INTERNATIONAL NIAGARA BOARD OF CONTROL

Minutes of the September 30, 2020 Meeting
Virtual Meeting

Mr. Thompson called the virtual meeting to order at 1:00 PM. Those in attendance were:

UNITED STATES	CANADA
BOARD MEMBERS	
Mr. K. McCune, Alt. Co-Chair	Mr. A. Thompson, Co-Chair
Mr. D. Capka, Member	Ms. J. Keyes, Member
SECRETARIES	
Mr. B. Carmichael	Mr. D. Beach
WORKING COMMITTEE AND ASSOCIATES	
LTC E. Adams	Mr. H. Ahmad
Ms. L. Schifferle	Dr. K. Kornelsen
Mr. M. Asklar	Mr. J. Staples
Mr. A. Armstrong	Mr. J. Schooley
Ms. C. Fisher	Mr. R. Malier
Mr. E. Tauriainen	
Ms. E. Cuddihy	
Mr. M. McClerren	
Mr. K. Koralewski	
OTHER	
Comm. L. Yohe, IJC	Ms. E. Klyszejko, IJC
Mr. M. Colosimo IJC	
Mr. A. Greeley , IJC	

Item 1. Opening Remarks, Introductions

Mr. Thompson welcomed attendees to the first fully virtual meeting of the board. This board meeting was held virtually due to restrictions on travel due to the COVID-19 pandemic. Each attendee provided a brief introduction at the start of the meeting.

Item 2. Approval of Agenda

The draft agenda was approved as presented and is attached.

Item 3. Membership changes

The Canadian and US members of the board remained the same from the last meeting. One change to the membership of the International Niagara Working Committee (INWC) was made with LTC Eli Adams assuming the US chair from LTC Jason Toth with the exchange of command of the United States Army Corps of Engineers Buffalo District.

Item 4. Review of Previous Meeting Minutes

The review of the previous meeting minutes from the board meeting held in Ann Arbor, Michigan on March 12, 2020 was completed by email and the meeting minutes have been finalized. Draft meeting minutes were distributed for comment on September 11, 2020. A final draft was distributed September 30, 2020 and the board approved the minutes as final.

Item 5. Update on Lake Erie/Niagara River Conditions

The board was provided an update of water levels, precipitation, net basin supplies and flows for Lake Erie and Niagara River for the reporting period. For much of this reporting period Lake Erie and its supplies were at seasonal record-breaking levels. Levels of Lake Michigan-Huron, which supplies water to Lake Erie, were above seasonal-record-high values (1918-2019). As a result of the extremely high levels of Lake Michigan-Huron, monthly mean flows in the Detroit River were at record high values (1900-2019) for the entire reporting period. Precipitation, another key component of water supplies, on the Lake Erie basin was 7% below average. The monthly net basin supplies, or the net amount of water from the Lake Erie watershed to Lake Erie, were cumulatively well-below average over the reporting period as a result of most months being well below average except for March and May which were only near-average supplies. Despite below-average basin supplies, the very high supplies from inflows from Lake Michigan-Huron resulted in well-above average net total supplies for all months of this reporting period.

The high water supplies to Lake Erie over the reporting period resulted in record breaking conditions (1918-2020) in Lake Erie and the Niagara River during this reporting period. Lake Erie began the reporting period with a March mean level 86 cm (33.9 inches) above its period-of-record (1918-2019) average level for the month and set a seasonal monthly-high for March by 7 cm (2.8 inches). The level of Lake Erie remained well-above average throughout this reporting period, also setting record high monthly mean values for April and May, and near-record-high values for June, July and August. Lake Erie levels ended the reporting period with August mean water level the the second highest on record for the month, 66 cm (26.0 inches) above average and only 9 cm (3.5 inches) below its

record high set in 2019. The six month forecast for Lake Erie levels estimates that levels will remain well above average even if very dry conditions are encountered, and could remain near record high values if very wet conditions occur.

During the reporting period, the Niagara River flow at Queenston averaged 7,761 m^3/s (274,080 cfs), which was 1,802 m^3/s (63,640 cfs) above the 1900-2019 average of 5,959 m^3/s (210,440 cfs). The monthly mean Niagara River flow at Queenston for March (7,757 m^3/s, 173,940 cfs), April (8,014 m^3/s, 283,010 cfs), and May (7,900 m^3/s, 278,990 cfs) set new high flow records (1900-2020) for these months at Queenston.

