INTERNATIONAL ST. CROIX RIVER BOARD

ANNUAL REPORT

2005

ST. CROIX RIVER
MAINE AND NEW BRUNSWICK

Restricted for the information and use of the International Joint Commission and the Governments of Canada and the United States.

2005 ANNUAL REPORT

of the

INTERNATIONAL ST. CROIX RIVER BOARD

covering

The Orders of Approval with respect to the control of the discharge of the St. Croix River at Forest City, Vanceboro, and the water levels of East Grand Lake, Spednic Lake, Grand Falls Flowage and Milltown Dam Forebay.

The Water Quality and Aquatic Ecosystem for the St. Croix River Boundary Waters.

SUBMITTED TO

THE INTERNATIONAL JOINT COMMISSION

by

The International St. Croix River Board

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1.0 GENERAL

1.1 Year 2005 - Synopsis

Water Levels and Flows: In 2005 mean water levels and flows were observed to be above long term averages. Flows were high in the spring, fall, and early winter. During the year flows and levels were maintained in accordance with the IJC's orders. Refer to Section 2 for more detailed information on this topic.

Anadromous fisheries: A total of 42 Atlantic salmon (Salmo salar) were recovered in 2005, of which seven were stocked as juveniles or were wild fish, and 35 were aquaculture escapees. Six of the former were retained for broodstock (the seventh was a mortality). A total of 11,632 alewives (*Alosa pseudoharengus*) were also recorded. This was the highest return of alewife since 1999.

Water Quality: Water quality in the river monitored at the USGS at Milltown gage was observed to meet the Dissolved Oxygen objective of 5.0 mg/l in support of aquatic life.

1.2 Board Membership

Board membership changes during 2005 included:

- the retirement of Colonel Thomas Koning - Board member and U.S. Co-Chair
- the appointment of Colonel Curtis Thalken - Board member and U.S. Co-Chair
- the retirement of Ken Hamilton - Board member and past Canadian Co-Chair
- the appointment of Joseph Kozak - Board Member

<u>Canadian Section</u>

Bill Appleby, Canadian Co-Chair, Regional Director, Meteorological Service of Canada, Environment Canada, Atlantic Region

Joseph Kozak, Manager, National Marine Water Quality, Monitoring Office, Water Quality Monitoring & Surveillance Division, Science &Technology Branch, Environment Canada

William Ayer, Consultant to New Brunswick Department of the Environment and Local Government

Joseph H. Arbour, Ph.D., Manager, Oceans and Coastal Management Division, Department of Fisheries and Oceans Canada, Maritimes Region

Jessie Davies, Director, Environment and Sustainable Development Research Centre, University of New Brunswick, New Brunswick

Peter Johnson, Canadian Secretary, Policy and Strategic Planning Division Environment Canada, Atlantic Region

U.S. Section

Colonel Curtis Thalken, U.S. Co-Chair, District Engineer, U.S. Army Corps of Engineers, New England District

Edward Logue, Regional Director, Maine Dept. of Environmental Protection

Carol Wood, Deputy Director, Environmental Measurements, U.S. EPA Region 1

Joan Garner Trial, Ph.D., Senior Biologist, Maine Atlantic Salmon Commission.

Robert M. Lent, Ph.D., Maine District Chief, United States Geology Survey

Barbara Blumeris, U.S. Secretary, U.S. Army Corps of Engineers, New England District

1.3 Policy of the Board Regarding Dam Regulation

The Board continued its policy of leaving the regulation of the Dams at Forest City, Vanceboro, Grand Falls (owned and operated by Domtar, Inc.) and Milltown (owned and operated by New Brunswick Power) in the owners' hands, exercising only that oversight necessary to ensure adherence to the requirements of the Commission's Orders.

During the reporting period, the Board reviewed conditions prevailing in the river by the following means: a continuous record of water elevations of East Grand Lake and continuous record of discharge below Forest City Dam; a continuous record of water elevations of Spednic Lake and a continuous record of discharge at Vanceboro; a

continuous record of water levels above the Dam at Grand Falls; a continuous record of discharge at Baring, Maine; and monthly reports received from NB Power indicating daily forebay elevations obtained during regular work days at the Milltown Dam. Data are discussed in Section 2 of this report and summarized in Tables and Figures in the Appendices.

