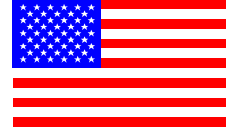




**INTERNATIONAL LAKE SUPERIOR
BOARD OF CONTROL**



Canada
Mr. Jean-François Cantin, Member
Mr. Rob Caldwell, Secretary

United States
Mr. Stephen Durrett, Member
Mr. Bryce Carmichael, Secretary

19 October 2020

MEMORANDUM TO INTERNATIONAL JOINT COMMISSION

Enclosed are the approved minutes of the Board's 2 October 2020 meeting via MS Teams. We will post these to the Board Website as soon as possible.

Sincerely,

Enclosure

Rob Caldwell
Secretary, Canadian Section

DISTRIBUTION:
Mr. J-F. Cantin
Ms. S. Lobrichon
Ms. C. Mageau
Board Members
Mr. B. Carmichael
Regulation Representatives

INTERNATIONAL LAKE SUPERIOR BOARD OF CONTROL

Minutes of the 2 October 2020 meeting

The International Lake Superior Board of Control met on 2 October 2020 virtually via MS Teams. Mr. Jean-François Cantin, Canadian Chair, chaired and convened the meeting at 13:06. The attendees were:

United States

Mr. K. Mccune (Alt.)

Mr. B. Carmichael

LTC S. Katalenich

Mr. J. Allis (Alt.)

Mr. L. Yohe

Dr. M. Colosimo

Mr. A. Greeley

Mr. J. Kart

Mr. C. Sidick

Ms. M. Kropfreiter

Board Members

Secretaries

Regulation Representatives

Associates/IJC

Canada

Mr. J-F. Cantin

Mr. R. Caldwell

Mr. J. Bruxer

Ms. J. Ferguson (Alt.)

Ms. E. Klyszejko

Mr. D. Fay

Mr. M. Hanninen

Ms. W. Leger

Item 1. Welcome and Introductions

Chair Cantin welcomed attendees and noted the main objectives were to prepare for the Board's upcoming Appearance with the IJC and completion of the semi-annual progress report.

Item 2. Approval of Agenda and Status of Prior Action Items

The agenda was approved as drafted. All prior action items have been completed or were deferred. Five will be discussed further later today:

- Share routine hydrological & plan evaluation updates with Board/IJC/public
 - Agenda item 6b today
- Draft an operational guide for 10 cm/hour gate movement threshold
 - Agenda item 6b today
- Develop a Whitefish Island performance indicator for flooding
 - Agenda item 6b today
- Decide appropriate future deviation request procedure
 - Coordination call in August, further discussion under Agenda item 6b today
- Improve inflow/outflow comparison graphics
 - Used during Tri-Board webinar, further discussion under Agenda item 7c today

Item 3. Update from Regulation Representatives

Hydrologic Conditions

The Board was provided with an update on hydrologic conditions for Lake Superior and Lake Michigan-Huron. Slides were presented showing recent precipitation, air temperatures, drought indices, net basin water supplies, levels and flows (observed and forecasted) and climatological outlooks. Highlights included:

- Supplies to Lake Superior varied over the past six months but were generally near or below average.
- Supplies to Lake Michigan-Huron were generally at or above average.

- As a result, upper Great Lakes water levels remain well above average, near record highs.

Regulation Update

The Board had received Commission approval to deviate from Plan 2012 from December through April. The Board maintained additional flow through the Compensating Works with a gate setting equivalent to one gate fully open in lieu of the typical winter setting of equivalent to one-half gate open. With some reduced side-channel capacity some months, the net effects on total outflow and the water levels of Lake Superior and Lake Michigan-Huron were equivalent to -0.7 cm and +0.5 cm, respectively, at most. Total outflows were, on average, slightly more than the flow prescribed by Plan 2012.

In July and August, limited hydropower capacity resulted in outflows unexpectedly lower than prescribed by Plan 2012. Overall, outflows were slightly less than those prescribed by Plan 2012 in the past six months, and Lake Superior outflows were set in accordance with Plan 2012 from April through August. A maximum of two gates equivalent were open at the Compensating Works (during August).

