow to the lake over the winter and into next spring.

If inflows become very low in late fall, there are minimum flows for hydropower production and plant heating during the winter on the Winnipeg River that will need to be considered when setting Lake of the Woods winter outflow. At cold temperatures, a minimum outflow of 150 m<sup>3</sup>/s at the Norman Dam and Kenora Powerhouse and of 200 to 370 m<sup>3</sup>/s at Whitedog are required for plant heating. Manitoba Hydro requires 170 m<sup>3</sup>/s until mid-November, 340 m<sup>3</sup>/s from mid to end of November and mid-February to mid-March, as well as 625 m<sup>3</sup>/s during the core winter period from December to mid-February at Slave Falls. These flows should be achievable under very low inflow conditions without over-drawing the lake by end-of-winter. Should inflows increase between now and freeze-up, this outlook could change.

#### **i) Short-term Regulation Strategy (until to freeze-up; which is typically mid to end November)**

- If dry conditions persist, conserve water to the extent possible, while balancing upstream and downstream interests.
- Target for a Lake of the Woods level at freeze-up between 322.55 and 322.8 m (1058.2 to 1059.1 ft), with outflow preferably between 150 and 450 m<sup>3</sup>/s. If high or low inflow precludes the preferred conditions, then adjust both level and outflow without deviating from the target range more than necessary.

- Combined with Lac Seul regulation, adjust Lake of the Woods outflow to meet Winnipeg River minimum flow at Slave Falls in Manitoba of 170 m<sup>3</sup>/s up to November 15, and 340 m<sup>3</sup>/s from November 16 to 30.
- Combined with Lac Seul regulation, target to keep Winnipeg River flows in Manitoba below 1400 m<sup>3</sup>/s during the critical ice cover formation period to prevent frazil ice problems.
- Due to concerns over freezing of domestic water lines along the Winnipeg River, increase Lake of the Woods outflow to at least 250 m<sup>3</sup>/s, if feasible, before an insulating layer of ice and snow forms on the river.

#### ii) Core Winter Period and End-of-winter Levels (typically end of March)

- The Board's end-of-winter target level, based on factors other than winter inflow, has typically been 322.38 m (1057.7 ft) and preferably no higher than 322.5 m (1058.0 ft). However, the actual end-of-winter level will vary depending on the winter inflow received, as noted in sections iii) to v) below.
- The preferred end-of-winter level for fishery interests as defined by the Ontario Ministry of Natural Resources and Forestry (MNR) is no lower than 322.5 m (1058.0 ft), subject to consideration of potential negative impacts downstream. In addition, for fall spawning fish, the preferred maximum drawdown during the winter is no more than 30 cm (1.0 ft). However, for south shore property owners, who would like to see lower summer levels, lower end-of-winter levels would be preferable. The Minnesota Department of Natural Resources (DNR) supports this position and has stated that lower water levels do not negatively impact the fishery in their portion of the lake.
- The preferred winter flow for H2O Power LP, to maximize their hydropower production, is 400 to 450 m<sup>3</sup>/s at the Lake of the Woods outlet. OPG would prefer flows closer to 575 m<sup>3</sup>/s at Whitedog Falls and Manitoba Hydro's flow preference for the Winnipeg River at Slave Falls is 675 to 960 m<sup>3</sup>/s.
- Aim to adjust Lake of the Woods outflow to set a stable core winter flow on the Winnipeg River by freeze-up and to avoid large shifts in river level that could affect ice cover and shorelines.

#### iii) Low Inflow Conditions

- Winter outflow should be no lower than 125 m<sup>3</sup>/s and preferably no lower than 200 m<sup>3</sup>/s to assist with winter heating of hydropower stations.
- If outflow is greater than 125 m<sup>3</sup>/s, the end-of-winter elevation should be no lower than 322.34 m (1057.5 ft).
- Combined with Lac Seul regulation, try to achieve flows on the Winnipeg River in Manitoba no lower than 625 m<sup>3</sup>/s between December 1 and February 15 to meet minimum winter peak period power demands. To do this, preferentially increase Lac Seul outflow and try to maintain an end-of-winter level on Lake of the Woods no lower than 322.34 m (1057.5 ft) in case of continued drought conditions in the spring.
- If inflow allows, and combined with Lac Seul regulation, increase outflows to achieve a flow of 675 to 960 m<sup>3</sup>/s at Slave Falls with an end-of-winter level no lower than 322.38 m (1057.7 ft).

iv) Moderate Inflow Conditions

- Winter outflow should be between 300 and 700 m<sup>3</sup>/s with a preferred end-of-winter level of 322.38 m (1057.7 ft), but not above 322.5 m (1058.0 ft).
- Combined with Lac Seul regulation, winter core period flows (between December 1 and February 15) on the Winnipeg River at Slave Falls in Manitoba should be between 675 and 960 m<sup>3</sup>/s.

v) High Inflow Conditions

- Adjust outflow as necessary to target an end-of-winter level no higher than 322.60 m (1058.4 ft) while considering the impact of increased outflow downstream, both in Ontario and Manitoba, in balance with higher water levels on the lake.
- If winter conditions indicate above normal risk of high spring inflow, aim for end-of-winter level no higher than 322.40 m (1057.7 ft) with outflow no higher than 700 to 800 m<sup>3</sup>/s,
- Communicate with First Nation communities on Lake of the Woods and the Winnipeg River, and with Grand Council Treaty #3 to keep communities informed of the potential for flooding and to assist in the determination of an appropriate balance of upstream and downstream interests.
- Combined with Lac Seul regulation, strive to keep Winnipeg River flows in Manitoba below 1600 m<sup>3</sup>/s through the winter.