1.4 International Joint Commission Semi-Annual Meeting

Board representatives attended the spring Semi-Annual Meeting of the International Joint Commission (IJC) in Washington, DC on April 12, 2005, to present the Board's Annual Report. Presenting for the Board were U.S. Co-Chair, Colonel Thomas Koning, and Canada Co-chair, Bill Appleby. Barbara Blumeris, U.S. Board Secretary, also attended. Peter Johnson, Canadian Board Secretary, participated by telephone.

1.5 Annual Public / Stakeholder Meeting in Basin

The annual public meeting was held in the St. Croix Basin on the evening of August 17, 2005 at the North Lake Community Center in Fosterville, New Brunswick. In addition to inviting the general public to this meeting, the Board also invited several stakeholder groups in the basin and provided them with an opportunity to give presentations on the activities of their respective groups. About 10 people attended in addition to the IJC Commissioner Allen Olson, IJC staff and IJC St. Croix Board Members. After welcoming meeting participants and providing introductory comments, Bill Appleby introduced Commissioner Olson. Following opening remarks by Commissioner Olson the following presentations were provided.

St. Croix Board Annual Report. Peter Johnson provided a review of the Board's oversight role in the Basin and discussed some of the special projects the Board is involved in including the GIS Atlas project, the Watershed Modeling proposal, the State of the Environment report proposal and the Alewife studies.

Chiputneticook Lakes International Conservancy, Inc (CLIC) Presentation [1.] Jerry Wilson, CLIC Board member discussed CLIC's position on lakes issues. He noted that CLIC is in opposition to alewife restoration. CLIC values the existing small mouth bass

1. CLIC advocates for those "in" and around the Upper St. Croix River Basin waterway, the five Chiputneticook Lakes, North, East Grand, Mud, Spednic and Palfrey Lakes.

fishery in Spednic Lake. CLIC is also concerned over lake levels, however, Mr. Wilson indicated that Domtar has does an acceptable job in managing the system and working with CLIC on their objectives.

Domtar presentation. Donna Adams, Hydro Superintendent, Domtar provided information on Water Management during 2005. Donna discussed general lake level and stream flow targets.

International Waterway Commission.[2] Lee Sochasky, Executive Director provided an overview of the Commissions authorization and purpose. The IWC is involved in many projects in the basin including baseline water quality sampling, water classification, periodic water forum meetings, land conservation, maintaining 50 recreational sites, and fisheries monitoring, research, and river improvement.

Meeting participants were generally pleased with the presentations and there were no significant questions or concerns raised.

1.6 Annual Site Visit of Facilities in the Basin

The Board met with Domtar officials in the mill at Baileyville, Maine on the morning of

2. The St. Croix International Waterway Commission is an independent, international planning and management facilitation body established by New Brunswick and Maine Legislatures for the St. Croix boundary corridor. Primary themes: environment, natural resources, heritage, recreation, and economic development.

August 17, 2005. During the meeting, Donna Adams provided a briefing on the operation and condition of the Domtar dams at Forest City, Vanceboro, and Grand Falls. Following the briefing the Board visited the three dams.

The Board met with New Brunswick Power officials at the Milltown Dam, Milltown, New Brunswick on the morning of August 18, 2005, and was briefed on the dam repairs and viewed the dam and power house.

Participants of the facilities visits are shown below.

Name	Position/Representing
Lisa Bourget	Secretary, IJC, U.S. Section
Murray Clamen	Secretary, IJC, Canadian Section
Rudy Koop	Engineering Advisor, IJC, Canadian Section
Stephen Keat	Advisor, IJC, U.S. Section
Bill Appleby	St. Croix Board, Co-Chair, Canadian Section
Bill Ayer	St. Croix Board, Canadian Section
Joe Arbour	St. Croix Board, Canadian Section
Jessie Davies	St. Croix Board, Canadian Section
Joe Kozak	St. Croix Board, Canadian Section
Col. Curtis Thalken	St. Croix Board, Co-Chair, U.S. Section
Ed Logue	St. Croix Board, U.S. Section
Joan Trial	St. Croix Board, U.S. Section
Bob Lent	St. Croix Board, U.S. Section
Carol Wood	St. Croix Board, U.S. Section
Peter Johnson	Secretary, St Croix Board, Canadian Section
Barbara Blumeris	Secretary, St. Croix Board, U.S. Section
Donna Adams	Domtar Industries, Inc.
Larry Doyle	Domtar Industries, Inc.
Jeff Babcock	New Brunswick Power Co.
Glen Hanson	New Brunswick Power Co

Information describing the dams is provided in the Appendices.

General Comments.

