Adopted Regulation Strategy
LWCB Regulation Meeting - June 21, 2007

The following strategy was adopted by the Lake of the Woods Control Board at its Regulation Meeting in Kenora on June 21, 2007. The strategy was formulated considering basin conditions, hydrologic and meteorological forecasts, and the input of the Board's Secretariat, Specific Interest Group Representatives and Resource Advisors.

At the time of the meeting, the entire basin was in a state of transition. Up until mid-May, the basin was in a drought condition. Inflow to Lake of the Woods from June 2006 to mid-May 2007 was the lowest in 91 years of record. Although the Lac Seul basin had not been as dry, the 11 ½ month inflow there was still only 15 %ile. Since mid-May, conditions were dramatically different in the Lac Seul basin and steadily improving in the Lake of the Woods basin. Rainfall in the Lac Seul basin for the 30 days ending June 15 was maximum of record. Inflow rose by a factor of 4 from mid-May to the end of the month and the level of Lac Seul rose 1.2 m (3.9 ft) from late May to the time of the Regulation Meeting. For Lake of the Woods, rainfall was 90th percentile for the 30 days ending mid-June, with inflow also jumping by a factor of 4. The lake level there rose about 0.4 m (1.2 ft) from late May to the time of the meeting.

LAC SEUL

A) Seasonal Considerations

Lac Seul regulation over the near term should hedge against a higher risk of wet conditions. Regulation should be carried out to provide storage in the event that inflows remain high, or become even higher. 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.
- Attempt to meet the preferred Lac Seul, Pakwash Lake and English River levels for the fishery and tourist outfitter interests.
- The tourist outfitters preferred summer maximum level for Lac Seul is 356.6 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.
- Due to maintenance at Caribou Falls from July through most of the remainder of the year, turbine capacity there will be limited to 400 m^3/s.
- Ear Falls flows less than 240 m^3/s would be desirable in July when the downstream cofferdam is removed from the construction site of the new Ear Falls powerhouse. The upstream cofferdam is scheduled to be removed in the late summer or early fall. Lac Seul levels toward the low end of the normal range would be preferable at this time.
- Preferred river flows at Grassy Narrows are 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

i) Low Inflow Conditions

- With the record rainfall over the past month, a return to low inflow conditions is not expected in the near term. However, conditions could change quite quickly if warmer, drier weather

predominates over the summer.

- Reduce outflows as necessary to maintain the lake level above lower quartile. If the required reductions would lead to English and/or Winnipeg River flows less than minimum requirements of the provincial power utilities, consultations would be necessary with the OMNR in Red Lake and Sioux Lookout, as well as with the two provincial power companies, to determine an appropriate balance between upstream and downstream conditions.
- Severely restrict outflow to maintain lake levels above lower decile. In 1988 Lac Seul outflow was reduced to 25 m^3/s and, in 1981 and 1977, outflow was reduced to 0 for an extended period. Again, consultations would be necessary to appropriately balance upstream and downstream interests.

ii) Moderate Inflow Conditions

- Generally target for lake levels between lower and upper quartile, while supplying water for hydropower production and for English River fishery concerns. Regulate with the Caribou outage and Ear Falls construction in mind to accommodate OPG's requests if possible, while accounting for other interests as well.
- Under moderate inflow conditions, attempt to keep Lac Seul level no higher than upper quartile, with outflows no higher than 400 m^3/s.
- If flows on the Winnipeg River in Manitoba are high, use the storage available in Lac Seul to minimize the water released downstream. However, Lac Seul levels throughout the entire report period should not be above 356.75 m (1170.4 ft).
- Maintain Lac Seul outflow within a range of approximately 100 to 400 m^3/s to satisfy the overall objectives and maintain the lake level in the 25-75 %ile range.

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 and the Winnipeg River in Manitoba.
- 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.
- Regulate Lac Seul outflow to as high as 500 m^3/s at Ear Falls to prevent the lake level exceeding 356.75 m (1170.4 ft) from June 30 to October 31; the Lake St. Joseph diversion should be reduced to the extent necessary to achieve this.
- Once the diversion is closed, regulate outflow to as high as 600 m^3/s to prevent the lake exceeding 356.9 m (1170.9 ft), to as high as 800 m^3/s to prevent the lake exceeding 357.05 m (1171.4 ft) and as high as necessary to ensure that the upper storage limit of 357.2 m (1171.9 ft) is not exceeded.