Daily flows over Niagara Falls were above Treaty limits for the entire reporting period with flows above 2832 m^3/s (100,000 cfs) for day and night time from the beginning of their reporting period to the beginning of August, and only dipped below these values in August during the night time.

Item 6. Lake Erie – Niagara River Ice Boom

a) 2019-20/2020-21 Ice Boom Seasons

The board was provided a review of ice boom activities. Well above average air temperatures in the early months of 2020 kept ice formation on Lake Erie well below average. Maximum ice cover for the 2019/20 ice season occurred the during the first week of March and was estimated at only 9% cover. A MODIS image of Lake Erie from 1 March 2020 showed the lake relatively ice free. New York Power Authority informed the Working Committee on February 27 that boom removal would begin as early as March 2. The board issued their media advisory on the morning of March 2, before boom removal began later the same day. All spans of the ice boom were removed from Lake Erie and tied off to the Buffalo Harbor Breakwall by March 5, effectively removing the boom for the 2019/20 season. Due to operational and weather related delays removal operations were limited between March 5 and March 17. On March 17 all boom spans remained secured to the Buffalo Harbor Breakwall and 17 buoys remained on Lake Erie. On March 17 NYPA informed the Working Committee that operations for placement of the boom components into storage needed to be suspended for safety due to the COVID-19 pandemic. NYPA informed the board that operations remained restricted in order to implement safe working protocols for COVID-19 from March 5 to June 1, although inspections and maintenance of tie lines were performed by NYPA during this period to ensure that boom spans remained securely attached to the breakwall. On June 1 restricted operations resumed and all boom components were placed in dry storage by June 4, 2020.

In preparation for the upcoming ice season, NYPA is conducting routine maintenance on equipment. It was suggested that an earlier installation start date may be required than provided in the IJC Order, to insure implementation of safe COVID-19 working protocols. The board indicated that they would discuss this matter with the IJC Commissioners in the upcoming hearing.

b) Status of 2019-20 Ice Boom Report

The first draft of the Ice Boom Report is being completed. A first draft is expected to be distributed to all board member and associates by October 7. Comments are due back to USACE Buffalo by October 16, 2020.

Item 7. Chippawa-Grass Island Pool

The board was provided a summary of the operation and maintenance of the Chippawa-Grass Island Pool (CGIP) and International Niagara Control Works (INCW).

a) Compliance to Directive

The water level in the CGIP is regulated in accordance with the board's 1993 Directive. The board was given an update of the conditions of the CGIP through the reporting period. The CGIP was operated within all criteria of the 1993 Directive. Due to very high flows in the Niagara River some tolerances continue to be suspended at a relatively high frequency in accordance with the Directive (i.e. hourly flows greater than 7650 m^3/s for four consecutive hours). Tolerances were suspended due to abnormally high flows for 7 days in March, 18 days in April, 17 days in May, 20 days in June, 16 days in July and 8 days in August. A comparison of daily fluctuations ranges was provided showing that all but one day in April had daily fluctuations within the normal directive limits, despite so many days with abnormal flows. The one day that was outside the normal limit for daily fluctuation was excluded because of the abnormally high flow condition, and therefore was not an exceedance of the Directive limits. Comparing the daily fluctuations and CGIP levels of this reporting period to those of 1986, the previous record high condition for Lake Erie, and 2019 presented in previous meetings indicates the operation of the CGIP is within acceptable impacts to the Niagara River. The INWC or NRCC was not aware of any concerns. The board agreed that the limits of the Directive continue to provide adequate protection of interests upstream of the INCW and directed the INWC to continue to monitor as high flow conditions are expected to continue through the upcoming reporting period.

b) Operations and Maintenance

The board was provided an update on regulatory gauge outages, regulatory reporting, International Control Dam (ICD) outages, and ICD environmental issues. Operations of the CGIP and INCW were satisfactory for this reporting period.

All gauges required for the operation of the INCW were in service during this reporting period, except for a period of 4 hours during a communications failure (modem failure) on Aug 31, 2020 at the Frenchman’s Creek gauge and two communication outages at Slater’s Point gauge on Aug 13 and Aug 31, 2020 both due to communication failures lasting 1 hour.

