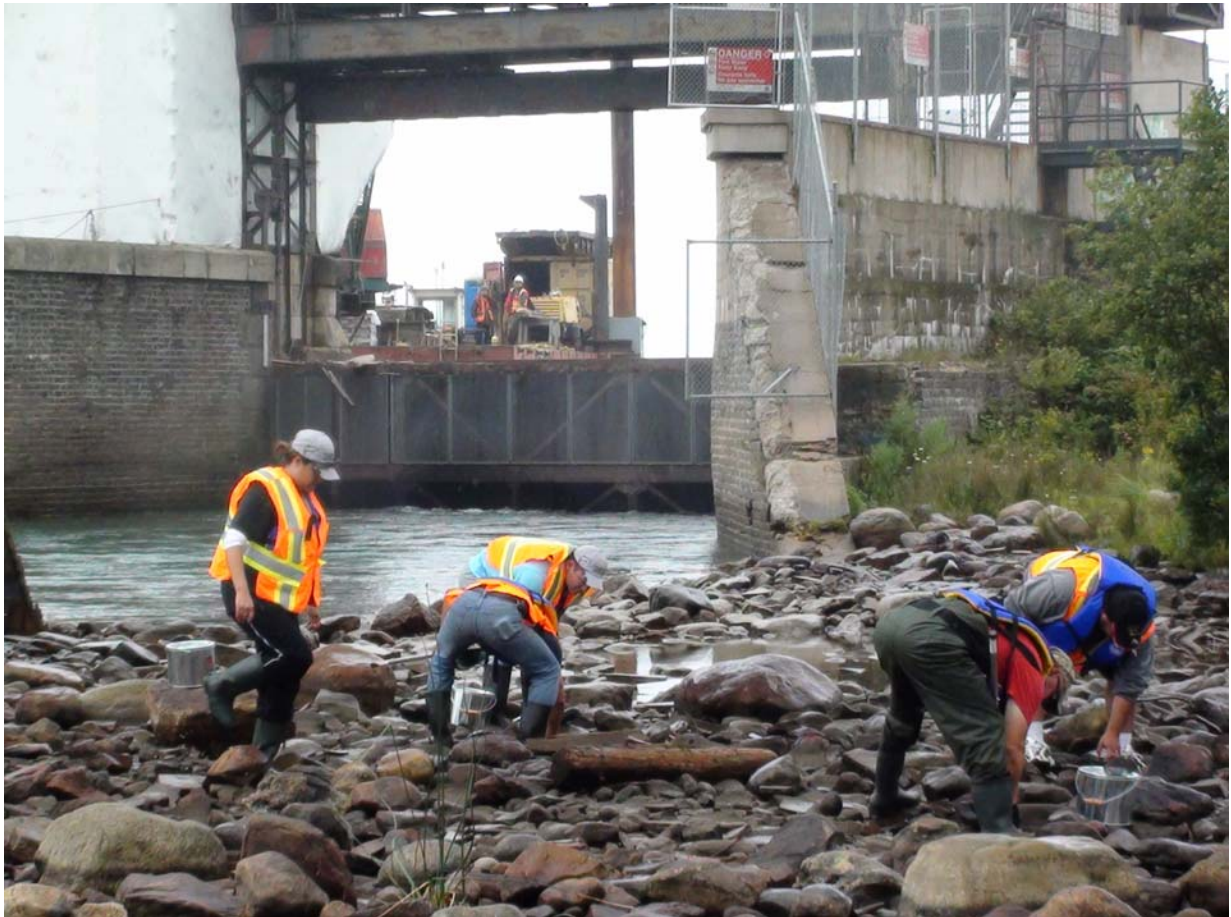


**International Lake Superior  
Board of Control  
Semi-Annual Progress Report to the  
International Joint Commission  
Covering the Period March 9, 2010 to September 8, 2010**

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**Cover photo:** Batchewana First Nations technicians moving stranded aquatic organisms during temporary closure of Gate 1, August 2010.

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# International Lake Superior Board of Control

## Canada

David Fay, Member  
Rob Caldwell, Secretary

## United States

MG John W. Peabody, Member  
John W. Kangas, Secretary

8 September 2010

International Joint Commission  
Ottawa, Ontario  
Washington, D.C.

Commissioners:

This semi-annual report covers the Board's activities from 9 March to 8 September 2010.

## **1. Highlights**

During the past six months, the water levels of Lake Superior remained below average and have been the same as to 17 cm (7 in.) lower than last year's levels, and last month were 19 cm (7 in.) below the year before. Monthly mean Lake Superior levels had moved to within 11 cm (4 in.) of average by December 2009, but now lie 34 cm (13 in.) below average. Lake Superior levels have been consistently below average since April of 1998, which is the longest sustained period of below-average monthly levels in the 1918-2009 record.

The levels of Lakes Michigan-Huron have been below average since January of 1999, the second longest period on record of consistently below average levels. Similarly, monthly mean Lakes Michigan-Huron levels had moved to within 12 cm (4 in.) of average by December 2009, but were as low as 37 cm (15 in.) below average by June and were 33 cm (13 in.) below average last month. Lakes Michigan-Huron were 20 cm (8 in.) below last year's level in August.

The Lake Superior outflows were as specified by Regulation Plan 1977-A. Since March, these monthly outflows have been between 66% and 87% of average, and have been at the Plan-prescribed normal minimum outflow of 1560 m<sup>3</sup>/s since May. Meanwhile, the monthly outflows from Lakes Michigan-Huron ranged from 93% to 101% of average. Water supplies to Lake Superior were near normal in June, but were otherwise below average from March through August. Water supplies to Lakes Michigan-Huron were above average in June and July but were otherwise below average.

Ponding by the hydropower entities was permitted on weekends and holidays during the reporting period.

The Board hosted its annual public meeting and teleconference on the evening of 9 June in Sault Ste. Marie, ON. Ten members of the public and media attended the meeting at Sault College (along with several Board Members, staff, and associates), while seven people participated via the teleconference line. Most participants remain concerned about potential impacts due to climate change and variability. Though people are aware that hydrologic factors have resulted in the low levels, many continue to believe that other factors (such as bulk withdrawals, diversions, regulatory practices, consumptive use, conveyance increases in the St. Clair River, etc.) were adding to the problem. There was significant trepidation surrounding the potential outcomes of the International Upper Great Lakes Study. After the meeting, attendees had an opportunity to talk one-on-one with the Board and Commission representatives.

A USEPA-funded study by the Great Lakes Fisheries Commission to assess potential improvements to sea lamprey trapping efficiencies in the St Marys River at Sault Ste, Marie was initiated and will continue in 2011.

Brookfield Renewable Power (BRP) began the final phase of its four-year refurbishment program of its half of the Compensating Works. The IJC issued a supplementary Order of Approval on 23 July permitting BRP to close Gate 1 temporarily to conduct this work. Gate 1 supplies water to the Fisheries Remedial Works.

Detailed inspections of the Compensating Works were conducted during the reporting period, with no major issues identified.

## **2. Monitoring of Hydrologic Conditions**

The Board continuously monitors the water levels of lakes Superior and Michigan-Huron, and the water levels and flows in the St. Marys River. The Regulation Representatives' monthly reports to the Board provide hydrologic assessments and recommendations on the regulation of outflows from Lake Superior. These reports indicate the amount of water available for hydropower purposes, after the requirements for domestic use, navigation, and the fishery (St. Marys Rapids) were met.

Tables 1 and 2 list the recent monthly water levels, net basin supplies, and outflows for lakes Superior and Michigan-Huron, respectively. Figure 1 compares the monthly water levels for this period to long-term averages and extremes. Figure 2 shows the monthly precipitation over the lakes Superior and Michigan-Huron basins. Figure 3 shows the monthly net basin supplies for the basins.

Precipitation over the Lake Superior basin was 89% of average from March through August 2010 and would be expected to be exceeded 79% of the time. The only months with above average precipitation were June and August. The net basin water supplies to Lake Superior, which are the net effect of precipitation, evaporation and runoff to the lake, were near normal in June but were otherwise below average from March through August. On the

whole, the March through August net basin supplies to Lake Superior would be expected to be exceeded greater than 99% of the time.

Lake Superior's water levels had been consistently below chart datum (183.2 m or 601.1 ft.) since 16 January, but rose to chart datum on 12 July, where levels remained through the end of the reporting period, and, on 8 September were 5 cm (2 in.) above chart datum. Its levels over the past six months ranged from 15 to 34 cm (6 to 13 in.) below average. On 8 September, its level was at elevation 183.25 m (601.21 ft.), which was 29 cm (11 in.) below average and 18 cm (7 in.) lower than last year. The levels of Lake Superior have been consistently below average since April of 1998, which is the longest sustained period of below-average monthly levels in the 1918-2009 period of record.

Precipitation over the Lakes Michigan-Huron basin was 109% of average over the past six months according to provisional data and would be expected to be exceeded 26% of the time. Net basin water supplies to Lakes Michigan-Huron were above average in June and July but were otherwise below average from March through August. On the whole, the March through August net basin supplies to Lakes Michigan-Huron would be expected to be exceeded about 78% of the time.

Monthly mean Lake Michigan-Huron levels ranged from 22 to 37 cm (9 to 15 in.) below long-term averages. Water levels have been consistently above chart datum (176.00 m or 577.4 ft.) throughout the reporting period. On 8 September, Lakes Michigan-Huron were at elevation 176.17 m (577.99 ft.), 35 cm (14 in.) below average, 22 cm (9 in.) lower than one year ago, and 17 cm (7 in.) above chart datum. The level of Lakes Michigan-Huron has been below average since January of 1999, the second longest sustained period of below-average monthly levels on record.

### **3. Regulation of the Outflow from Lake Superior**

The outflows of Lake Superior were as specified by Regulation Plan 1977-A during the reporting period. Lake Superior outflows were 74% of average over the last six months, with monthly flows ranging from 1,550 to 1,690 m<sup>3</sup>/s (54,700 to 59,700 cfs). Outflows were not limited by Criterion (c) of the Orders during this reporting period. Outflows were limited to the normal minimum outflow of Plan 1977-A (1560 m<sup>3</sup>/s) except during April.