Grand Falls Dam - During the site visit in August 2005, it was observed that

maintenance work to the Canadian side of the spillway crest and flashboards was underway by Bancroft Construction Company.

Vanceboro Dam - Domtar indicated that a small erosion area observed on the upstream side of the project was scheduled for repair.

Forest City Dam - Domtar hired an independent consultant to assess the fishway and the adjoining deck structure. There is no issue reported on the structural condition of the dam itself. Domtar plans to take necessary actions on the fishway based on the independent consultant's recommendations.

Milltown Dam - During the Board's annual site visits, it has been observed that there is a crack in the floor of the powerhouse. About two years ago the Board reported to the IJC that there was increased movement in the crack. At that time NB Power took actions to assess the situation and established initial procedures to prevent further movement of the wall. NB Power set up temporary heated hoarding on the face of the wall to prevent freezing and thawing action. NB Power advises us that there has been no significant movement in the crack since the temporary hoarding was set up two winters ago. NB Power plans to replace the tarps this year and to identify a long-term option for dealing with this issue. It appears to the Board that NB Power is conducting appropriate investigations and actions regarding the problem. The company apparently wishes to follow a least cost approach. However, without an independent technical evaluation of the dam and powerhouse wall, it can not be known for certain if these actions are sufficient. We suggest that the IJC fund an independent dam safety inspection of the Milltown Dam to determine if other actions are necessary.

1.7 Board Meeting

The Board met in Calais, Maine on August 16, 2005. The meeting focused primarily on the special projects on-going in the basin. Meeting Notes are included in the Appendices.

2.0 MANAGEMENT OF THE WATER LEVELS AND FLOWS

In 2005, the annual mean water level at East Grand Lake was 131.968 metres (432.97 feet), which is higher than the long term mean value of 131.782 metres (432.36 feet).

The annual mean flow from the lake at Forest City Stream was 9.46 m^3/s (334 cfs), 54% higher than the long term mean value of 6.16 m^3/s (218 cfs).

The annual mean water level for the year at Spednic Lake was 116.567 metres (382.44 feet) higher than the long term mean value of 115.453 metres (378.78 feet).

The annual mean flow as recorded at Vanceboro was 29.0 m^3/s (1020 cfs), 43 % higher than the long term mean of 20.3 m^3/s (717 cfs).

The annual mean flow at Baring was 112 m^3/s (3960 cfs), which is 58 % higher than the long term mean at Baring of 71.0 m^3/s (2510 cfs).

2.1 East Grand Lake Reservoir and Discharges Below Forest City Dam

During the period from January 1 to December 31, the reservoir was operated between a maximum daily mean water level of 132.528 metres (434.80 feet) on 1 May, and a minimum daily mean of 131.496 metres (431.42 feet) on 7 October.

The maximum lake level as prescribed by the Commission's Order is 132.570 metres (434.94 feet): the minimum is 130.496 metres (428.14 feet). The Order was maintained throughout the year. The daily mean elevations are presented in Table I and depicted in Figure I of the Appendix.

Table II and Figure II of the Appendix presents the daily mean discharges below the Forest City Dam at the outlet of East Grand Lake for 2005. The maximum daily mean for the reporting period was 39.3 m^3/s (1390 cfs) on 1 May and the minimum daily mean was 2.48 m^3/s (87.6 cfs) on 1 January. The mean discharge for the year was 9.46 m^3/s (334 cfs). The Commission's Order of 2.12 m^3/s (75 cfs) as a minimum flow was maintained throughout the year.

2.2 Spednic Lake Reservoir and Discharges below Vanceboro Dam

During the year, levels in the Spednic Lake reservoir, ranged from a maximum daily mean of 117.563 metres (385.71 feet) on 30 April, to a minimum daily mean of 115.267 metres (378.17 feet) on 8 March. The maximum limit specified in the Commission's Order is 117.610 metres (385.86 feet). The allowable minimum level is 113.233 metres (371.50 feet) for the period January 1 to 30 April and 1 October to December 31 inclusive, and 114.757 meters (376.50 feet) for the period 1 May to 30 September inclusive. These orders were maintained throughout the year. The daily mean elevations for the Spednic Lake Reservoir during the year are presented in Table III and depicted in Figure III of the Appendix.

The maximum daily mean discharge recorded from the outflow at the reservoir at Vanceboro was 165 m^3/s (5830 cfs) on 1 May and the minimum daily mean recorded was 6.06 m^3/s (214), on 14 Oct. The Commission's Order of a minimum flow of 5.66 m^3/s (200 cfs) was maintained throughout the year. Daily mean discharges are presented in Table IV and depicted in Figure IV of the Appendix.

