Adopted Regulation Strategy
LWCB Regulation Meeting - March 22, 2010

The Lake of the Woods Control Board held a Regulation Meeting in Kenora on March 25, 2010 and adopted the following strategy. 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/reg-guide/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/actionslist.html.

Lac Seul

A) Seasonal Considerations

At the time of the meeting, the level of Lac Seul was just above median and was declining slowly with inflow and outflow both above upper quartile. The Lake St. Joseph diversion flow into Lac Seul at the time of the meeting was 80 m^3/s with Lake St. Joseph level at 60^{th} percentile.

Lac Seul inflows remained strong all winter, but outflows had been maintained above normal as well. All indications put the basin on the dry side and, barring significant precipitation, freshet was considered likely to be below average. Refill will depend mostly on spring rainfall (as is usually the case). Generalized long-term weather forecasts are tending to somewhat above-normal temperatures but with precipitation about normal.

While end-of-winter water levels should be good from a fisheries perspective, it is still highly desirable for the fishery to have levels rising after mid-April. Outflow reductions will very likely be needed to ensure this. Navigation problems early in the season for tourist outfitters should also be reduced this spring, but rising lake levels must be balanced against a future risk of high water. The points below reflect a number of ideal or desirable regulation objectives over the next few months, based on input provided to the Board.

- At its public meeting in Ear Falls in September 2008, the Board committed to a review of the 2008 Lac Seul & English River high water event. Until the review is complete, the end-of-winter water level, and the rate of spring refill, should be conservative in line with the Pakwash outfitters' concern that higher end-of-winter Lac Seul water levels may increase the risk of summer high water levels on Lac Seul and Pakwash Lake. After April 15, Lac Seul outflow should be regulated, as much as possible, so that the level of Lac Seul is no higher than the upper quartile level, instead of being allowed to rise ahead of it.
- Regulation of Lac Seul level and outflow should take into account the preferred Lac Seul, Pakwash Lake and English River levels for the fishery and tourist outfitter interests, to provide good spring spawning conditions and adequate navigation levels at the start of the walleye fishing season.
- Lac Seul level should be constant or rising after April 15 for spring spawning fish.
- The minimum spring lake level should be no more than 1.5 m (5 ft) below the November 1 level for whitefish. For spring 2010, this level is 354.76 m (1163.9 ft).
- The Board's end-of-winter target level, set at the October Regulation Meeting, was 354.7 m (1163.7 m). This was deemed to be an appropriate balance between fisheries interests, Lac Seul

and Pakwash high water concerns, and downstream flow interests.

- The desirable lake level on May 15 is no less than 355.1 m (1165 ft) for navigation for the start of the walleye fishing season.
- The tourist outfitters preferred summer maximum level is 356.6 m (1170 ft).
- Lac Seul level and outflow should be managed to supply water requested by Ontario Power Generation and Manitoba Hydro for hydroelectric energy generation, to avoid spill in wet conditions and violation of low flow constraints in dry conditions.
- A minimum Manitou Falls outflow of 180 m^3/s below is desirable during spring spawning. If there is not sufficient water to meet this criteria, Lac Seul discharge should be set to maintain a uniform flow through the spawning period.
- River flows at Grassy Narrows should be less than 550 m^3/s.
- Lac Seul storage should be used to offset Lake of the Woods high/low outflows for the benefit of users of the Winnipeg River in Manitoba.
- Lac Seul level and outflow should be managed to reduce the need to close the Lake St. Joseph diversion with resulting spill down the Albany River. However, the diversion should nevertheless be closed to reduce impacts in the English River basin under wet conditions.

B) Strategy

The Board motion adopting the strategy noted the consensus concern for the possibility of dry spring and early summer conditions.

<u>To April 15 (Drawdown Period)</u>

Lac Seul outflow should be maintained as high as necessary, but no greater than 450 m^3/s, to achieve a mid-April water level between 354.6 m (1163.4 ft) and 354.9 m (1164.4 ft), while considering flows in the Winnipeg River in Manitoba and hydropower requirements.