Total Lake Superior outflows have been at or slightly above long-term average values since May due to the balancing principle internal to Plan 2012, that is holding back water on Lake Superior in consideration of relatively higher Lake Michigan-Huron levels downstream. The balancing factor has generally been reducing outflows consistently since April 2018. For example, a maximum monthly adjustment equivalent to +1.6 cm stored on Lake Superior or -1.1 cm reduction on Lake Michigan-Huron was made in June. Lake Superior is now 26 cm above long-term average for this time of year, while Lake Michigan-Huron is 82 cm above average. St. Marys Rapids flows have also been lower than in recent years owing to the balancing principle and higher hydropower capacity.

Looking at the next few months, conditions are expected to be warmer than average but may be somewhat drier than normal. La Nina conditions, indicated since mid September, may yield a colder, wetter winter in the upper Great Lakes basin. The upper Great Lakes are expected to remain well above average but likely below record-high values over the next six months, and St. Marys outflows should continue to be above normal but lower than in recent years with a maximum of about 2 gates equivalent at the Compensating Works. No need for deviations is anticipated.

Item 4. Hydropower

Recent and Expected Maintenance and Other Outages

Evolugen

Mr. Hanninen reported that outages at the Clergue plant totaled 948 hours (20 percent of the reporting period with at least one unit shut down). The majority of down time (609 hours) was due to annual maintenance and welding repairs on Unit G1 between 10 August to 4 September. Extensive welding repair work was required on the runner, which required an extension of the planned outage by nine days (216 hours).

The balance of the outages were routine annual maintenance. Critical maintenance items were completed on 30 March (Unit G1), 31 March (Unit G2) and 1 April (Unit G3). Routine maintenance activities for Unit G2 and Unit G3 were completed 7 to 13 July and 20 to 27 July, respectively. Excluding the extension of the planned outage on G1, there were no unplanned outages during the reporting period.

In late July and during August, build up of 'didymo' algae caused excessive differential pressure on the generator trash racks, limiting the plant's maximum flow capacity. Diligent cleaning of the trash racks has resolved the issue for now.

Typical planned outages are expected for all three units in 2021, including a three-year inspection on Unit G2.

U.S. Government Hydropower Plant

There were only 13 unit outages during the reporting period for a total of 65 hours, significantly lower than the almost 2600 hours of downtime last reporting period. 34 hours were due to instrumentation issues, 25 hours were

attributed to a single plant-wide outage to repair a primary cable that connects the plant to the electrical grid, three hours were for mechanical issues and the remaining three hours were for scheduled maintenance.

The maintenance outage for Unit 3A that was scheduled for last April was moved to this October. This outage will last for two weeks and will be for general cleaning, minor instrumentation upgrades and testing. There are also divers scheduled this fall to remove debris upstream of the turbines and inspect the trash racks. Some smaller half-day preventative maintenance is also scheduled for the late fall for Units 2 and 3.

Cloverland Electric Co-op (CEC)

CEC hydro ran at maximum allowed capacity this spring and summer. High tailrace water levels due to the Lake Michigan-Huron high levels impacted the plant by lowering the available head, affecting power production.

Looking forward, the canal restoration work is not expected to resume this fall, and will most likely be suspended until September 2021 at the earliest, so maximum output should be expected until then.

CEC has contracted Barr Engineering to do a full assessment of their entire hydrofacility civil and mechanical works, from intake boom to hydro plant. The last assessment was done in 2006 and needed to be brought up to date to help CEC with prioritizing upcoming major capital outlay. The final report is due mid to late December, 2020. A turbine efficiency/upgrade study has been postponed until 2021 due to COVID-19 restrictions on international travel.

CEC has been able to continue to make good forward progress with their excitation, relay protection, and governor upgrades. They are upgrading at a rate of about two every eight working days, and currently have upgraded 22 of their 74 turbines. By upgrading two units at a time, there is no impact to flows.

2021 Flow Measurements

All scheduled flow measurements in August 2020 were cancelled due to the pandemic and will be rescheduled for next summer. These will primarily be verifications of plant-reported outflows from the hydropower facilities, but there may be opportunity to take some additional measurements at the Compensating Works.

