Adopted Regulation Strategy
LWCB Regulation Meeting – March 30, 2006

The following strategy attempts to strike a balance among the various interests in the Winnipeg River Drainage basin, while considering the limitations of hydraulics and hydrology. However, each year is different hydrologically and impacts on interests may vary. Level and outflow targets must be considered together, as well as the impact of the combined operation of Lac Seul and Lake of the Woods on the Winnipeg River in Manitoba.

Lac Seul

a) Seasonal Considerations

Lac Seul regulation over the near term will be highly influenced by the high inflows that have been experienced throughout the winter and the above-average end of winter lake level. In the longer term, spring inflows after the initial freshet have been shown to be highly variable. The risk of higher early spring runoff is increased, but total spring inflow volume, used to fill the lake, is very much an unknown. The points below reflect a number of ideal or desirable regulation objectives over the next few months, based on input provided to the Board.

- Lac Seul level and outflow should be managed to reduce flood risk on the lake and downstream in Ontario and Manitoba.
- Attempt to meet the preferred Lac Seul, Pakwash Lake and English River levels for the fishery and tourist outfitter interests; provide good spring spawning conditions and adequate navigation levels at the start of the walleye fishing season.
- The minimum Lac Seul level on April 15 should be no less than 354.8 m (1164 ft) and the level should not decline after April 15 for spring spawning fish.
- The minimum spring lake level should be no less than 1.5 m below the November 1 level for whitefish. For spring 2006, this level is 354.87 m (1164.3 ft).
- The minimum lake level on May 15 should be 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 355.6 m (1170 ft).
- Supply water requested by Ontario Power Generation and Manitoba Hydro for hydroelectric energy generation; avoid spill in wet conditions and violation of low flow constraints in dry conditions.
- A minimum flow of 180 m^3/s below Manitou Falls is desirable during spring spawning. A uniform flow should be maintained through the spawning period.
- River flows at Grassy Narrows should be less than 550 m^3/s.
- 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

To April 15 (Drawdown Period)

Lac Seul outflow should remain at the current 450 m^3/s to lower the lake level to approximately 354.9 m (1164.4 ft). If inflows decline, the level may fall further to near 354.8 m (1164 ft) by mid-April, but should not be allowed to decline below this. However, given the ongoing wet conditions, somewhat lower lake levels at the onset of the spring freshet would be desirable. On the other hand, if late winter inflows are higher than anticipated, previous investigations have indicated that an end of winter level up to 355.3 m (1165.7 ft) does not unduly increase flood risk. As spring freshet

approaches, outflow should be reduced to: a) reduce spring flows downstream in Manitoba during the freshet and b) to store the excess freshet water in Lac Seul. Outflow increases during the remainder of the drawdown period are unlikely, but could be desirable if the Lac Seul basin becomes wetter or additional water for hydropower becomes desirable and an outflow increase fits into the overall regulation balance for the coming months.

After April 15 (Refill Period)

i) Low Inflow Conditions
- Outflow should be managed to ensure that Lac Seul continues to rise, while ensuring that there is sufficient outflow to meet downstream hydropower generation and fishery requirements.
- The end of winter level on Lac Seul is expected to be above the preferred fishery levels for spawning; a refill of about 0.2 m (8 in) will be needed to satisfy the outfitter target lake level of 355.1 m by May 15. Outflow should be reduced to as low as 100 m^3/s to meet this target, provided Winnipeg River flows in Manitoba are no lower than 600 m^3/s.
- 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 an end of June level no lower than lower quartile, with an outflow no lower than 100 m^3/s, unless downstream conditions are such that lower outflows do not have an adverse impact.
- 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, Note that a lower quartile outflow for May for the 1970-1999 period was approximately 50 m^3/s while a lower decile outflow was approximately 40 m^3/s.

ii) Moderate Inflow Conditions
- Generally target for lake levels between lower and upper quartile, with a transition from the above-normal end of winter level, while supplying water for 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.
- Attempt to meet the outfitters Lac Seul lake level target of 355.1 m (1165 ft) for May 15.

iii) High Inflow Conditions
- 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 decile through May, with a transition to near upper quartile by the end of June. 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.
- Under very wet conditions, maintain Lac Seul level to no higher than upper decile at the end of June with outflow no higher than 600 m^3/s.
- 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

Regulation of Lake of the Woods following the Regulation Meeting will be a matter of responding to inflows with a desire to not allow the lake to decline too much more while avoiding reducing outflows too much, too soon and losing the opportunity to continue holding lake levels 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 Lake of the Woods fishery level 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 avoided.
- 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. This criteria would result in a peak summer level of about 323.0 m (1059.7 ft).
- 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

To March 31 (Drawdown Period)

The Board's end of winter target level, as set in the Adopted Strategy from the October Regulation Meeting, was ideally 322.36 m (1057.6 ft), preferably no higher than median (322.46 m / 1057.9 ft), and within the range from lower to upper quartile depending on inflows. The current level, as of March 28, is 322.34 m (1057.5 ft).

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.

There is some concern about the risk of higher spring levels and flows due to the above normal winter inflows and somewhat above normal snowpack. However, this is offset by the warm winter conditions that may have led to a loss of water that is normally stored until spring melt and the below normal end of winter Lake of the Woods level.

i) Low Inflow Conditions
- 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.

- Satisfy minimum flow requirements as recommended by the Ontario Ministry of the Environment.
- Maintain the lake level above lower quartile if possible, with outflow no lower than 200 m^3/s.
- Reduce outflow further as the level approaches lower decile to balance lake and river conditions.

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.
- 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.

iii) High Inflow Conditions

- Balance higher water levels on the lake with the impact of increased outflows downstream, both in Ontario and Manitoba.
- Do not increase outflow above 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.