2.3 Water Levels above Grand Falls Dam

Table V of the Appendix and Figure V include a list of the water level elevations of the headpond above the Grand falls Dam. The recorded maximum daily mean elevation was 62.021 metres (203.48 feet) on 3 December and the minimum recorded elevation was 61.560 metres (201.97 feet) on 12 September. The maximum prescribed elevation of 62.106 metres (203.76 feet), as set by the Commission, was not exceeded at any time during the year.

2.4 Discharges at Baring, Maine

Table VI of the Appendix and Figure VI presents and depicts the daily mean discharges of the St. Croix River at Baring, Maine. The mean discharge for the report period was 112 m^3/s (3960 cfs). The maximum daily mean was 493 m^3/s (17400 cfs) on 3 December. The minimum daily mean was 26.7 m^3/s (943 cfs) on 6 February. Domtar met the historic minimum flow target of at 21.2 m^3/s (750 cfs).

2.5 Headwater Elevations above Milltown Dam

Table VII and Figure VII of the Appendix present and depict daily water elevations in the forebay of the NB Power Corporation plant at Milltown, New Brunswick. These elevations refer to mean sea level datum. As daily observations of elevations are not obtained on holidays or weekends, maximum and minimum daily mean water levels are not quoted in this report.

3.0 WATER QUALITY

3.1 Milltown Monitor

Water-quality values for the St. Croix River at the Milltown monitor during the summer of 2005 were well within the extreme values for the period of daily record based on records since September 1969. Values were above the water-quality objectives for the river. The flows in June kept water temperatures and specific conductance values low and dissolved oxygen values high for the start of the season. The maximum dissolved oxygen value recorded was 10.5 mg/L on June 1; the minimum dissolved oxygen value recorded was 6.1 mg/L on both August 14, and August 15.

St. Croix River at Milltown, Station # 01021050
Water-Quality Monitor, June – September 2005

Dissolved Oxygen (mg/L)
IJC objective = 5.0 mg/L minimum

	June	July	August	September
Maximum	10.5	8.6	8.0	8.9
Minimum	7.3	6.7	6.1	7.1
Mean	8.9	7.6	7.1	7.9

Water Temperature (degrees centigrade)

	June	July	August	September
Maximum	25.4	27.4	25.5	23.6
Minimum	12.2	20.5	21.7	15.8
Mean	19.2	23.7	23.4	20.0

pH (standard units)

	June	July	August	September
Maximum	6.9	6.9	6.9	7.1
Minimum	6.7	6.5	6.4	6.7
Median	6.8	6.7	6.7	6.8

Specific conductance (microsiemens per centimeter at 25 C)

	June	July	August	September
Maximum	77	116	135	107
Minimum	41	65	55	32
Mean	59	86	94	74

4.0 STATUS OF POLLUTION ABATEMENT

4.1 Maine

The Domtar facility was issued a new State of Maine wastewater permit in 2005. This is the first time that the State has issued a single State license for this facility since being delegated by the federal EPA. The permit requires more rigorous testing parameters. The facility has remained in compliance with their license for 2005 and there were no wastewater enforcement issues during this year.

The City of Calais wastewater facility continues to be operated by a private contractor and the overall operation and performance during 2005 has been excellent. There are still numerous and costly upgrades that are needed for this facility at the treatment plant

and the collection system. The State and the City continue to pursue funding options for these upgrades.

The Town of Baileyville has had some operation problems with their wastewater system over the last year. This has resulted in some compliance issues. Corrective actions may include upgrades to problem areas in their collection system.

4.2 New Brunswick

McAdam

The McAdam WWTP continues to minimize phosphorous levels in the effluent (alum addition), which discharges to Waklehegan Lake. The Clean Water Grant Study of Fall 2004 determined that many factors contribute to the high nutrient levels in the Lake.

St. Stephen

The aerated lagoon along Dennis Stream operates within the effluents standards of 20 mg/l of BOD and 20 mg/l SS year round with disinfection. The system is treating process water from both Ganong Bros. Ltd., as well as the municipal wastewater.

Champlain Industrial Park

The extended aeration facility treats the domestic wastewater of 85 employees and a large portion of industrial wastewater. The facility discharges treated effluent to the St. Croix River. No more users will be added to the system until upgrades have been made, although the temporary sludge tanks have improved performance.