The gate settings at the Compensating Works supplying the main portion of the St. Marys Rapids were at an equivalent one-half gate open from March through August. The equivalent one-half gate open setting was initially maintained in the typical pattern with Gates 7, 8, 9, and 10 each set at 20 cm (8"). To facilitate the Canadian gate refurbishment program, these four gates were closed and Gates 11 to 14 were each opened on 15 July to the 20 cm equivalent opening. Gate 1, which supplies water to the Fishery Remedial Works, remained set at 15 m<sup>3</sup>/s (530 cfs) until 21 August. Gate 1 was closed eight times thereafter (through the end of the reporting period), for periods of less than 24 hours each time, in accordance with the supplementary Order of Approval of 23 July 2010 permitting

BRP to close the gate temporarily to facilitate its refurbishment (between 1 August and 15 September, as required). The negligible storage of water resulting from these short-term closures of this gate was accumulated on Lake Superior, and is not sufficient to affect regulatory computations.

Several scheduled and a few unexpected flow reductions occurred at the three hydropower plants to facilitate maintenance and make repairs. Details are provided in Section 6. All flow reductions were easily offset by flow increases at other times within each month. When units are taken off-line, water levels immediately downstream of the plants (as indicated by the U.S. Slip gauge) fall, but quickly rise again as the idled units are brought back on-line. No problems related to water levels were reported as a result of these variations. No ships were reported delayed due to the flow variations.

#### **4. Governing Conditions during the Reporting Period**

The monthly mean levels of Lake Superior ranged between 183.08 and 183.20 m (600.7 and 601.0 ft.) during the reporting period, within the limits of 182.76 and 183.86 m (599.6 and 603.2 ft.) specified in the Commission's Orders of Approval.

During the reporting period, the daily mean water levels in the lower St. Marys River at the U.S. Slip gauge downstream of the U.S. Locks, varied between 176.07 and 176.50 m (577.7 and 579.1 ft). Therefore, the requirement for maintaining the level below 177.94 m (583.8 ft.) was satisfied. Daily mean U.S. Slip levels fell below the ponding restriction threshold (see Section 10) of 176.09 m (577.72 ft.) for 1 day during the reporting period, due to strong northwest winds, on a weekday with peaking (March 25).

#### **5. Inspection and Repairs at the Compensating Works**

Ongoing routine maintenance and inspections of the Compensating Works occurred in the past six months. The structure is generally in good condition.

On the Canadian side of the structure, Brookfield Renewable Power's (BRP's) major multi-year repainting and refurbishment program recommenced on 10 June 2010, with completion of the program expected by late November 2010.

On 5 June 2009, BRP submitted a request to the Commission to temporarily suspend Condition 3(a) of the 11 December 1985 Orders of Approval (requirement to maintain a flowrate of 15 m<sup>3</sup>/s to the Fishery Remedial Works downstream of Gate 1). BRP sought and received the concurrence of relevant natural resource agencies to temporarily close Gate 1 subject to a number of conditions. Letters of concurrence were received from the Batchewana First Nations (BFN) of Ojibways, Ontario Ministry of Natural Resources, Michigan Department of Natural Resources and Environment, Canadian Department of Fisheries and Oceans, and the US Fish and Wildlife Service. In July, the Board sent a letter to the Commission, supporting the request. On 23 July 2010, the Commission issued a

supplementary Order, granting BRP permission to close Gate 1 temporarily, as required, for periods of less than 24 hours at a time, between 1 August and 15 September, to facilitate the work. A gate opening and closing protocol approved by the above agencies (i.e., a rate of no more than 10 cm (4") every hour) was followed to minimize potential adverse impacts by accommodating the lack of mobility and slow response of small fish in the downstream channel to receding water and flushing water. BRP arranged to have BFN technicians return all forms of trapped and stranded aquatic life to flowing water after each closure of Gate 1, and a monitoring report will be prepared and provided to the Board.

On 21 August 2010, large debris, some lodged under the gate, was removed prior to the initial movement of Gate 1. Smaller debris was flushed through by slowly raising the gate, in increments, an extra 13 cm (5"). All gate movements were undertaken at a rate of 1" (2.5 cm) every 15 minutes. Underwater inspections of the upstream apron area followed closure of the gate. A temporary control structure was to be installed upstream of the gate to maintain and control the flow to the fisheries remedial works while the gate is fully raised, enclosed, and refurbished. The structure consists of a steel truss (at apron level), a steel beam (at pier top level), and moveable panels supported by the truss and beam. Installation and removal of the structure requires gate closure to accommodate divers. However, approval to close Gate 1 lapses on 15 September. Due to inclement weather creating unexpected work delays, BRP expects to request an extension of one week or more for the closure approval (from 15 September to approximately 22 September). Removal of the upper portions of the structure and scaffolding will be performed without need for gate closure, though the steel truss and scaffold feet will remain in place, within the flowing water, until further approval for gate closures can be obtained.

A previously repaired hub of a gear wheel in the north mechanism of Gate 6 was found to contain cracks. It was removed on 27 July for repairs and will be re-installed in late September or early October. Gate 6 is inoperable in the interim.

The five-year periodic inspection of the Canadian portion of the structure was completed between 15 to 17 July 2010, with the exception of the underwater portions of Bays 1 and 2. Underwater inspection of Gate 1 was completed on 21 and 22 August. Underwater inspection of Bay 2 will be carried out once the scaffolding and dewatering structures needed for the refurbishment program have been fully removed. Painting of Gate 2 is complete and removal of the enclosure and dewatering gates is under way. A final report was provided to the Board on 8 September (*that will be amended, if necessary, pending results of the lattermost inspection*).

Monthly inspections and routine maintenance continued to be conducted on the U.S. portion by the USACE Soo Area Office. The 9 August 2010 monthly inspection found the Compensating Works facilities to be in good condition. The five-year periodic detailed inspection of the U.S. portion of the Compensating Works was done on 26 and 27 May. A report of the findings and recommendations is being prepared.

## **6. Repairs and Maintenance at the Hydropower Facilities**

### *a. U.S. Government Hydropower Plant*

As reported previously, the turbine runner for Unit 10 was damaged by cavitation. Vibration problems were experienced when the unit was repaired permanently and brought back to service on 12 February 2010. The shaft was re-shimmed and returned to service on 15 March. Unit 10 was taken off line from 20 to 21 May for transformer and generator inspection and testing. Unit 3A was off line from 7 to 9 June and from 14 to 16 June for hydraulic system repairs. From 29 to 30 June, the plant was backed down to 7-10 MW output for 11 hours each day to facilitate maintenance at the Magazine Street substation. On 14 June, Unit 10 was down for about 7 hours for screen rack cleaning. On 5 August, Unit 1 was off line due to failure of a wicket gate control sensor.

Several scheduled and unscheduled outages have occurred since March resulting in about 93 hours of downtime for scheduled and unscheduled maintenance and to correct electrical faults. Flow allocations were met during the reporting period. Cloverland Electric Coop (CEC) used all of the allocation that the government plant was unable to use.

A detailed inspection of the main plant and Unit 10 powerhouse, and a visual inspection of the dikes, was conducted on 26 and 27 May. No major issues were identified.

### *b. Brookfield Renewable Power*

A series of scheduled maintenance outages were undertaken at the Brookfield Renewable Power plant. Unit G2 was shut down from 3 to 7 May, and Unit G1 was shut down from 8 to 18 May for annual inspections. The plant was shut down on 29 August for ten hours to facilitate an inspection of the head race ice boom. The boom broke in several spots earlier in August. The power entity was able to pass the allotted flows each month. A shutdown during daylight hours is scheduled for 25 September to facilitate the annual underwater cable inspection and maintenance for Lake Superior Power Ltd., and the ice boom will be repaired at that time. Most of the previous monitoring issues that had arisen were resolved, but all alarm terminal points will be checked and tightened as necessary as well. Unit G3 is scheduled for shut down from 24 September until 8 October for annual inspection and replacement of a transformer.

### *c. Cloverland Electric Coop*

Cloverland Electric Co-operative completed acquisition of Edison Sault Electric Company on 4 May 2010. Routine maintenance was conducted during the reporting period. Placement of stone on the bottom of the power canal is expected to resume on 13 September 2010, and continue for four to six weeks. During the reporting period all flow

allocations were used.

## **7. Flow Verification Measurements**

Hydropower flow verification measurements are performed on a five-year cycle, and are expected to be completed this summer during the weeks of 13 and 20 September. A final report will be prepared and the results presented to the Board. Compensating Works flow verification measurements may be scheduled in 2011, following completion of BRP's refurbishment program this fall.

Flow measurements were made on 18 and 19 May at model sections in the lower St. Marys River. Additional measurements will be made the week of 13 or 20 September. These are for use in the calibration of hydraulic models and are not related to the power plant flow verification program.

## **8. Water Usage in the St. Marys River**

Table 3 (Table 4 in cubic feet per second) lists the distribution of outflows from Lake Superior for January 2009 to August 2010. Water uses are divided into four categories: domestic, navigation, fishery, and hydropower. According to the 1979 Supplementary Order, after the first three water requirements are satisfied, the remaining outflow is shared equally between the U.S. and Canada for hydropower purposes. Any remainder, beyond the flow capacity of the hydropower plants, is discharged through the Compensating Works into the St. Marys Rapids.

As shown in the tables, water used for domestic and industrial purposes ranged from 8 to 11 m<sup>3</sup>/s (283 to 388 cfs), or 0.5 to 0.7% of the total monthly outflow.

The monthly flow through the locks depends on traffic volume and varied from 5 to 16 m<sup>3</sup>/s (177 to 565 cfs). As a percentage of the total river flow, water allocated for navigation can vary seasonally from 0.1% (when the locks are closed for the winter) to 1.0% in the busiest part of the navigation season.

The U.S. locks opened four days early, on 21 March, due to the presence of a light ice field and to facilitate transport of iron ore and coal to rebuild stocks. The Canadian lock remained closed throughout the 2010 season to allow for upgrades to the site infrastructure. The lock was drained for inspections and repairs. The baffle wall was rebuilt, while water infiltration into the powerhouse was also addressed. Boaters were able to use the U.S. locks. The Canadian lock will reopen in 2011.