OPG reported that a new strategy is being implemented for INCW gate maintenance. Seasonal equipment overhauls are being undertaken to provide better flexibility for gate maintenance. The philosophy of gate overhaul maintenance has been changed from

one of preventative to condition based to fit overhaul activities into the upcoming major gate rehabilitation project scheduled to start in 2023. The outcome of this new strategy is expected to avoid duplication of work on the control structure.

NRCC reported that communications with other interested parties along the Niagara River are ongoing to ensure that impacts of water level changes due to operation of the CGIP are considered. Due to the recent high water levels on the Lower Niagara River the Canadian and USA tour boat operators (e.g. Hornblower Niagara Tours and Maid-of-the-Mist Tours) are undertaking modifications to their docks to allow for passenger loading and unloading in higher water levels. These higher water levels on the Niagara River are a result of the record setting outflows from Lake Erie.

The INCW reported that the bullnose refurbishment project work was completed and upgrades to the control room and information technologies were ongoing during this reporting period. Other ongoing projects included the Water Level Gauge House Replacement Project that estimated completion by 2021 and the Public Safety Accipiter Radar Phase 2 estimated completion later in 2020.

Item 8. Plant Upgrades and Unit Testing

a) OPG – Ongoing plant upgrades and unit testing continued during this reporting period. SAB G10 unit Gibson rating report is currently undergoing review by NYPS and, overhaul of SAB G5 began January 2020 and is scheduled to run to June 2021. Plans for upcoming upgrades include closure of the SAB1 canal and Montrose Gate refurbishment currently scheduled to start 2022-2023, and installation of new 60 Hz units replacing the 20 Hz G1 and G2 units are planned to begin in 2021 with units in service by 2022. SAB2 overhauls are scheduled to begin in September 2023. DeCew Falls unit G8 runner replacement is scheduled from September 2020 to July 2021 with the same runner design being used.

b) NYPA – NYPA continued to improve the Lewiston Pump Generating Plant with further work on PG 3 and PG1. At the Robert Moses Plant planned upgrades began on the control room. The Robert Moses Unit 1 refurbishment was also ongoing for this reporting period. NYPA plans to provide a more detailed update for the spring board meeting.

Item 9. Review Discharge Measurement Programs

a) Overall Schedule – The schedule for flow measurements for verification of the rating curves for estimation of flows in the upper Niagara River, over Niagara Falls (including the Horseshoe Falls and American Falls), over the American Falls and in the Welland Canal was reviewed. The schedule for international flow measurements was not impacted by the COVID-19 pandemic as no measurements were scheduled for 2020. Flow measurements in the Welland

Canal and Niagara River at the International Railway Bridge are scheduled for 2021. It was noted that the flow measurement schedule for 2021 may need to be revised due to the current COVID-19 pandemic and the need for implementation of safe working procedures which puts limitations on field procedures and travel. The flow measurement schedule will continue to be reviewed in upcoming 2021 board meetings.

b) **International Railway Bridge** – The last set of flow measurements were taken in 2018. All reports are up to date for this location. The next scheduled measurements are planned for May 2021.

c) Welland Canal – Measurements were taken in the Welland Supply Canal above Weir 8 to further verify the index-velocity rating used to determine flow through the Welland Canal in May 2018 and a report is being prepared. The next set of measurements is planned for May 2021.

d) Ashland Avenue Rating Section – Measurements is at the AARS were taken September 17-18, 2019. Due to record high flow in the Niagara River discharge measurements were obtained between 2,400 m^3/s and 4,400 m^3/s. Measurements at the originally requested flows of 1420, 1700 and 2000 m^3/s were not attempted due to the large quantities of water flowing in the Niagara River. A report has been drafted and is under review by the INWC. The next measurements are planned for the fall of 2022.

e) **American Falls** – The last measurements for verification of the American Falls rating equation were completed in May 2017. Analysis has been completed and the report is final. Following the five-year cycle, the next scheduled measurements at this location are scheduled for May 2022. It was noted that plans for the American Falls pedestrian bridges are progressing and construction could begin as early as 2023. Should COVID-19 require rescheduling of flow measurements this may need to be taken into account.

f) Niagara-on-the-Lake – The Lower Niagara Index Velocity Meter has been installed by USACE at Old Fort Niagara, Youngstown, New York. The USACE is providing maintenance for the meter and is developing the index rating. A draft report has been submitted to the Coordinating Committee for Great Lakes Hydraulic and The USGS has been contracted through the USACE to provide data collection support. Flow measurements continue to be collected by US crews with the last measurement collected in August 2020. A draft report has been submitted to the Hydraulics Subcommittee of the Coordinating Committee on Great Lakes Basic Hydraulic and Hydrological Data for review.