Item 5. Compensating Works

Inspections and Maintenance

Routine monthly maintenance inspections continued to be conducted on the Canadian portion of the Compensating Works by Evolgen. Monthly inspection observations included public safety features such as fencing and signs, the concrete and masonry structure, gates, and mechanisms, on-site safety equipment such as life jackets and air horns, as well as the noting of anything unusual.

Monthly inspections and routine maintenance continued to be conducted on the US portion by the US Army Corps of Engineers (USACE) Soo Area Office. The monthly inspections found the Compensating Works facilities to be in good condition overall.

5-year Inspection on Canadian Gates

The 5-year dam safety assessment was conducted by an independent consulting engineer. Underwater inspections of Gates #3 through #8 were completed on 5 August and underwater inspections of Gates #1 and #2 were completed on 9 September.

A procedure for the operation of Gate #1 was submitted to the regulatory agencies for their approval. With this support, application was made on 19 May to the IJC requesting temporary amendment of the 11 December 1985 Supplementary Order, to facilitate the operation of Gate #1. Not all approvals were received in time due to the COVID-19 pandemic, so a second request was necessary, with the closure period delayed by several weeks. The IJC issued a temporary Supplementary Order on 27 August, permitting closures for up to three days from 1 August to 15 September. A news release was issued by the Board, warning anglers and other users of the St. Marys Rapids of the temporary closure of Gate #1. During the closure, natural resources technicians retrieved the aquatic life that became trapped in pools as the water receded.

The inspection of the Compensating Works structure and the earth dam north of the structure was completed on 11 August. The repair to the cold joint and crack in the concrete apron downstream of Gate #8 was completed on 9 September. The 5-year control survey was completed the week of 24 September.

During gate operations on 30 July, it was determined that Gate #5 is not operable and will not open due to a lack of clearance between the concrete gains and the gate. The concrete is cracked and has moved, causing the gate to jam. Gate #5 will have to remain closed until further investigations are completed. Other than Gate #5, no other significant findings were observed during the inspections.

Item 6. GLAM Committee and Superior Board Task Update

The committee welcomed three new US members (i.e., Lauren Fry [GLERL, in May]; Mary Austerman [NY Sea Grant, July]; and Dena Abou-El-Seoud [USACE Chicago District, August]). One US vacancy remains that the IJC's Victor Serveiss is working on filling.

FY2021 work plan

Expedited review of Lake Ontario Regulation Plan 2014 components were reviewed. One primary component is projecting future hydrologic climates. Tracking observed hydrological conditions (since 1950) is under way, with a due date of 31 December. The second review component involves calculating water levels and flows during simulations of various regulation plan scenarios. By the end of the calendar year, regulation plan rules will be coded into the new regulation and routing model. By October 2021, multiple regulation strategies will be generated using the updated models.

Projects specific to the upper Great Lakes

Routine Evaluations

Water levels and flows recorded in 2019 were again compared to simulated water levels and flows under Plan 2012 and (previous) Plan 1977-A. Lake levels under Plan 2012 were up to 6 cm (2.4 in) higher on Lake Superior and up to 4 cm (1.6 in) lower on Lake Michigan-Huron than under Plan 1977-A. Lake Superior was up to a maximum of 3 cm (1.2 in) higher and Lake Michigan-Huron was between 2 cm (0.8 in) lower to 1 cm (0.4 in) higher due to these deviations.

The third review component is using predictive models to assess outcomes. USACE Detroit District staff completed collection of substrate and aquatic plant data in September meant to feed improvements to the IERM2D model of the St. Marys River.

Operational guide for 10 cm/hour gate movement threshold

An operational guideline for the rate of Compensating Works gate movements is being developed and a draft is expected in October. Development of a flow-change smoothness performance indicator for the Rapids continues to be considered, as it may inform future deviation decisions.

Whitefish Island flooding performance indicator

Similarly, development of a Whitefish Island flooding performance indicator will be helpful in this regard.

Procedure for future deviation requests

The fourth component is evaluations of plan performance. Formalizing recent deviation strategies was discussed in September. Deviations will be programmed into the plan code to test the notion with existing evaluation tools, as well as potential performance indicators that better represent the Compensating Works.