In accordance with the Commission's Orders to fulfill the fishery needs in the main rapids, a minimum gate setting of one-half gate open is required at all times at the Compensating Works. A setting equivalent to ½ gate open for the main rapids is maintained by having four gates partially open to supply the same quantity of water. This spreads the flow more

evenly across the main rapids, and is thought to reduce potential damage from ice floes impacting the gate. In addition, a flow of at least 15 m<sup>3</sup>/s (530 cfs) is normally also maintained in the Fishery Remedial Works (through Gate 1; see Section 5 for details on temporary closures of the gate during this reporting period). The flow in the St. Marys Rapids, including that through the Fishery Remedial Works, ranged from 83 to 84 m<sup>3</sup>/s (2,930 to 2,970 cfs) over the last six months, or approximately 5% of the total monthly outflow.

The hydropower plants passed an average of 1,470 m<sup>3</sup>/s (51,900 cfs) from March to August for electric power production, or 93.0% of the total river flow. The allocation for this period averaged 1,468 m<sup>3</sup>/s (51,800 cfs). Usages at each plant are shown in Tables 3 and 4.

## **9. Long Lac and Ogoki Diversions**

Ontario Power Generation (OPG) continued to provide the Board with information on the operations of the Long Lac and Ogoki Diversions. The Ogoki Diversion into Lake Nipigon (which flows into Lake Superior) averaged 90.4 m<sup>3</sup>/s (3,190 cfs) and the Long Lac Diversion averaged 11.8 m<sup>3</sup>/s (420 cfs) from March through August. Combined, these diversions were about 60 percent of average for the period 1944-2009. Record low Long Lac Diversion values were passed in June and July this year.

Slots cut into Waboose Dam provide a minimum flow northward to the Ogoki River of approximately 2 m<sup>3</sup>/s (to meet fisheries requirements). “Slot flow” (averaging 2.0 m<sup>3</sup>/s (71 cfs)) was passed during March through August.

Continuous minimum flows of 2 m<sup>3</sup>/s (70 cfs) are maintained from the Saturday of Victoria Day weekend (in May) through Labour Day from the northern outlet of Long Lake (Kenogami Dam) for environmental enhancement. No additional water was spilled from March through August.

## **10. Peaking and Pondering Operations at Hydropower Plants**

Peaking and pondering operations are the within-day and day-to-day flow variations that enable the hydropower plants to better match their electricity production with demand. However, these variations cause the water levels in the St. Marys River downstream of the plants to fluctuate more than they otherwise would. The Commission has approved guidelines within which the Board may restrict peaking and pondering operations by the hydropower entities under certain conditions. Specifically, if the minimum level at the U.S. Slip gauge on the lower river is expected to be below the threshold level of 176.09 m as a result of pondering operations, then the power entities are required to pass peak flows for at least an 8-hour period each weekend and holiday day to provide periods of relatively higher levels on the lower St. Marys River each day. The Board provides summaries of peaking and pondering in its semi-annual reports.

The Commission's guidelines were to be examined on a five-year basis by the Board, beginning in 2010. At the Spring Appearance on 21 April 2010, the Commission agreed that the Board could defer the report until after related findings of the International Upper Great Lakes Study are released.

During the reporting period, the power entities undertook peaking and ponding operations under the supervision of the Board. From March 21 (opening of navigation) through August, the weekend minimum levels at the U.S. Slip site were expected to be above the threshold level. As a result, ponding was permitted for the entire reporting period. No navigation problems related to peaking and ponding were called to the Board's attention.

To continue to provide timely information on expected flow variations to the users, the Corps distributes monthly notices during the shipping season (March through January) on expected Lake Superior outflows, and a schedule of flow variations at the hydropower plants. No concerns related to peaking and ponding were reported to the Board during the period.

Figures 4a-4f compare the hourly Lake Superior outflow and the hourly levels at U.S. Slip on the lower St. Marys River. In general, U.S. Slip levels were significantly lower than during the same period last year.

## **11. Proposed Environmental Studies**

The Great Lakes Fisheries Commission received funding through the U.S. Environmental Protection Agency's Great Lakes Restoration Initiative (GLRI) to test the potential for improving sea lamprey trapping efficiencies at the traps located immediately downstream of the hydropower plants at Sault Ste. Marie. The proposal timeline was modified (at the EPA's request) and now field-work is expected to be completed in 2011, following receipt of the funds. Objectives include evaluation of how changes in hydropower outflows affects water levels (plus turbulence and air entrainment) at the traps, observation of behaviour near the traps (to assess those that may be exploited to improve efficiencies) and distribution of fin-clipped individuals (to ascertain whether all individuals migrate to trap sites and have the potential to be trapped), evaluation of the feasibility and efficiency of traps at the Compensating Works, assessing the feasibility of manual removal by divers, and assessing whether a reduction in the gated flow at the Compensating Works reduces the number of nests built in the rapids.

The proponents continue to seek the Board and power entities' cooperation to vary the flow releases during the sea lamprey spawning period in 2011 to facilitate experiments. The requested flow manipulations may include deviations from the Plan 1977-A flow.

The Board agreed in principle to cooperate with the experiments, but continues to await further details and discussions with the experimenters. The Board noted that the prior approval of the Commission was required for any deviations from the monthly mean flow

specified by the regulation plan. Board staff will continue to work with the proponents to get as early an indication as possible of proposed flow variations in order to inform the Commission of any need to deviate from the Plan.

Note that a non-related proposal for a fisheries habitat study in the St. Marys Rapids (see previous report for details) did not receive GLRI funding. However, Dr. Mark Bain and other scientists will attempt to continue to work with the Ecosystem Technical Working Group, International Upper Great Lakes Study (IUGLS), in an effort to seek out ways to study how water levels in the rapids respond to gate changes at the Compensating Works.

## **12. Annual Meeting with the Public and Public Information**

The Board hosted its annual public meeting and teleconference on the evening of 9 June in Sault Ste. Marie, ON. Ten members of the public and media attended the meeting at Sault College (along with several Board Members, staff, and associates), while seven people participated via the teleconference line. Canadian Member, Mr. David Fay presented information describing the IJC, the Board, the control structures, the regulation plan, and the current and expected water levels. The meeting was then opened for public comment, questions, and concerns, with Mr. Fay, chairing. The slide presentation shown at the meeting hall was made available online to callers beforehand, and callers were able to interact with the chairman and other participants during the event. Most participants remain concerned about potential impacts due to climate change and variability. Though people are aware that hydrologic factors have resulted in the low levels, and that regulatory operations have a limited ability to actually control water levels, many continue to believe that other factors (such as bulk withdrawals, diversions, regulatory practices, consumptive use, conveyance increases in the St. Clair River, etc.) were adding to the problem. There was significant trepidation surrounding the potential outcomes of the International Upper Great Lakes Study, such as large, unbalanced releases to benefit downstream interests, or use of Lake Superior as a reservoir. After the meeting, attendees had an opportunity to talk one-on-one to the Board and Commission representatives.

The Board continues to recognize the need to coordinate its public communication activities with the IUGLSB to avoid possible confusion of the roles and responsibilities of the two Boards by stakeholders. The date and location of its next meeting with the public will be set by the Board at its spring business meeting.

The Board continues to issue, at the beginning of each month, news releases informing the public about Lake Superior regulation and water level conditions. The Board provides monthly media releases and hydrologic update information to the Commission to maintain a Board web site. Content includes information on Board members and responsibilities as well as news releases, semi-annual reports, meeting minutes and hydrologic data summaries. In addition, in support of the Board and the Commission, the Detroit District Corps of Engineers maintains additional technical information on its own Board Web site.

### 13. Related Items for Interest

#### *a. Lock Replacement at Sault Ste. Marie, Michigan*

A new "Poe sized" lock will replace the existing Davis and Sabin Locks at the Soo Locks complex at Sault Ste. Marie, MI. The purpose of this project is to provide for more efficient movement of waterborne commerce. The Water Resources Development Act (2007) directs that construction shall be at full U.S. Federal expense.

In FY 2010, \$969,000 was appropriated. Contracts for construction of cofferdams and deepening of the downstream approach channel, which were awarded using FY 2009 funds, will be completed in FY 2010. Plans and specifications for the guide walls and an upstream channel excavation contract will be completed in FY 2010. Design efforts have continued on the lock chamber and will also be completed in FY 2011 if funds are provided. The future advertisement of additional construction contracts will be dependent on the availability of funds.

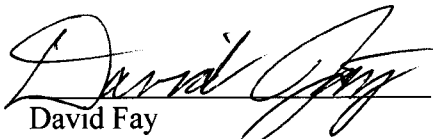
### 14. Board Membership and Meetings

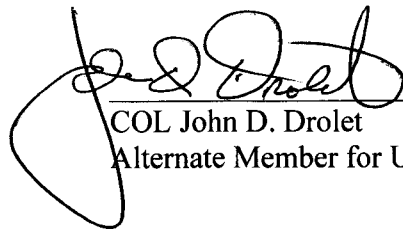
There was no change in the Board membership during the reporting period.

LTC Michael Derosier replaced LTC Jim Davis as the U.S. Regulation Representative on 23 July 2010.