<u>After April 15 (Refill Period)</u>

i) Low Inflow Conditions

- Outflow should be managed to ensure that Lac Seul level does not decline, and preferably rises, while providing sufficient outflow to meet downstream hydropower generation and fishery requirements.
- Target for an end of June level no lower than lower quartile (355.46 m / 1166.2 ft) with an outflow no lower than 100 m^3/s, provided that flows in Manitoba are no lower than 600 m^3/s.
- Target for an end of June level no lower than 355.1 m (1165 ft) with an outflow no lower than 25 m^3/s, provided that flows in Manitoba are no lower than 300 m^3/s.
- Consultation with interests, including OMNR staff, tourist outfitters and the provincial hydro utilities, may be necessary to arrive at the appropriate balance between lake levels and outflows.
- If inflow remains low throughout the refill period, outflow should be adjusted to maintain a balance between upstream and downstream interests.

ii) Moderate Inflow Conditions

- Due to the carry-over of high water concerns from 2008 and the pending review of the high water event, regulate through the refill period to hedge against a return to wetter conditions, so that the risk of outflows above 500 m^3/s is reduced.
- Generally target for lake levels between lower and upper quartile, while supplying water for efficient hydropower production and for English River fishery concerns.

- Use additional water to maintain desired fishery flows in the English River below Manitou Falls, provided this does not cause high flow conditions on the Winnipeg River in Manitoba.
- Target for flows in the Winnipeg River in Manitoba between 675 and 960 m^3/s.

iii) High Inflow Conditions

- As above, regulate through the refill period to hedge against a return to wetter conditions, so that the risk of outflows above 500 m^3/s is reduced.
- Balance Ear Falls outflow with the rise in Lac Seul level to reduce flood risk both on Lac Seul and on downstream areas such as Pakwash Lake.
- An effort should be made to maintain Lac Seul levels (or projected levels) below upper quartile during the entire refill period. Outflows should remain below 450 m^3/s for moderately wet conditions, below 500 m^3/s for most conditions and below 600 m^3/s in all but extreme conditions.
- Increase to as much as 800 m^3/s to keep the level below 357.1 m (1171.6 ft).
- When Lac Seul is above the level at which the Lake St. Joseph diversion comes under Board jurisdiction (356.01 m / 1168.0 ft until the end of May; 356.31 m / 1169.0 ft for June), the diversion flow should be reduced before increasing Lac Seul outflow to more than 500 m^3/s.

Lake of the Woods

A) Seasonal Considerations

At the time of the meeting, Lake of the Woods was projected to end the winter slightly above its median March 31 level, or about 15 cm (6 in) above the lower quartile level of 322.35 m (1057.6 ft). The Board has stated that it would generally prefer a lower quartile end of winter level to reduce the risk of higher summer lake levels. In early March, outflow reductions were being considered so that the lake level would not decline below the target lower quartile level, but the early freshet caused an early rise in levels from the second week of March onward. Current conditions were such that there appeared to be a higher risk of below normal freshet, due to the warm winter temperatures, below normal winter rainfall and early loss of the snow pack.

The adopted strategy is one of hedging against drier conditions while striving to have summer levels somewhat below median. The points below reflect a number of ideal or desirable regulation objectives over the next few months, based on input provided to the Board.

- Adjust lake level and outflow to achieve a balance between upstream and downstream interests, as inflow dictates.
- Minimize ice damage when possible. Ice damage is greater in the spring if there are rapid changes in levels (on either the lake or the river) and especially if the level rises while there is still a solid ice cover.
- The preferable end of April level for the Lake of the Woods fishery is no lower than 322.5 m (1058 ft). Higher levels would be beneficial to northern pike.
- Regulate to avoid, to the extent possible, any reductions in outflow or any large increases in outflow during the spring spawning season on the Winnipeg River (late April to early June).
- For loons on the Winnipeg River, flow changes during the incubation period (approximately mid-May to the end of June) should be minimized.
- A summer Lake of the Woods level 10-15 cm (4-6 in) below the summer peak median level of 323.14 m (1060.2 ft) is desired for south shore residents. These criteria would result in a peak summer level of about 323.0 m (1059.7 ft).
- For wild rice on Lake of the Woods and the Winnipeg River, maintain lower lake and river

levels and minimize level and flow increases during the floating leaf stage in June and early July
- For piping plovers on Lake of the Woods, maintain lower lake levels and minimize lake level increases during their nesting and rearing season of May, June and July.
- 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

The Board motion adopting the strategy noted the consensus concern for the possibility of dry spring and early summer conditions.

