Adopted Regulation Strategy
LWCB Regulation Meeting - October 25, 2007

The following strategy was adopted by the Lake of the Woods Control Board at its Regulation Meeting in Kenora on October 25, 2007. The strategy was formulated considering basin conditions, hydrological and meteorological forecasts, and the input of the Board's Secretariat, Specific Interest Group Representatives and Resource Advisors. First Nations issues were also presented and considered.

Basin conditions at the time of the meeting were very wet. While the Lac Seul basin had experienced above normal inflow conditions throughout the summer, inflow rose significantly in the second half of October. The Lake of the Woods basin had experienced very low inflow through August and most of September. The latter half of September saw some recovery in inflow, followed by a sharp increase in inflow from early October. The adopted Regulation Strategy, in addition to setting management strategies through the winter, also sets out action and strategies in the short term to deal with large amount of excess water in the basin.

Lac Seul

A) Seasonal Considerations

The strategy for Lac Seul over the near term addresses the excess water in the basin, especially as freeze-up draws closer. Over the longer term, the strategy tries to balance desired winter outflows with a consideration of desirable water levels next spring. Due to the current conditions, with high inflows and with the lake level at upper quartile, the conflict between drawdown for hydropower production and spring minimum fishery levels should be reduced. Ideal or desirable regulation objectives for the next several months, based on input provided to the Board, include the following:

- Lac Seul level and outflow should be managed to reduce flood risk on the lake and downstream in Ontario and Manitoba.
- Operate Lac Seul primarily as a hydropower reservoir to benefit downstream hydropower plants in Ontario and Manitoba, but with consideration of other interests, such as the fishery.
- To the extent possible, limit winter drawdown on Lac Seul to provide good spring spawning conditions, adequate navigation levels at the start of the walleye fishing season and protection of eggs of fall spawning fish. OMNR recommends avoiding Lac Seul overwinter drawdown (nominally from November 1) greater than 1.5 m (5 ft) 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 outflows 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) Strategy

i) Short-Term Regulation (up to freeze-up; typically mid to end November)

- Increase outflow to 600 m^3/s and maintain the diversion full open as long as the lake remains below 356.75 m (1170.4 ft).
- If the level rises above 356.75 m (1170.4 ft), the diversion should be closed by the amount necessary to hold the lake level without increasing Lac Seul outflow above 600 m^3/s. (In this

period, the Board has authority over the Lake St. Joseph diversion when Lac Seul reaches 356.62 m or 1170 ft.)

- If inflow conditions allow, the Lac Seul freeze-up level should preferably be no higher than 356.50 m (1169.6 ft) with outflows no higher than 450 m^3/s and Winnipeg River flows in Manitoba below 1400 m^3/s (to avoid frazil ice problems).

ii) End-of-winter Levels

- The preferred minimum end-of-winter level for fishery interests is no lower than 354.8 m (1164 ft) (near upper quartile lake level). In addition, fishery interests have an additional criteria that drawdown should be limited to about 1.5 m (4.9 ft) after November 1.
- For the hydropower utilities, the flow available for generation is more important than target water levels. For hydropower operations, water in storage down to 353.60 m (1160.1 ft), the bottom of the defined "normal operating range", would be regarded as available to supply winter generation flows to the extent needed to augment inflows. During a drought, some or all of the defined drought reserve (down to 352.40 m or 1156.17 ft) might also be regarded as available. In periods of excess water, the hydropower utilities would prefer to store as much water as possible upstream.
- The actual end-of-winter level will vary depending on the winter inflows received and the balances made between the interests, as noted in sections iii) to v) below.
- To minimize high water risks during the late refill period, a maximum end of winter level of 355.30 m (1165.7 ft) is desirable.

iii) Low Inflow Winter Conditions

- Winter outflow should be between 150 and 450 m^3/s, with a core winter flow between 230 and 450 m^3/s.
- Combined with Lake of the Woods regulation, winter core period flows on the Winnipeg River in Manitoba should be no lower than 450 m^3/s to meet minimum winter peak power demands with an end-of-winter elevation no lower than 353.60 m / 1160.1 ft.
- If flows are greater than 675 m^3/s on the Winnipeg River in Manitoba, the end-of-winter elevation should be allowed to decline to no lower than lower decile (354.26 m / 1162.3 ft).

iv) Moderate Inflow Winter Conditions

- Winter outflow should be between 200 and 450 m^3/s with a core winter flow between 350 and 450 m^3/s.
- The end-of-winter elevation should be allowed to decline to no lower than lower quartile (354.42 m / 1162.8 ft) to meet Winnipeg River flow targets.
- Combined with Lake of the Woods regulation, winter core period flows on the Winnipeg River in Manitoba should be between 800 and 960 m^3/s.
- If flows are greater than 960 m^3/s on the Winnipeg River in Manitoba, the end-of-winter elevation should be allowed to decline no lower than the fisheries spring target level 354.80 m (1164.0 ft).
- If there is excess water downstream, water should be stored in Lac Seul subject to targeting for an end-of-winter level no higher than 355.50 m (1166.3 ft) and preferably no higher than 355.30 m (1165.7 ft).

v) High Inflow Winter Conditions

- Regulate Lac Seul outflow to as high as 600 m^3/s to prevent the lake exceeding an end-of winter level of 355.50 m (1166.3 ft).