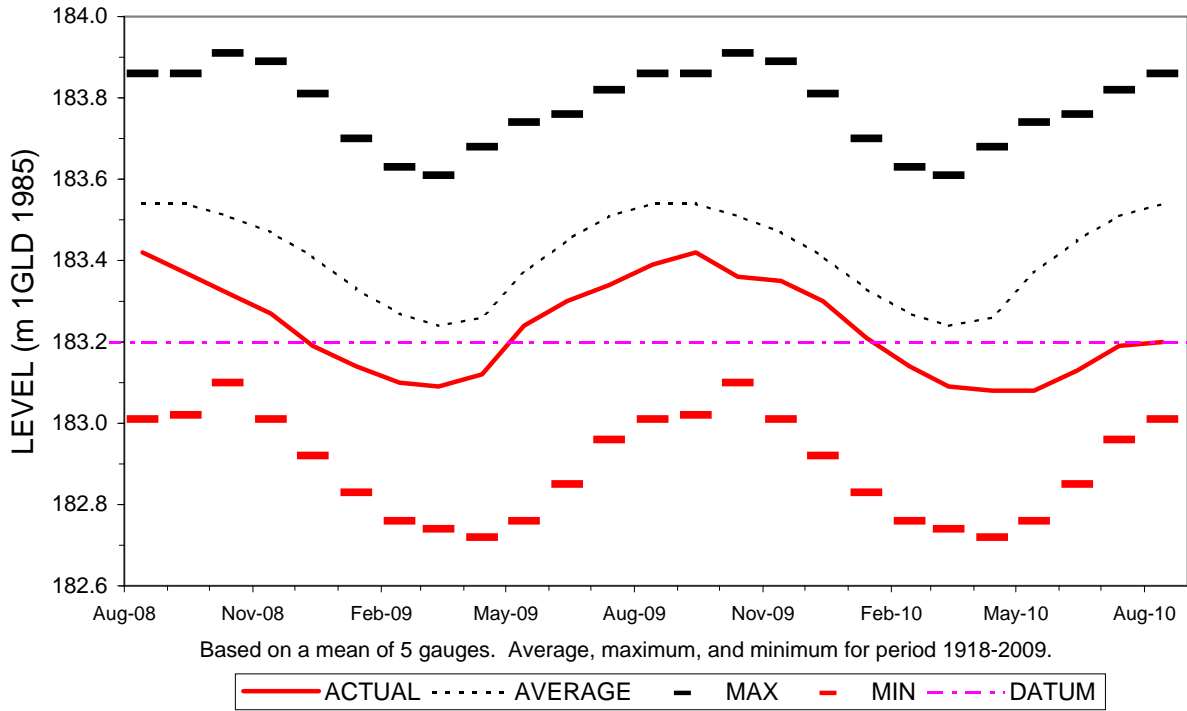
The Board held a meeting on 8 September in Kingston, Ontario, with the Canadian Member and the U.S. Alternate Member in attendance.

Respectfully submitted,

  
David Fay  
Member for Canada

  
COL John D. Drolet  
Alternate Member for United States

### LAKE SUPERIOR MONTHLY WATER LEVELS



### LAKES MICHIGAN-HURON MONTHLY WATER LEVELS

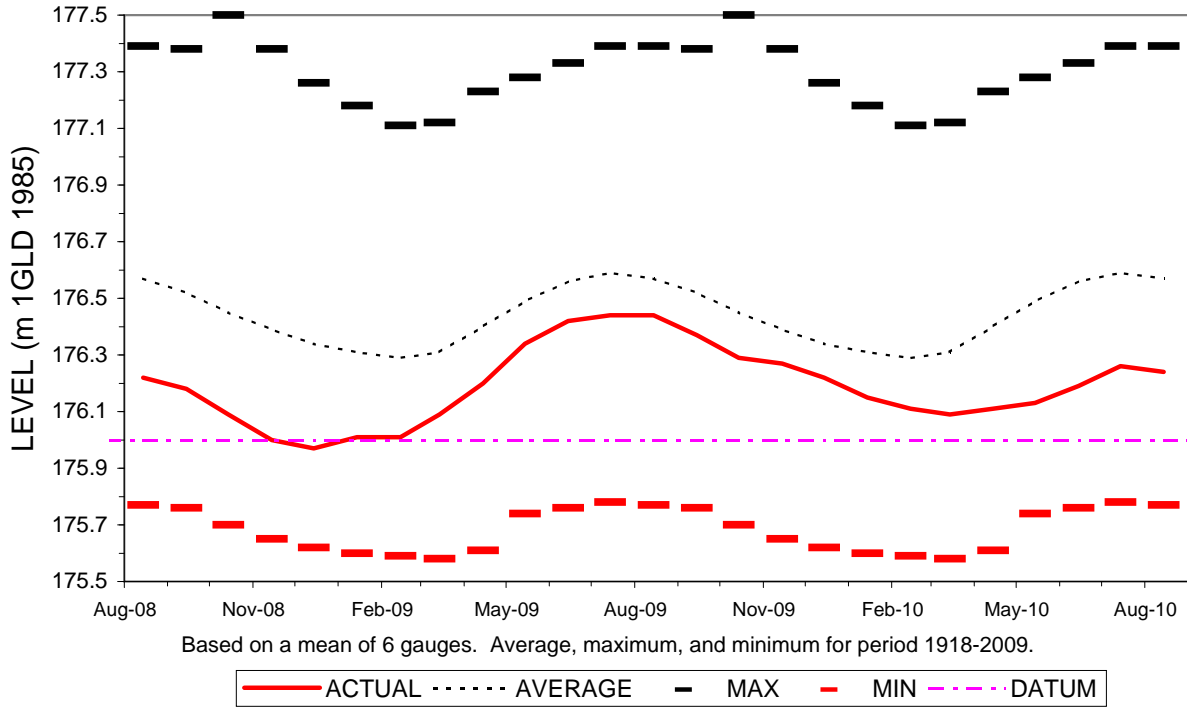
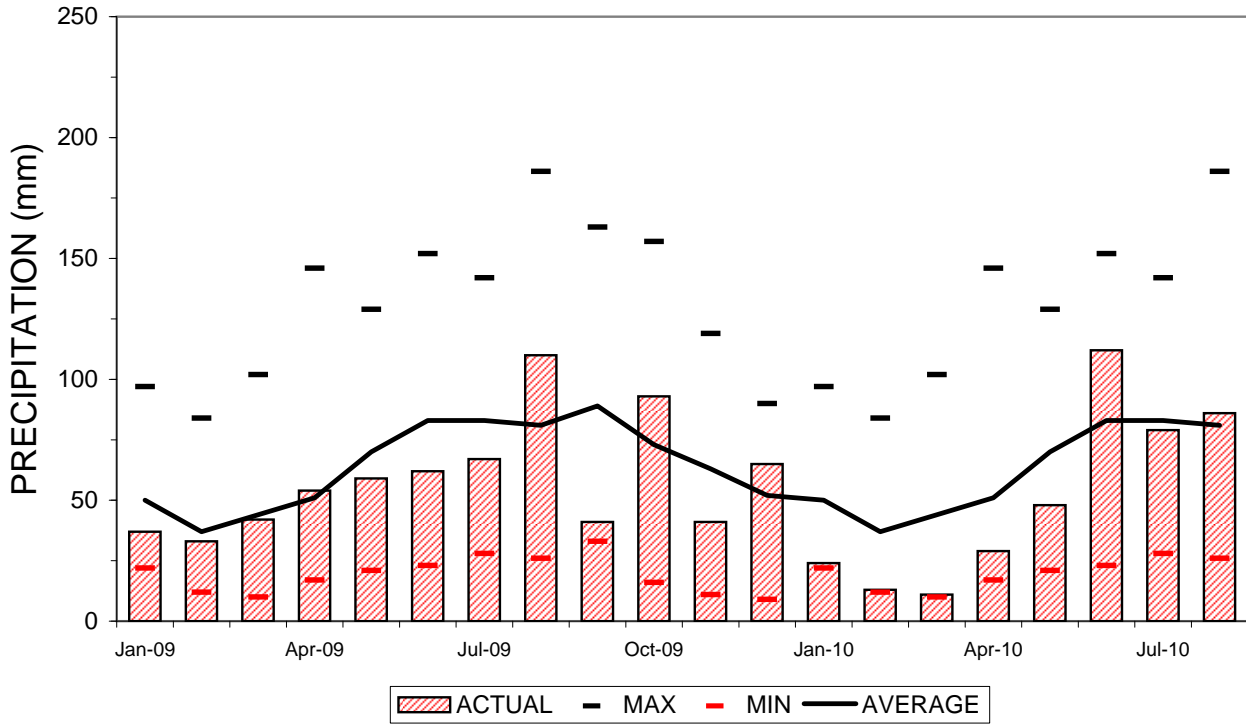
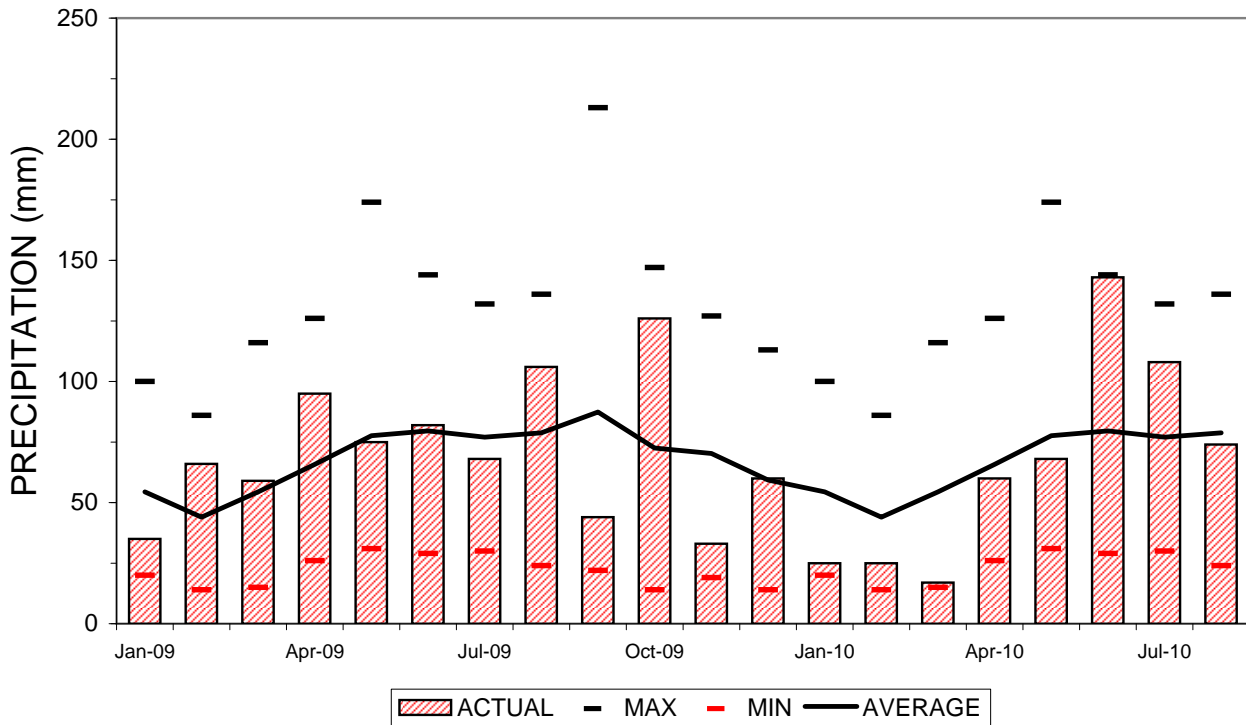