East Coast Village MHP

The facultative lagoon treats the domestic wastewater of the 58 mobile homes in the park. The facility discharges treated effluent to a marshy area of Meadow Brook. The receiving stream is not adequate to receive the wastewater. Eventually the services from the municipality of St. Stephen may be extended to the mobile home park.

Fisheries Biological Station

The Fisheries Biological Station currently has an extended aeration system to treat domestic wastewater from the office buildings of the Department of Fisheries and Oceans (DFO). The long-term plan is to expand the DFO site and this will include a

new wastewater treatment facility or connecting with the services of the Town of St. Andrews, no decisions have been made yet.

Huntsman Marine Science Center

The lower campus of the Huntsman Marine Science Centre consists of a public aquarium facility, a number of teaching, research and service buildings adjacent to three greenhouses and three Quonset buildings that are used for fish rearing. Effluent from the fish rearing facilities empties into a 2-stage settling pond system prior to discharge from the site.

Oak Bay Park

The Oak Bay Campground has a trickling filter to treat the seasonal domestic wastewater of 110 campsites and the treated effluent is discharged to Oak Bay. The facility has recently added chlorination and dechlorination to the treatment process and the outfall pipe has been extended to the high tide mark. The system does not meet the desired effluent limits in the peak camping months.

5.0 FISHERIES

5.1 Anadromous Fisheries

The St. Croix International Waterway Commission operates a research trap in the Milltown dam fishway, just above head of tide, to monitor anadromous fisheries runs in the St. Croix River. Due to river flows 2-5 times above normal at both ends of the season, fishway operation at this site was delayed for three weeks in May and was largely ineffective for the last three weeks in October.

In 2005, the Milltown fishway and research trap were both operated from May 18 to October 25, inclusive, and were monitored on a seven-day-a-week basis between these dates. The fishway and trap were re-activated for the period November 15 –December 12 by the Atlantic Salmon Federation to monitor for additional aquaculture escapees. A total of 42 Atlantic salmon (*Salmo salar*) were recovered in 2005, of which seven were stocked as juveniles or were wild fish, and 35 were aquaculture escapees. Six of the former were retained for broodstock (the seventh was a mortality) and all aquaculture fish were sacrificed for research.

A total of 11,632 alewives (*Alosa pseudoharengus*) were also recorded. This was the highest return of alewife since 1999. Fisheries & Oceans Canada (DFO) trucked 7,100 of these fish 16 kilometers upstream to the Woodland Flowage where they were released to spawn. [The State of Maine maintains a barrier to alewives immediately below this flowage.] Another 400 fish died in transit due to an aerator failure. The remaining 4,132 alewives were released directly from the Milltown fishway to spawn in the lower (Milltown-Woodland) section of the river.

Biological data was collected on 90 of these alewives for ongoing population studies by DFO and the Maine Department of Marine Resources and for a separate research project on the interaction of alewives and smallmouth bass in the St. Croix system. The Milltown trap also recorded the following freshwater fish: 90 white suckers, four smallmouth bass, four landlocked salmon and six brook trout. All were released into the river above the trap.

A total of 24,815 St. Croix salmon parr were reared by the Waterway Commission at Milltown and by DFO at the Mactaquac Biodiversity Facility. These fall fingerlings were stocked in the fall into selected juvenile rearing habitat the upper river.

5.2 Shellfish Harvesting

Since briefly being opened to shellfishing under a conditional harvest plan in 1999, Oak Bay was not reopened in subsequent years. However, a three year MOA (2005-2008) was signed in November, 2005 with a view to reactivating a conditionally approved shellfishery along the eastern portion of the bay beginning in 2006. Depuration harvesting began in 2005 within the western portion of the bay. Plans are in place to re-sample Oak Bay in 2006 to determine if bacteria levels have decreased since the last water samples were taken in 2003.

6.0 IMPLEMENTATION OF THE IJC's WATERSHEDS INITIATIVE

The Board continued in 2005 to make progress in the implementation of the IJC's International Watersheds Initiative. Initiatives with funding in 2005 were:

6.1 GIS Project

Staff of the U.S. Army Corps of Engineers, with the assistance of the U.S. EPA and

funding from the IJC and the Corps, continued to work intensively on Phase 1 of the GIS project. Significant progress has been made on this project, which is tentatively due for release in June 2006.

6.2 Hydrology Model

The availability of adequate water levels in the reservoir lakes and sufficient flow in the river has been a significant area of conflict over the years between the various users of the system. People who wish to use the lakes for cottages and other lake recreational activities desire high water levels whereas, people who wish to use the river for recreational purposes (e.g., canoeing and kayaking) and for industrial purposes such as power generation and pollution assimilation of wastewater (Domtar), require adequate river flows in order to satisfy their needs.