To March 31 (Drawdown Period)

Begin reducing outflow, if possible, in anticipation of an expected quick decline in inflow after the current snowmelt runoff finishes and before spring rainfall is likely to provide additional runoff.

After March 31 (Refill Period)

Refill of Lake of the Woods is largely dependent on spring rainfall and is highly variable. There is no single outflow that can accommodate the range of possible future conditions at this time of year. Lake level and flow outlooks must be continually updated and outflows adjusted in response to changes in conditions or forecasts.

i) Low Inflow Conditions
- Adjust outflows as necessary, subject to minimum flow requirements as recommended by the Ontario Ministry of the Environment, to keep the lake from declining after the end of April. If possible, have the lake maintain at least a 10 %ile level, with outflows no lower than 100 m^3/s.
- Assess conditions immediately before spawning begins in the Winnipeg River so that outflows can be set to prevent, as much as possible, the need for further flow reductions during the spawning season (late April to early June), while ensuring the lake level does not decline.
- Target for a lake level above lower quartile at the end of June (322.73 m / 1058.8 ft) if possible, with outflow no lower than 200 m^3/s.
- If inflow remains low throughout the refill period, outflow should be adjusted to maintain a balance between upstream and downstream interests.

ii) Moderate Inflow Conditions
- Assess conditions immediately before spawning, as described under "Low Inflow Conditions" above.
- Outflow increases should be kept moderate during the spawning period and reductions should be minimized.
- Set outflow to as much as 800 m^3/s to prevent the peak lake level from exceeding 323.09 m (1060 ft) for the benefit of Lake of the Woods cottagers, if inflow is no higher than median.
- Attempt to keep the summer lake level 10-15 cm (4-6 in) below the summer peak median level of 323.14 m (1060.2 ft) in accordance with the commitment made by the Board following the high water year of 2001. To achieve this, the lake level targets would be approximately 322.7 m (1058.7 ft) for the end of May and 322.9 m (1059.4 ft) at the end of June. Try to balance this with avoiding outflows in excess of the generation capability at Kenora and optimizing hydroelectric generation downstream.
- Through late May and June, attempt to limit Lake of the Woods outflow changes that would adversely affect nesting loons on the Winnipeg River.
- Through June (and early July), try to manage lake levels to limit the rate of rise for wild rice.

- By managing LW outflows, along with LS outflows, try to maintain Nutimik Lake levels in the preferred range.

iii) High Inflow Conditions

- Balance higher water levels on the lake with the impact of increased outflows downstream, both in Ontario and Manitoba.
- Increase outflow to a maximum of 800 - 900 m^3/s to keep the lake level (or projected level) below upper quartile in June (approximately 323.2 m / 1060.4 ft). A flow of 900 m^3/s on the Winnipeg River would cause the level below the Norman Dam to be about 1.4 m (4.6 ft) above normal; upper quartile level is 0.2 m (8 in) above median on the lake.
- Increase outflow as necessary to prevent the lake level (or the projected level) from rising above 323.47 m (1061.25 ft), which is the legislated top of the normal operating range. Note however, that the Convention and Protocol states "during periods of excessive precipitation the total discharge from the lake shall, upon the level reaching 1061 sea-level datum, be so regulated as to ensure that the extreme high level of the lake shall at no time exceed elevation 1062.5 sea level datum". In future years, the Board may wish to consider making use of this flood storage during periods of high inflow.
- An attempt should be made to keep outflow increases to a maximum of 100 m^3/s per week, except during the spawning season when it would be desirable to not exceed 50 m^3/s per week. Note however, that persistent higher inflows could necessitate inflow increases of 200 m^3/s per week or more.