Item 10. 2020 Public Outreach Events

The board expressed continued support for the tri-board public webinar format similar to the tri-board public webinar held on July 17, 2020. The webinar was conducted in collaboration with the IJC commissioners and communications staff, Lake Superior Board of Control, International Lake Ontario – St. Lawrence River Board and Great Lakes Adaptive Management Committee. The board will explore opportunities to participate in these types of outreach for 2021.

Item 11. Review 135th Semi-Annual Progress Report

A 1st draft report was submitted to the INWC on September 8 for discussion at the INWC meeting on September 10. Discussion from INWC meeting and comments were compiled. The board was provided the 2nd draft on September 28 and was asked to provide comments by October 7 so that it can be finalized and sent to the IJC advisors. Once finalized and accepted by the IJC commissioners, the report will be posted on the INBC web site.

Item 12. Other Business

a. Adaptive Management Update

The board was given a briefing on the IJC Great Lakes Adaptive Management Committee's activities. Work on review of plan 2014 for regulation of Lake Ontario outflow and plan 2012 for regulation of Lake Superior outflow is ongoing. Several of the IJC's International Watershed Initiative projects are being used to assess response of Great Lake levels to the regulation plan requirements and associated impacts to riparian interests. Efforts are being focused on Lake Ontario, Lake Superior and Lake Michigan-Huron. The board associates will continue to monitor these ongoing efforts and keep the board informed of issues related to the Niagara River.

b. Falls Recession

The board was updated on monitoring the Falls crest recession. No significant changes in the crest line of the Falls were noted over the last reporting period based on search of aerial photographs posted on the internet. The last verified photograph of the Falls was taken during the British Red Arrow Jet fly-by of Niagara Falls on August 29, 2019. A photo posted on August 26, 2020 on Facebook page "TodaysCanada" by a private user did not show any noticeable changes in crestline.

c. American Falls Bridge Update

An update of the ongoing plans for construction of the two replacement pedestrian bridges from the mainland to Goat Island was provided to the board. The New York State Office of Parks, Recreation and Historic Preservation recognized that the pedestrian bridges from Niagara Falls, New York to Goat Island over the Amercan

Falls channel are in need of reconstruction. New York Parks with the help of New York State Department of Transportation began planning for reconstruction of the bridges in 2014. The location of construction due to proximity to the lip of the falls and swift moving water will present challenges to the bridge construction. Preliminary plans and environmental assessments were initiated by consultants working on behalf of the New York State Departments, however planning was suspended in 2016.

In 2019, planning by the State's consultants resumed with meetings including the Power Entities, IJC and Federal Government Agencies from U.S. and Canada. In those meetings permitting requirements were discussed. As well a range of engineering options were discussed on dewatering the American Falls channel for bridge construction ranging from a complete dewatering as seen in 1969 to isolated work areas around bridge piers that would have minimal impact on flow. The INWC will continue to monitor progress and provide input as necessary on these plans.

d. Public Information – CGIP Impacts to Great Lake Levels

Due to the recent record high levels on Lake Erie and upstream Great Lakes, there has been public interest in the potential for impacts to lake levels due to operation of the INCW. The board was provided a summary of the rational for operation of the INCW and how it minimizes impacts on Great Lake levels upstream of the Niagara River.

The INWC determined that some form of control structure was required above Niagara Falls to a) maintain the natural levels of the CGIP and prevent unnatural drops in Lake Erie’s levels due to water withdrawals for power generation and b) allow power entities to maintain the treaty required minimum flows over Niagara Falls. In 1973 the long-term mean level of the CGIP was set at 171.16 m (IGLD 1985) and further conditions of operation were implemented through the board’s 1993 Directive (as presented in agenda item 7a), to limit the impacts of operation of the INCW to riparian interests of the Niagara River and upstream Great Lakes.