Other recent and expected tasks

USACE Detroit District staff continue to monitor the St. Clair River for physical changes. Results of a 2018 bathymetric survey demonstrate that noticeable deepening of up to 10 to 15 cm is apparent in some parts of the river. A conveyance change analysis is expected to be completed by the end of the year.

General updates were provided. During the GLAM/Board workshop yesterday, the Board generally agreed to proceed with the proposed risk-informed decision-support approach. The short- and long-term strategies are in translation this week and will be posted following final IJC approval. The semi-annual report is completed and will be sent to the Board Co-Chairs for their approval. The FY21 Work Plan draft is now complete and will be sent to the members for approval. Much of it was covered in the meeting today. The Triennial report has been postponed by the IJC.

Item 7. Communications

2020 Tri-Board Webinar

The Board co-hosted a public webinar on 17 July along with the other two Great Lakes Boards, the GLAM Committee and the IJC. Almost 1,000 people from across the Great Lakes-St. Lawrence River system participated in sessions held in English and French. Board Chairs co-presented information on the high-water event of recent years, limitations on regulation of outflows and the conveyance of various connecting rivers, recent deviations, recent and expected lake levels, adaptive management and resiliency measures. The webinar was then opened for public comment, questions, and concerns. Participants submitted questions via the webinar's chat function. A video recording of the webinar and the answers to additional questions from participants that were not answered during the webinar due to time constraints is available at <https://ijc.org/en/labc/video-july-2020-tri-board-webinar-great-lakes-water-levels-and-answers-additional-questions>. Many questions related to the very high lake levels and associated shoreline flooding and erosion damages and what roles regulatory operations, climate change and other factors may have. The Board was pleased with the success of this event and looks forward to similar collaborations in the future.

The IJC will host a webinar for elected officials from the upper Great Lakes basin on 14 October. It will be by invitation only, but the IJC plans to provide a video recording of the webinar online.

Website/Facebook Updates

A feature has been added to the Board website providing an overview of the various diversions into and out of the Great Lakes system, including the Long Lac and Ogoki Diversions, the Chicago Diversion, as well as the diversion through the Welland Canal. The static map has been moved from the home page to its own tab and smaller photos will be used on future media releases so readers will be able to see text immediately. The members' page has been simplified and only one contact button is featured now.

Facebook infographics have been posted monthly to summarize routine media releases. The page continues to gain both "Likes" and "Followers".

Additional Communication

Summary of Outreach Activities

Outreach events have been curtailed owing to the pandemic, so USACE staff have pivoted to public webinars. These have remained very popular, with 200 to 400 attendees commonly.

USACE Detroit District is undertaking georeferencing of all photographs to facilitate citations by internal employees.

Diversions

An analysis was undertaken by the Regulation Representatives to assess the potential lake-level reductions possible since early 2017 had it been possible to alter flowrates of the various diversions into and out of the upper Great Lakes. For example, had the Long Lac & Ogoki Diversions been shut down and the Chicago Diversion maximized, each of the upper Great Lakes would have been up to 4 cm lower after 2017 and up to 11 cm lower after 2019. It is important to note that these diversions are not under the authority of the IJC and that such changes are likely not feasible.

Inflow/Outflow Comparison Graphics

Some related graphics were developed for and used in the Tri-Board webinar on 17 July. Board staff will now adapt these graphics into an online feature and static handouts that will include an overlay of similar graphics and aerial imagery. Staff will hold a call to kick off this effort shortly.

Item 8. Construction of New Soo Lock

The upstream channel deepening began on 4 May and will be complete in fall 2021. The upstream approach walls construction will begin next spring and will be complete in fall 2023. The lock chamber is in design, with construction to begin in spring 2022. The entire project will take ten years to complete at a cost of about \$1 billion. Maintenance of the existing lock facilities is equally important to provide a resilient linkage through the Great Lakes Navigation System.

Item 9. Review Semi-Annual Progress Report

Mr. Caldwell requested timely receipt of any additional comments or changes to the draft semi-annual progress report by next Friday, 9 October. He will incorporate changes, update the available data, and distribute advance copies to the IJC prior to its October meeting. A cover collage will be developed from available photos of shore protection installations.

Item 10. Other Business

No additional agenda items were added.