Figure 1

### LAKE SUPERIOR MONTHLY PRECIPITATION



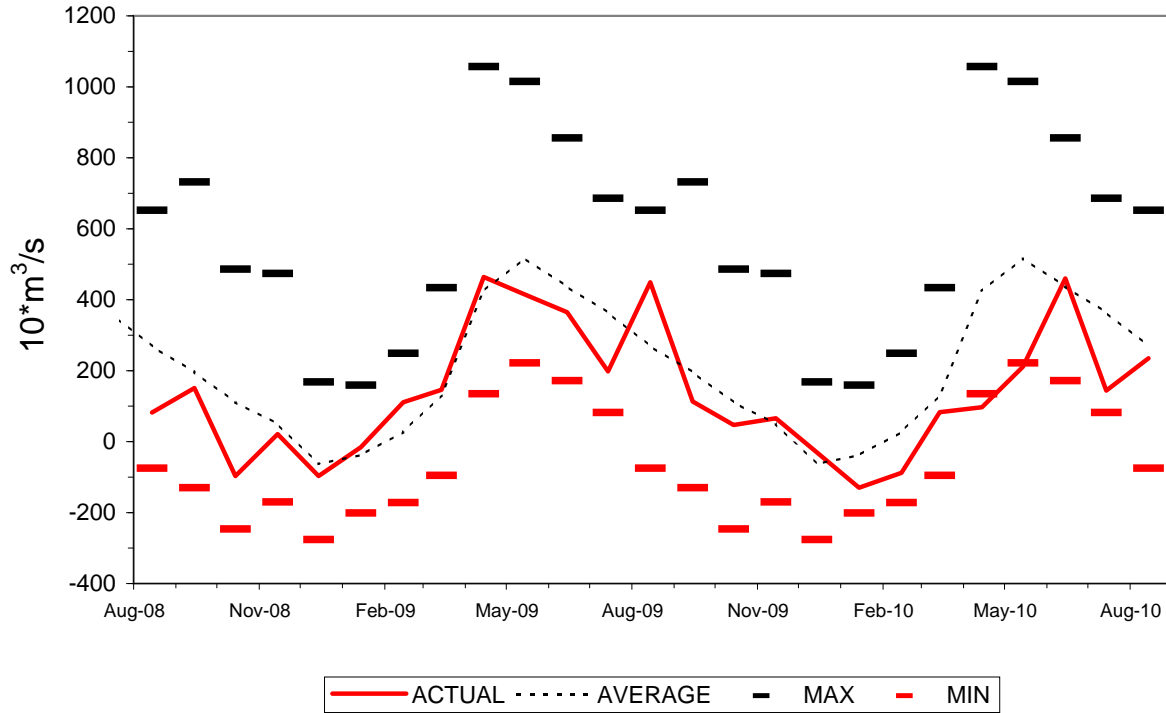
### LAKES MICHIGAN-HURON MONTHLY PRECIPITATION



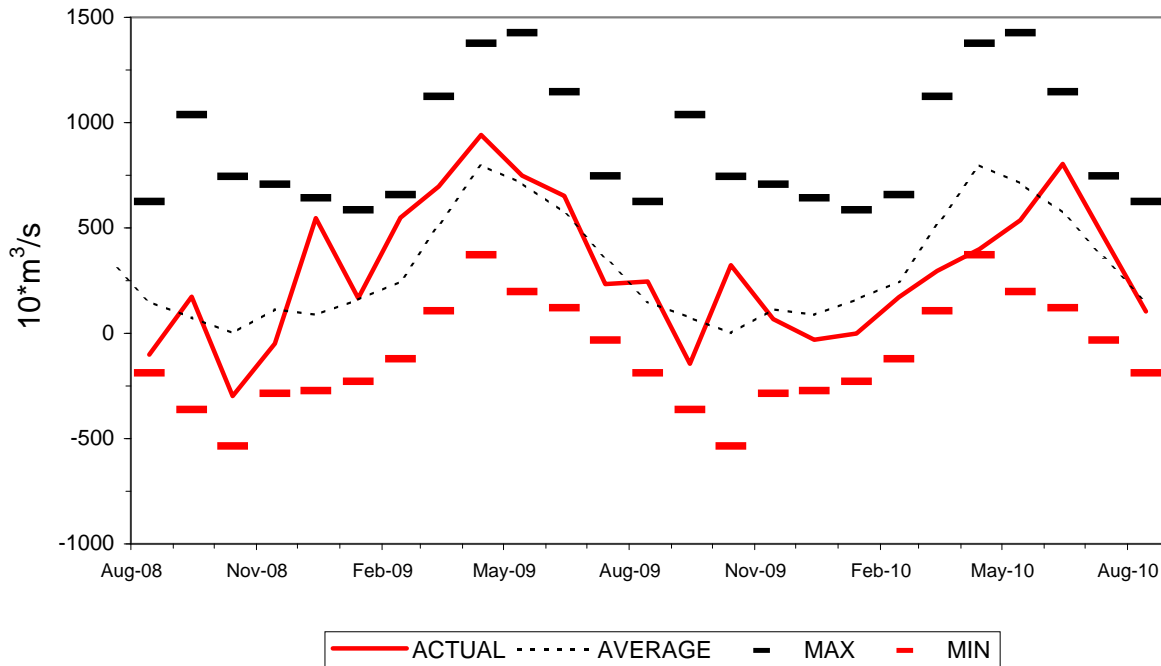
Average, maximum and minimum values based on period of record 1900-2009.

Figure 2

### LAKE SUPERIOR MONTHLY NET BASIN SUPPLIES



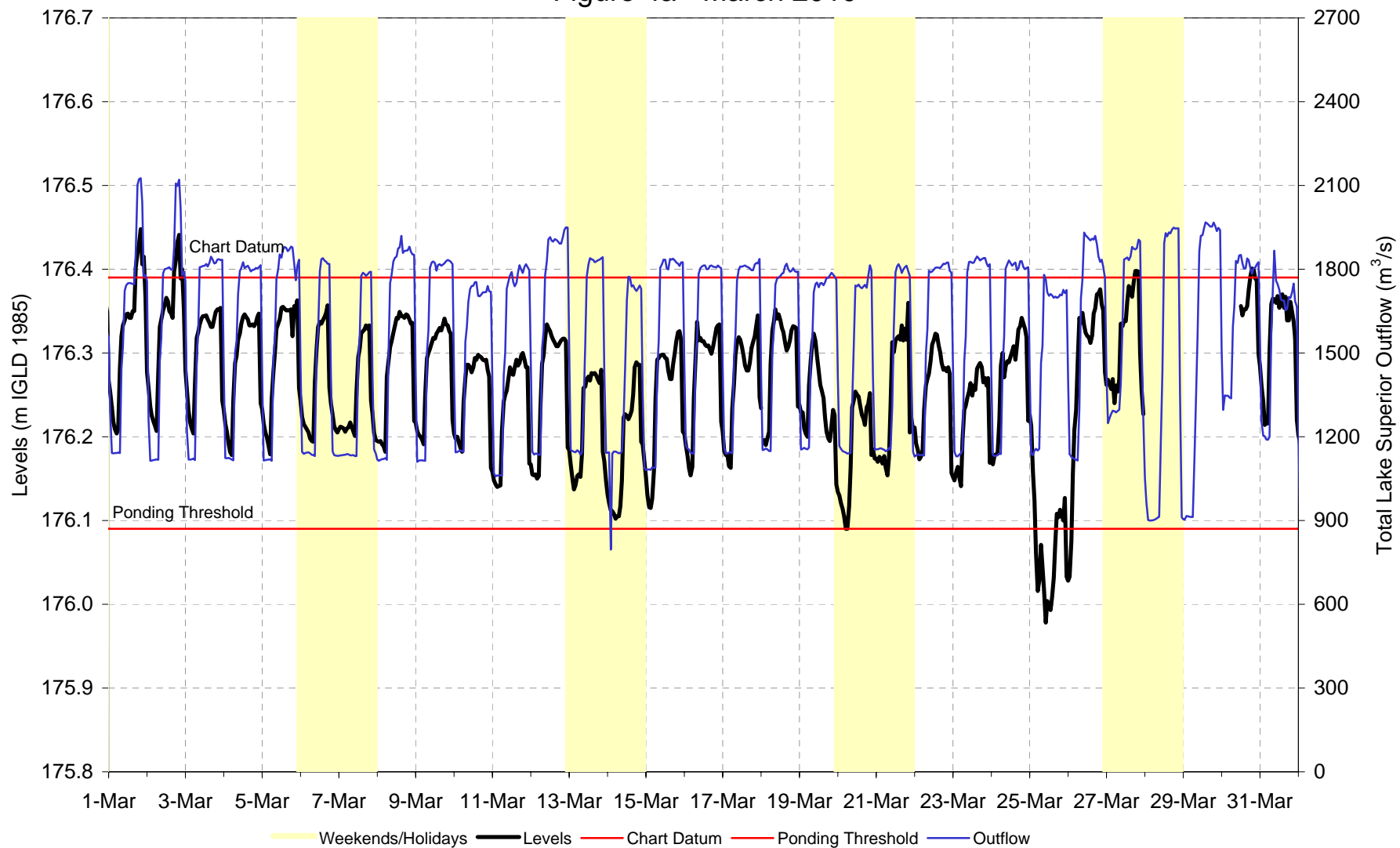
### LAKES MICHIGAN-HURON MONTHLY NET BASIN SUPPLIES