Further studies and experience of the impacts of operation of the INCW found a) short-term changes in operation of the CGIP have no measurable impact on flows out of Lake Erie, b) lowering levels of the CGIP have rapid and negative impacts on riparian interests along the Niagara River (e.g. water wells have gone dry and boating issues have been reported), c) raising or lowering of the average operational level of the CGIP by 30 cm was estimated using hydraulic modelling to have only a small impact on levels of Lake Erie (Lee et al., 1993) and the full effects of the level changes would take approximately two years to be realized. Based on the above rational, variations of CGIP levels have not been recommended as emergency measures for impacts of high water levels on

upstream Great Lakes due to the relatively small relief that can be provided, the very slow response in lake levels to changes in operation of the INCW relative to changes in water supplies to the lakes (i.e. recent high lake levels are predominantly driven by well above average precipitation to the Great Lakes Basin) and the negative impacts to riparian interests along the Niagara River.

A preliminary analysis of hydraulic gradients from 2012 to the current reporting period was provided for sections of the Niagara River from Lake Erie at Buffalo to the CGIP (Material Dock). The gradients showed a general increasing trend from 2013 to 2020 showing that hydraulic gradients have increased as Lake Erie levels have risen, allowing for the record high outflows from Lake Erie that have been seen recently. As well the gradients showed a very steep sections at the upper end of the Niagara River from Buffalo to Frenchman's Creek, indicating that this steep section dampens the short-term effects of changes in CGIP levels on the outflow from Lake Erie.

The board agreed that the current rational for operation of the INCW is sound and no extra study is required at this time. The board and INWC will continue to monitor public concerns. A draft figure showing a schematic of the gradients of the Niagara River and impacts of changes in levels of the CGIP was presented for discussion. Comment was requested on further use of this as a communication product to the public.

e. IWI Projects

An update to IWI projects was provided in agenda item 12 a) as they are closely related to the current IJC Adaptive Management initiatives.

Item 13. IJC Appearance Meeting

The presentation for the upcoming IJC Appearance meeting will be prepared. Topics to include: 1) board membership, 2) Working Committee membership 3) board's area of responsibility, 4) Lake Erie water levels and Niagara Falls flow, 5) compliance to Directive during high water level and flow period, 6) 2020-21 ice boom season planning, 7) 5 year ice boom review, 8) update on plans for American Falls bridges, 9) public communication of board activities.

The next IJC Appearance is scheduled for Wednesday October 21st, 2020 via virtual meeting. Further details will be forwarded by board secretaries.

Item 14. Next Board Meeting, Closing Remarks, Adjourn

The next board meeting is tentatively scheduled for March 2020 via virtual meeting. The closing remarks were made and the meeting adjourned at 3:46 PM.

International Niagara Board of Control
Semiannual Meeting
September 30, 2020
1:00 p.m. – 3:30 p.m.
Teleconference/Virtual Meeting
Final Agenda

1.	Opening Remarks, Introductions ……	1:00-1:05
2.	Approval of Agenda ……	1:05-1:10
3.	Membership Changes, Roles and Responsibilities ……	1:10-1:15
4.	Review of previous meeting minutes ……	1:15-1:20
5.	Update on Lake Erie/Niagara River Conditions ……	1:20-1:30
6.	Lake Erie – Niagara River Ice Boom	
	a) 2019-20 / 2020-21 Ice Boom Seasons ……	1:30-1:35
	b) Status of 2019-20 Ice Boom Report ……	1:35-1:45
7.	Chippawa-Grass Island Pool	
	a. Compliance to Directive ……	1:45-1:55
	b. Operations and maintenance ……	1:55-2:05
8.	Plant Upgrades and Unit Testing	
	a) OPG ……	2:05-2:15
	b) NYPA ……	2:15-2:25
9.	Review discharge measurements program ……	2:25-2:35
	g) Overall schedule	
	h) International Railway Bridge (Buffalo and Fort Erie)	
	i) Welland Canal	
	j) Ashland Avenue Rating Section	
	k) American Falls	
	l) Niagara-on-the-Lake	
10.	2020 Public Outreach Events ……	2:35-2:45
11.	Review of 135th Semi-Annual Progress Report ……	2:45-2:55
12.	Other Business	
	a) Adaptive Management Update ……	2:55-3:00
	b) Falls Recession ……	3:00-3:05
	c) American Falls Bridge Update ……	3:05-3:15
	d) Public Information – CGIP Impacts to GL Levels ……	3:15-3:25
	e) IWI Projects ……	3:25-3:30
13.	IJC Appearance – Date, topics for presentation ……	3:30-3:35
14.	Next Board Meeting, Closing Remarks and Adjourn	