LAKE OF THE WOODS

A) Seasonal Considerations

As of June 21, inflow to Lake of the Woods was in the upper normal range, but most of the inflow was due to local inflow with outflow from Rainy Lake having only recently been increased above 100 m^3/s. Conditions across the basin had improved by the time of the meeting but the water deficit situation that resulted from the almost-year-long drought could still influence conditions over the summer. However, if above average rainfall continues, higher water conditions could develop.

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.
- For loons on the Winnipeg River, flow changes during the primary incubation period (normally to about the end of June) should be avoided. About 4½ to 5 weeks of relatively steady flows are needed for nesting success. Loons can make a second or third attempt, which means they could be on their nests into August for late nesting.
- 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, which could extend beyond mid-July this year.
- For wild rice, the most important period for controlled and stable water levels is during the floating leaf stage from early June to mid-July. During this period, the optimal level of Lake of the Woods is between 322.48 m (1058 ft) and 322.78 m (1059 ft); most important is that any increases in water level should be gradual.
- Water levels are also important during wild rice harvesting, which runs from about mid-August to mid-September on Lake of the Woods. If the water level is too high, the top of the plant will be too close to the water. If water levels are too low, the crop may be inaccessible to the harvesters' boats or canoes. Levels near 322.78 m (1059 ft) seem to be satisfactory.
- For sturgeon spawning and fry development on the Winnipeg River, avoid a significant drop in river level during the period up to mid-July.
- For recreational users on Lake of the Woods, maintain water levels in the range of 322.8 to 323.1 m (1059 to 1060 ft).
- 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) Low Inflow Conditions

- In the near term Lake of the Woods could continue in the “low inflow conditions” strategy or transition into the “moderate” category.
- If conditions turn very dry again, a further outflow reduction could become warranted, but should not occur until there would be no impact on sturgeon eggs and hatchlings (possibly mid-July).
- If outflows have been increased above 150 m^3/s, reduce outflow back to as low as 150 m^3/s to prevent the lake from declining below 322.7 m (1058.7 ft) for July through September and 322.6 m (1058.4 ft) in October. Maintain, or reduce, outflow to as low as 100 m^3/s to prevent to lake from declining below 322.5 m (1058.1 ft)
- If Lake of the Woods level drops below 322.2 m (1057.1 ft) reduce outflow to 70 m^3/s, following consultations with OMNR and OMOE regarding fishery and water quality concerns.
- In 2003, Lake of the Woods outflow was reduced to 100 m^3/s with the lake level falling below 322.4 m (1057.7 ft). In 1977 it was reduced to 63 m^3/s with lake levels between 322.2 and 322.4 m (1057.1 and 1057.7 ft).

ii) Moderate Inflow Conditions

- Outflow increases should be kept moderate during the period when sturgeon eggs or larvae could be impacted (possibly to mid-July).
- 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. Try to balance this with: avoiding outflows in excess of the generation capability at Kenora, optimizing hydroelectric generation downstream and attempting to provide optimum conditions for other river residents and interests.

- Attempt to limit Lake of the Woods outflow changes that would adversely affect nesting loons on the Winnipeg River.
- Try to manage lake levels to limit the rate of rise of the lake for wild rice during the floating leaf stage and to benefit the piping plovers nesting at Windy Point and on the Sable Islands.
- 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 and south shore residents, if inflow is no higher than median.
- Lake of the Woods should be regulated to target for an end of October water level between 322.8 m (1059.0 ft) and 323.0 m (1059.7 ft) with a preferred level no higher than median (322.88 m/1059.3 ft) with outflow between 300 and 700 m^3/s.

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. (maximum 323.26 m / 1060.6 ft in mid-July)
- Increase outflow as necessary to try 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".
- An attempt should be made to keep outflow increases to a maximum of 100 m^3/s per week. Note, however, that persistent 90 %ile inflows would necessitate outflow increases of 200 m^3/s or more per week.