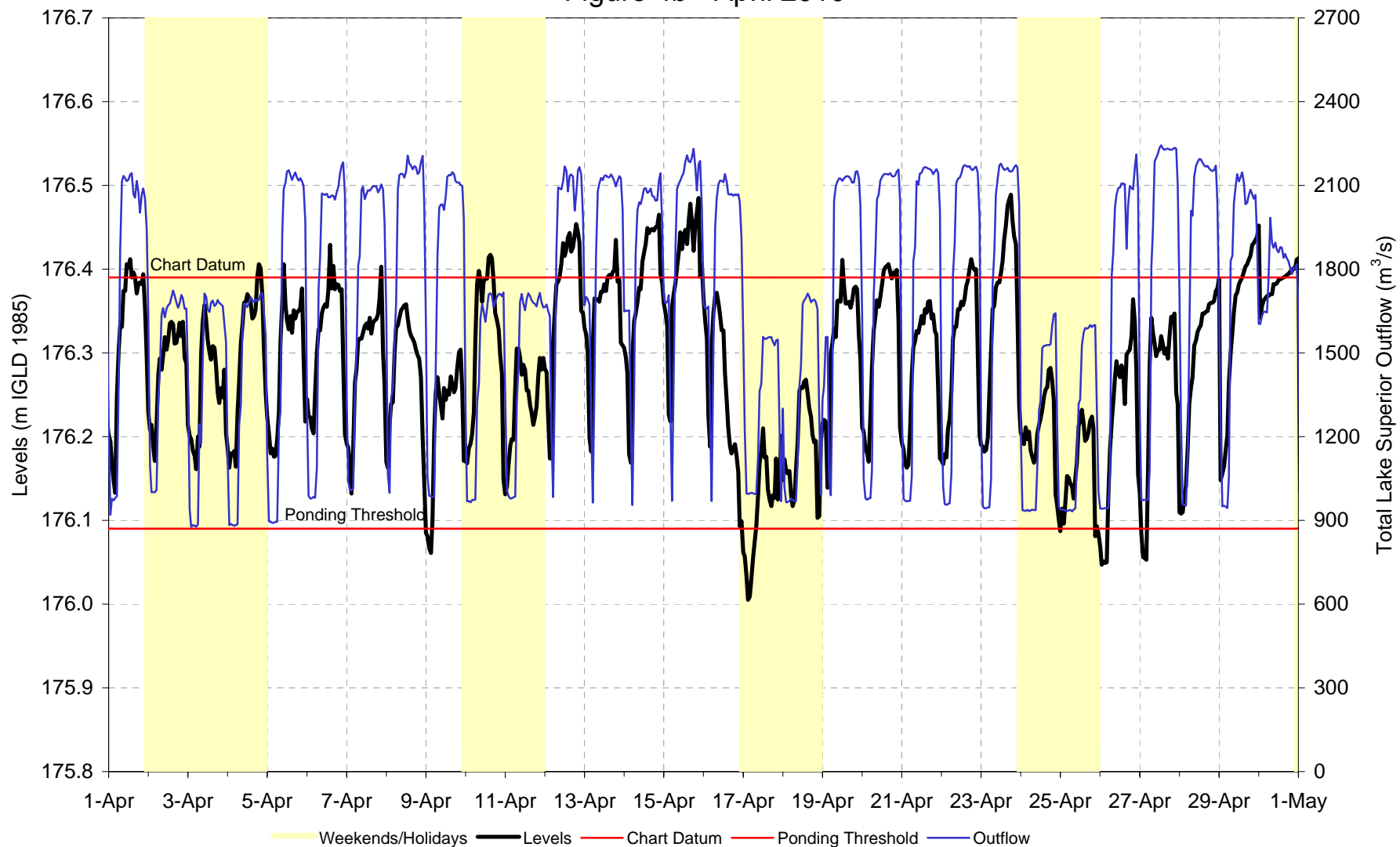
Average, maximum and minimum values based on coordinated period of record 1900-2006.

Figure 3

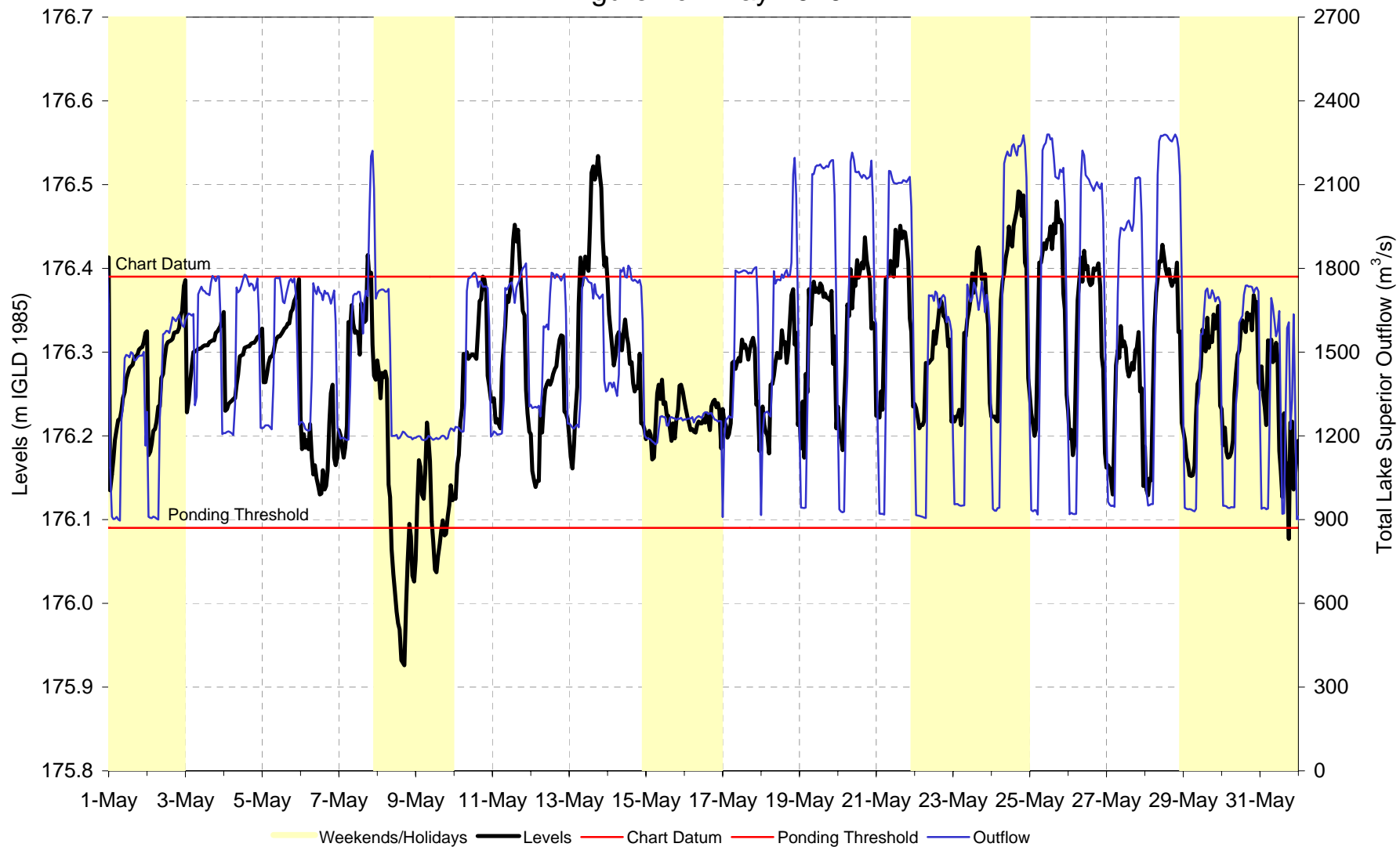
Hourly U.S. Slip Levels & Lake Superior Outflows  
Figure 4a - March 2010



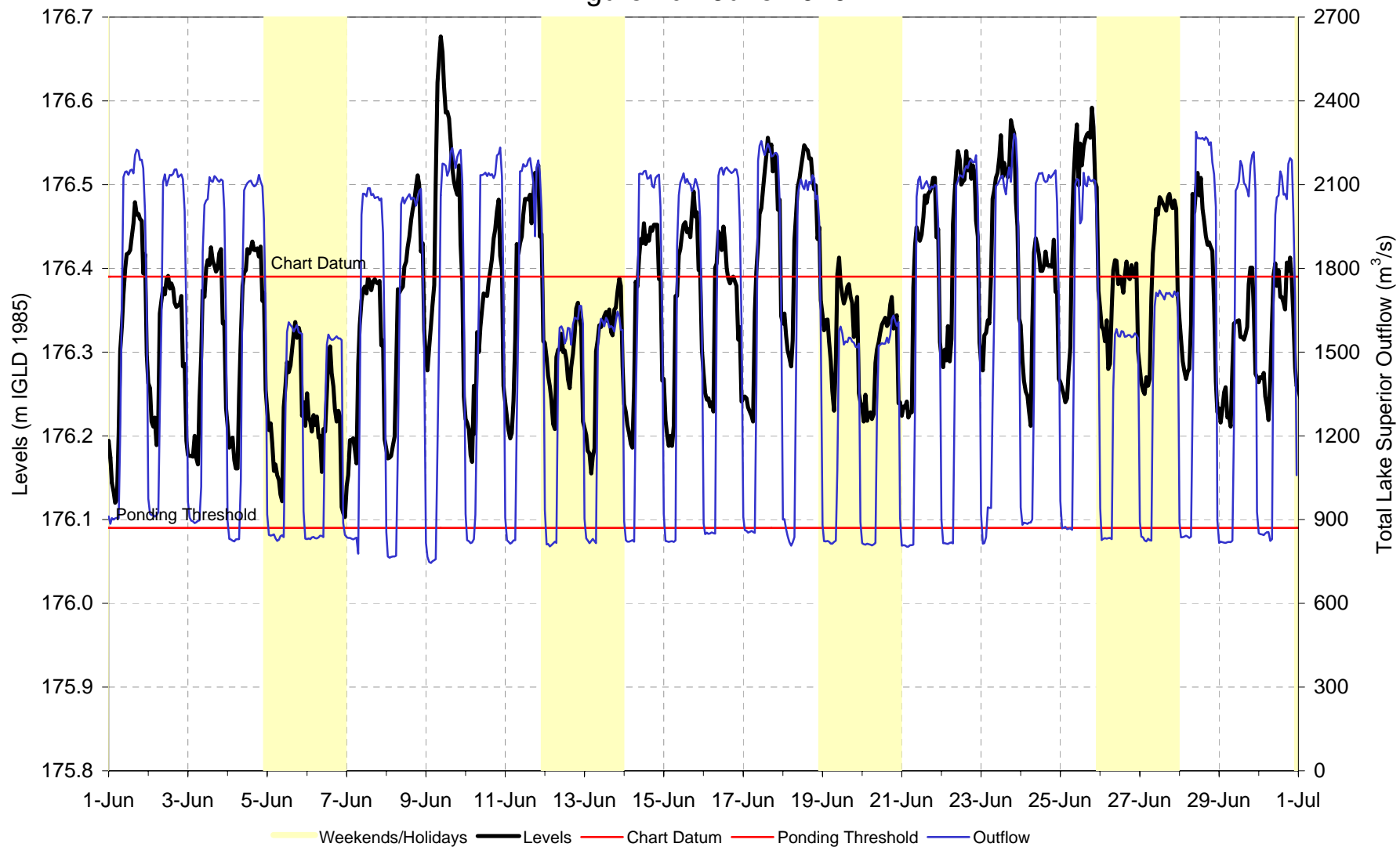
Hourly U.S. Slip Levels & Lake Superior Outflows  
Figure 4b - April 2010