Item 11. Upcoming Meetings

IJC Appearances

The Appearance will be held virtually on Wednesday, 21 October from 11:45 am to 12:30 pm. GLAM's follows from 1:45 to 2:45 pm.

Spring Board Meetings

The spring Board meeting would be held in March in the US or virtually. The secretaries of the Great Lakes Boards will coordinate the arrangements.

GLAM meetings

There will be committee meetings in Canada (or virtually) in February and in the US (or virtually) in June. Details will follow when available.

Item 12. Action Item Review

Several major actionable items during this meeting were noted:

- US Secretary to share balancing principle slides (fix cm typo, show when limits applied) prior to 14 October webinar with elected officials (due end of next week)
- News release/target communication re: no deviation strategy needed this year (prior to changing gates in December to ½ gate equivalent)
- GLAM: Deviation strategy formalization, code into Plan, evaluate impacts
- USACE Detroit District to provide a preliminary report on bathymetry observations (for conveyance change monitoring) prior to Appearances. Dr. Calappi may attend Appearance to answer questions. Also discuss Coordinating Committee role compared to GLAM and Board.
- GLAM: Work plan, SAR for Board approval in advance of Appearances (21 October)
- Regularly report GLAM routine plan comparisons at future meetings
- IJC to forward invitations to 14 October webinar with elected officials
- US Secretary to set up call re: inflow/outflow graphic (Thursday noon or 12:30)
- Mr. Kart to circulate insights on the new diversions webpage
- Refer to new lock at Soo (instead of new Poe-sized lock) – include in Appearance
- Semi-annual report comments to Cdn. Secretary by 8 October
- Cdn. Secretary to circulate draft Appearance deck late next week

Item 13. Closing Remarks and Adjourn

There being no other business, Mr. Cantin thanked everyone and adjourned the meeting at 16:07.

INTERNATIONAL LAKE SUPERIOR BOARD OF CONTROL
Board Meeting, 2 October 2020, 1:00 pm to 4:30 pm
AGENDA

- | | |
|---|-----------|
| 1. Welcome and introductions [Cantin] | 1300-1310 |
| 2. Approval of agenda and status of prior action items [Cantin, Caldwell] | 1310-1315 |
| 3. Update from Regulation Representatives [Ferguson] | 1315-1400 |
| a. Hydrologic conditions | |
| b. Regulation update | |
| 4. Hydropower [Real, Line, Katalenich] | 1400-1415 |
| a. Recent and expected maintenance and other outages | |
| b. 2021 flow measurements | |
| 5. Compensating Works | 1415-1430 |
| a. Inspections and maintenance [Real, Katalenich] | |
| i. 5-year inspections on Canadian gates | |
| 6. GLAM Committee and Superior Board task update | 1430-1500 |
| a. FY2021 work plan [Leger/Allis] | |
| b. Projects specific to the upper Great Lakes [Leger/Allis] | |
| i. Routine evaluations | |
| ii. Operational guide for 10 cm/hour gate movement threshold | |
| iii. Whitefish Island flooding performance indicator | |
| iv. Procedure for future deviation requests | |
| c. Other recent and expected tasks [Leger] | |
| Break (15 min) | 1500-1515 |
| 7. Communications | 1515-1540 |
| a. 2020 Tri-Board webinar [Caldwell] | |
| b. Website/Facebook updates [Ferguson, Carmichael] | |
| c. Additional communication | |
| i. Summary of outreach activities [Sidick/Allis] | |
| ii. Diversions [Ferguson, Sidick] | |
| iii. Inflow/outflow comparison graphics [Carmichael] | |
| 8. Construction of new Soo lock [Katalenich] | 1540-1545 |
| 9. Review semi-annual progress report [Caldwell] | 1545-1555 |
| 10. Other business | 1555-1600 |
| 11. Upcoming meetings [Caldwell] | 1600-1610 |
| a. IJC Appearances - Wed, 21 Oct 1145-1230, GLAM 1345-1445 | |
| b. Spring Board meetings - ?? Mar 2021 0830-1200, US (location TBD) | |
| c. GLAM meetings – Canada, ?? Feb 2021; US, ?? Jun 2021 | |
| 12. Action item review [Carmichael] | 1610-1625 |
| 13. Closing remarks and adjourn [Cantin] | 1625-1630 |