- If 600 m^3/s is insufficient outflow to stay below the target level, and if the Lake St. Joseph diversion is under LWCB authority, limit or close the diversion into Lac Seul before increasing Lac Seul outflow above 600 m^3/s to achieve regulation objectives. (Note: The Board only has authority to restrict diversion flow when Lac Seul exceeds certain levels as defined in the Lake of the Woods Control Board Act. However, Manitoba can restrict diversion flow when Winnipeg River flows in Manitoba exceed 963 m^3/s and OPG can also be requested to restrict diversion flow voluntarily.)
- Combined with Lake of the Woods regulation, strive to keep Winnipeg River flows in Manitoba below 1600 m^3/s through the winter.

Lake of the Woods

A) Seasonal Considerations

The concerns for low water conditions on Lake of the Woods that persisted into early October have been replaced by concerns of above normal freeze-up levels and high flows in Manitoba.

Ideal or desirable 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 avert frazil ice problems.
- Limit winter drawdown on the lake to provide good spring spawning conditions and for the protection of eggs of fall spawning fish.
- Limit winter drawdown to the extent possible to reduce damage from ice.
- Within the regulation parameters for Lake of the Woods, regulate outflows to assist in meeting targets/preferences for the Winnipeg River in Manitoba.

B) Strategy

i) Short-Term Regulation

- Increase outflow to as much as 700 m^3/s in the near term to target for a freeze-up (mid to end November) level no higher than 323.10 m (1060 ft).
- The preferred freeze-up condition would be a Lake of the Woods level no higher than 322.78 m (1059 ft) with outflow no greater than 420 m^3/s. If high inflows preclude this, then aim for both higher levels and outflows without deviating from the ideal more than necessary. Set outflows as high as necessary to keep the lake from exceeding a freeze-up level greater than 323.3 m / 1060.7 ft).
- Combined with Lac Seul regulation, target to keep Winnipeg River flows in Manitoba below 1400 m^3/s during the critical ice cover formation period to prevent frazil ice problems.

ii) End-of-winter Levels

- The end-of-winter level, based on factors other than winter inflow, is ideally lower quartile (322.35 m / 1057.6 ft) and preferably no higher than median (322.46 m / 1057.9 ft). The Board's strategy for the past few years has been to aim for somewhat lower summer levels. To achieve this in the long term, the overall level range should be moved downward. However, the actual end-of-winter level will vary depending on the winter inflows received, as noted in sections iii) to v) below.

- The preferred end-of-winter level for fishery interests as defined by the OMNR is no lower than 322.48 m (1058 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 (12 in). However, for south shore property owners, who would like to see lower summer levels, lower end-of-winter levels would be preferable. The Minnesota 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 ACH (Abitibi-Consolidated Hydro), to maximize their hydropower production, is 420 m^3/s at the Lake of the Woods outlet. OPG would prefer flows close to 575 m^3/s at Whitedog Falls and Manitoba Hydro's flow preference is 960 m^3/s for the Winnipeg River in Manitoba.
- The end-of-winter target level should be adjusted upward, to store more water (to no more than 322.60 m / 1058.4 ft) to relieve high flows on the Winnipeg River downstream in Ontario and Manitoba. In contrast to this, avoid storing more water than is necessary if seasonal snowpack accumulation is high. Although the refill of Lake of the Woods is more dependent on spring rainfall than on snowpack, higher snowpack does increase the risk of high early spring freshet runoff.

iii) Low Inflow Conditions
- Winter outflow should be no lower than 125 m^3/s.
- If outflow is greater than 125 m^3/s, the end-of-winter elevation should be no lower than lower decile (322.20 / 1057.1 ft).
- Combined with Lac Seul regulation, try to achieve winter core period flows on the Winnipeg River in Manitoba no lower than 450 m^3/s to meet winter peak period power demands, with Lake of the Woods drawn no lower than lower decile (322.20 / 1057.1 ft) to achieve this. Likewise, augment flows to achieve 675 m^3/s with an end-of-winter Lake of the Woods level no lower than lower quartile (322.35 m / 1057.6 ft).

iv) Moderate Inflow Conditions
- Winter outflow should be between 300 and 700 m^3/s with a preferred end-of-winter level of lower quartile, but not above median.
- Combined with Lac Seul regulation, winter core period flows on the Winnipeg River in Manitoba should be between 800 and 960 m^3/s.

v) High Inflow Conditions
- While trying to target for an end-of-winter level no higher than 322.60 m / 1058.4 ft (upper quartile) balance higher water levels on the lake with the impact of increased outflows downstream, both in Ontario and Manitoba.
- Combined with Lac Seul regulation, strive to keep Winnipeg River flows in Manitoba below 1600 m^3/s through the winter.