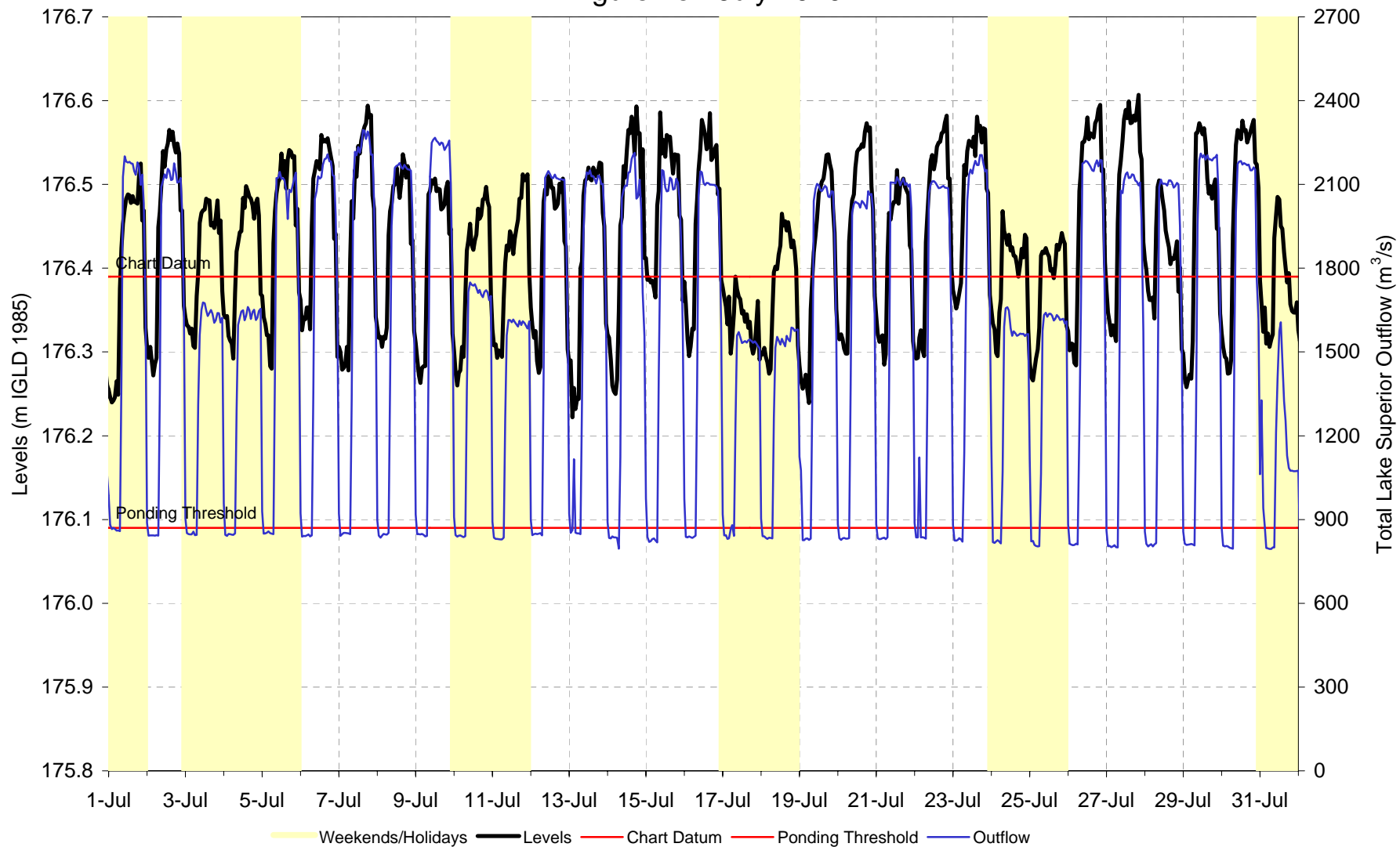
Hourly U.S. Slip Levels & Lake Superior Outflows  
Figure 4c - May 2010



Hourly U.S. Slip Levels & Lake Superior Outflows  
Figure 4d - June 2010



Hourly U.S. Slip Levels & Lake Superior Outflows  
Figure 4e - July 2010



Hourly U.S. Slip Levels & Lake Superior Outflows  
Figure 4f - August 2010

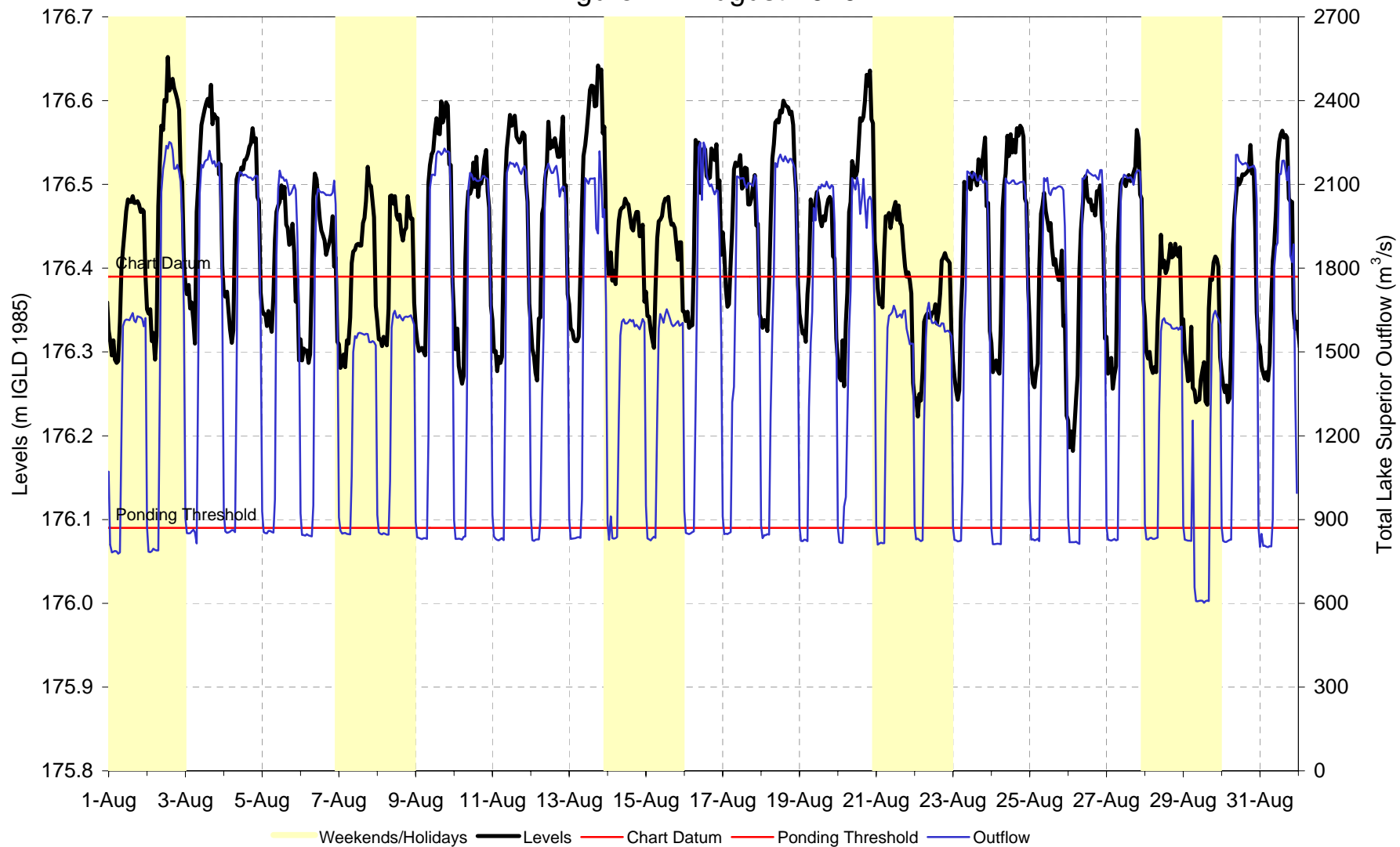


TABLE 1. 2009-2010 Lake Superior Hydrologic Factors

Month	Levels				Net Basin Supplies			Outflows		
	Monthly Mean Recorded <sup>1</sup>		Difference From Average <sup>2</sup>		Monthly Mean Recorded		Exceedence Probability <sup>3</sup>	Monthly Mean Recorded		Percent of Average <sup>4</sup>
	metres	feet	metres	feet	m3/s	tcfs	(%)	m3/s	tcfs	
Apr-09	183.12	600.79	-0.14	-0.46	4640	164	36	1590	56	82
May-09	183.24	601.18	-0.13	-0.43	4150	147	72	1920	68	91
Jun-09	183.30	601.38	-0.15	-0.49	3650	129	66	2120	75	96
Jul-09	183.34	601.51	-0.17	-0.56	1980	70	93	1930	68	85
Aug-09	183.39	601.67	-0.15	-0.49	4490	159	8	1810	64	77
Sep-09	183.42	601.77	-0.12	-0.39	1130	40	70	2110	75	90
Oct-09	183.36	601.57	-0.15	-0.49	470	17	66	1800	64	79
Nov-09	183.35	601.54	-0.12	-0.39	660	23	42	1780	63	80
Dec-09	183.30	601.38	-0.11	-0.36	-300	-11	34	1780	63	87
Jan-10	183.21	601.08	-0.12	-0.39	-1300	-46	91	2000	71	103
Feb-10	183.14	600.85	-0.13	-0.43	-880	-31	94	1750	62	92
Mar-10	183.09	600.69	-0.15	-0.49	830	29	64	1560	55	83
Apr-10	183.08	600.66	-0.18	-0.59	970	34	99	1690	60	87
May-10	183.08	600.66	-0.29	-0.95	2110	75	98	1550	55	73
Jun-10	183.13	600.82	-0.32	-1.05	4600	162	41	1550	55	70
Jul-10	183.19	601.02	-0.32	-1.05	1440	51	98	1550	55	68
Aug-10	183.20	601.05	-0.34	-1.12	2350	83	59	1550	55	66

Notes: m3/s = cubic metres per second      tcfs = 1000 cubic feet per second

<sup>1</sup> Water Levels are a mean of five gauges on Lake Superior, IGLD 1985

<sup>2</sup> Average levels are for period 1918-2009, based on a mean of five gauges. Differences computed as metres and then converted to feet.

<sup>3</sup> Exceedence probabilities are based on the period 1900-2006.

<sup>4</sup> Average flows are for the period 1900-2006.

TABLE 2. 2009-2010 Lakes Michigan-Huron Hydrologic Factors

Month	Levels				Net Basin Supplies			Outflows		
	Monthly Mean Recorded <sup>1</sup>		Difference From Average <sup>2</sup>		Monthly Mean Recorded		Exceedence Probability <sup>3</sup> (%)	Monthly Mean Recorded		Percent of Average <sup>4</sup>
	metres	feet	metres	feet	m3/s	tcfs		m3/s	tcfs	
Apr-09	176.20	578.08	-0.20	-0.66	9420	333	26	4670	165	91
May-09	176.34	578.54	-0.15	-0.49	7490	265	40	4850	171	91
Jun-09	176.42	578.81	-0.14	-0.46	6520	230	31	4980	176	92
Jul-09	176.44	578.87	-0.15	-0.49	2340	83	79	5070	179	92
Aug-09	176.44	578.87	-0.13	-0.43	2460	87	28	5070	179	92
Sep-09	176.37	578.64	-0.15	-0.49	-1450	-51	87	5040	178	92
Oct-09	176.29	578.38	-0.16	-0.52	3230	114	7	4940	174	91
Nov-09	176.27	578.31	-0.12	-0.39	670	24	56	5040	178	94
Dec-09	176.22	578.15	-0.12	-0.39	-310	-11	72	4950	175	96
Jan-10	176.15	577.92	-0.16	-0.52	-10	0	85	4580	162	102
Feb-10	176.11	577.79	-0.18	-0.59	1710	60	69	4260	150	97
Mar-10	176.09	577.72	-0.22	-0.72	2960	105	82	4880	172	101
Apr-10	176.11	577.79	-0.29	-0.95	3990	141	97	5140	182	100
May-10	176.13	577.85	-0.36	-1.18	5370	190	78	5040	178	95
Jun-10	176.19	578.05	-0.37	-1.21	8040	284	12	5030	178	93
Jul-10	176.26	578.28	-0.33	-1.08	4580	162	25	5150	182	94
Aug-10*	176.24	578.22	-0.33	-1.08	1040	37	60	5190	183	95

Notes: m3/s = cubic metres per second                      tcfs = 1000 cubic feet per second

<sup>1</sup> Water Levels are a mean of six gauges on Lakes Michigan-Huron, IGLD 1985

<sup>2</sup> Average levels are for period 1918-2009, based on a mean of six gauges. Differences computed as metres and then converted to feet.

<sup>3</sup> Exceedence probabilities are based on the period 1900-2006.

<sup>4</sup> Average flows are for the period 1900-2006.

\* Provisional estimates

Table 3

## INTERNATIONAL LAKE SUPERIOR BOARD OF CONTROL

## MONTHLY DISTRIBUTION OF LAKE SUPERIOR OUTFLOW

YEAR AND MONTH	POWER CANALS					NAVIGATION CANALS				DOMESTIC USAGE		FISHERY	TOTAL LAKE SUPERIOR OUTFLOW m <sup>3</sup> /s	
	US GOVT HYDRO	EDISON SAULT EL. CO	US TOTAL	GREAT LAKES POWER	TOTAL POWER CANALS	UNITED STATES	CANADA	TOTAL NAV. CANALS	S.STE MARIE US+CAN	ALGOMA STEEL	ST MARYS PAPER	TOTAL DOM. USAGE	STE. MARY'S RAPIDS	
2009														
JAN	396	340	736	741	1477	3.5	0.0	4	0.4	7.9	0.3	9	84	1574
FEB	403	326	729	729	1458	2.1	0.0	2	0.4	8.7	0.3	9	84	1553
MAR	401	329	730	729	1459	2.6	0.0	3	0.4	9.0	0.3	10	83	1555
APR	402	500	902	584	1486	7.2	0.0	7	0.4	9.1	0.3	10	84	1587
MAY	404	648	1052	768	1820	10.3	0.0	10	0.4	9.1	0.3	10	85	1925
JUN	396	655	1051	966	2017	11.4	0.0	11	0.4	9.7	0.3	10	85	2123
JUL	404	506	910	908	1818	13.3	0.0	13	0.4	10.0	0.3	11	85	1927
AUG	404	478	882	815	1697	12.6	1.3	14	0.4	10.3	0.3	11	85	1807
SEP	405	555	960	1040	2000	11.0	0.9	12	0.3	10.0	0.3	11	85	2108
OCT	404	339	743	949	1692	10.4	0.3	11	0.3	8.8	0.3	9	84	1796
NOV	360	375	735	935	1670	10.3	0.0	10	0.3	9.6	0.3	10	86	1776
DEC	354	393	747	931	1678	9.4	0.0	9	0.3	10.0	0.3	11	86	1784
2010														
JAN	349	597	946	954	1900	4.5	0.0	4	0.3	9.9	0.3	10	85	1999
FEB	352	472	824	827	1651	3.0	0.0	3	0.3	10.3	0.3	11	85	1750
MAR	402	334	736	728	1464	4.6	0.0	5	0.3	8.8	0.3	9	84	1562
APR	405	389	794	794	1588	10.9	0.0	11	0.3	8.0	0.3	9	83	1691
MAY	407	318	725	722	1447	12.6	0.0	13	0.4	7.6	0.3	8	83	1551
JUN	397	323	720	720	1440	13.7	0.0	14	0.3	7.9	0.3	8	84	1546
JUL	405	318	723	720	1443	15.6	0.0	16	0.3	9.9	0.3	10	84	1553
AUG	405	315	720	720	1440	14.0	0.0	14	0.3	10.3	0.3	11	83	1548

NOTE: POWER CANALS COLUMNS INCLUDE FLOWS THROUGH POWER PLANTS AND SPILLWAYS

Table 4

## INTERNATIONAL LAKE SUPERIOR BOARD OF CONTROL

## MONTHLY DISTRIBUTION OF LAKE SUPERIOR OUTFLOW

YEAR AND MONTH	POWER CANALS					NAVIGATION CANALS			DOMESTIC USAGE			FISHERY	TOTAL LAKE SUPERIOR OUTFLOW CFS	
	US GOVT HYDRO	EDISON SAULT EL. CO	US TOTAL	GREAT LAKES POWER	TOTAL POWER CANALS	UNITED STATES	CANADA	TOTAL NAV. CANALS	S. STE MARIE US+CAN	ALGOMA STEEL	ST MARYS PAPER	TOTAL DOM. USAGE	STE. MARY'S RAPIDS	
2009														
JAN	14000	12000	26000	26200	52200	124	0	124	14	279	11	304	2970	55600
FEB	14200	11500	25700	25700	51400	74	0	74	14	307	11	332	2970	54800
MAR	14200	11600	25800	25700	51500	92	0	92	14	318	11	343	2930	54900
APR	14200	17700	31900	20600	52500	254	0	254	14	321	11	346	2970	56100
MAY	14300	22900	37200	27100	64300	364	0	364	14	321	11	346	3000	68000
JUN	14000	23100	37100	34100	71200	403	0	403	14	343	11	368	3000	75000
JUL	14300	17900	32200	32100	64300	470	0	470	14	353	11	378	3000	68100
AUG	14300	16900	31200	28800	60000	445	46	491	14	364	11	389	3000	63900
SEP	14300	19600	33900	36700	70600	388	32	420	11	353	11	375	3000	74400
OCT	14300	12000	26300	33500	59800	367	11	378	11	311	11	333	2970	63500
NOV	12700	13200	25900	33000	58900	364	0	364	11	339	11	361	3040	62700
DEC	12500	13900	26400	32900	59300	332	0	332	11	353	11	375	3040	63000
2010														
JAN	12300	21100	33400	33700	67100	159	0	159	11	350	11	372	3000	70600
FEB	12400	16700	29100	29200	58300	106	0	106	11	364	11	386	3000	61800
MAR	14200	11800	26000	25700	51700	162	0	162	11	311	11	333	2970	55200
APR	14300	13700	28000	28000	56000	385	0	385	11	283	11	305	2930	59600
MAY	14400	11200	25600	25500	51100	445	0	445	14	268	11	293	2930	54800
JUN	14000	11400	25400	25400	50800	484	0	484	11	279	11	301	2970	54600
JUL	14300	11200	25500	25400	50900	551	0	551	11	350	11	372	2970	54800
AUG	14300	11100	25400	25400	50800	494	0	494	11	364	11	386	2930	54600

NOTE: POWER CANALS COLUMNS INCLUDE FLOWS THROUGH POWER PLANTS AND SPILLWAYS

NOTE: Flows for individual users were originally coordinated in m3/s, and are converted here to U.S. customary units (cfs) and rounded to 3 significant figures. Total flow for each category and total Lake Superior flow in this table are computed from the individual flows in cfs.