In order to assist with the management of lake levels and, indirectly flows in the river, the U.S. Army Corps of Engineers, with funding from IJC, is currently developing a reservoir simulation model for the St. Croix River. A draft report on the model will be completed in June 2006. Modeling work on the Saint Croix is proceeding well.

The ResSIM (Reservoir Simulation Model) developed and supported by the Corps Hydrologic Engineering Center will is being utilized. This is a non-proprietary system capable of modeling complex systems. It prioritizes operating rules, and these priorities can be easily changed for evaluating what-if scenarios. Tasks include collecting reservoir and hydrologic data, and information on operating rules and procedures; layout of the model in the watershed; back-calculating inflows from gage data, and verifying the model's ability to reproduce observed water levels. Future work (dependent on availability of funding) will include any needed final improvements to the ResSIM model, and developing a rainfall-runoff model (HEC-HMS) for the basin and tying it into the ResSIM to allow the evaluation of different operating scenarios based on anticipated rainfall amounts.

6.3 State of the Environment Report

The Board has developed a proposal to prepare a State of the Environment Report for the Watershed. This project is currently on hold until funding can be obtained.

7.0 OTHER DEVELOPMENTS IN THE BASIN

7.1 Proposed LNG Facilities in Maine

Two Liquefied Natural Gas (LNG) facilities have been proposed for development in the Pleasant Point and Robbinston areas of Maine.

Downeast LNG Inc. is proposing to develop the Robbinston facility. Robbinston is located near the mouth of the St. Croix River and across the river from St. Andrews, New Brunswick.

Quoddy Bay LLC is proposing the development of the facility at Split Rock in the Pleasant Point area. Pleasant Point is located in the Western Passage, the southern entrance to Passamaquoddy Bay. The proposed facility at Split Rock would be located on land leased from the Passamaquoddy Indian Tribe.

As of this writing (March 2006), the development of a third LNG facility has been proposed at Red Beach on the St. Croix River. Red Beach is directly adjacent to Devil's Head on Route 1 and is across the river from the Bayside Port and Todd's Point on the Canadian side. As well, both Quoddy Bay LLC and Downeast LNG Inc have recently officially requested that the Federal Energy Regulatory Commission (FERC) initiate a National Environmental Policy Act (NEPA) Pre-Filing Review of their respective proposed projects.

The LNG facility proposals are controversial, particularly from the perspective of various local groups. Concerns have also been expressed by the Canadian government regarding LNG tanker transit through Canadian waters to the Head Harbour Passage area. The Premier of New Brunswick and provincial Ministers have also expressed concerns regarding potential environmental, navigational, and safety risks associated with these proposed facilities.

7.2 International Bridge

This project involves the construction of a new bridge connecting St. Stephen and Calais across the St. Croix River, a new approach road that will provide a connection to U.S. Route 1, along with improvements to U.S. Route 1 in Calais. New Border stations will also be constructed on the U.S. and Canadian sides of the bridge. The U.S.

Department of State has issued a Permit that allows the State of Maine to move forward with this project.

U.S. and Canadian agencies have completed Environmental Impact Assessments for this project. U.S. officials are seeking approval of the project without an IJC reference through the exchange of diplomatic notes. The Government of Canada would prefer an IJC reference. The IJC's role in this type of project, if requested by governments, is to review the effects on water levels and flows.

ACKNOWLEDGEMENTS

The International St. Croix River Board gratefully acknowledges the valuable input and efforts in support of this report provided by the following groups/ individuals and without which the preparation of this report would not be possible:

Lee Sochasky – St. Croix International Waterway Commission
Nelda Craig and Sheryl Johnston – New Brunswick Department of the Environment and Local Government.
Ed Logue – Maine Department of Environmental Protection
Paul Noseworthy – Environment Canada
James Caldwell – U.S. Geological Survey
Peter Johnson - Environment Canada
Barbara Blumeris – U.S. Army Corps of Engineers

APPENDIX 1

SUMMARY - ORDERS OF APPROVAL & BASIN MAP

SUMMARY - ST. CROIX RIVER ORDERS OF APPROVAL

INTERNATIONAL JOINT COMMISSION

9 November, 1915- For approval of a dam and power canal and the obstruction, diversion and use of the waters of the St. Croix River at Grand Falls in the State of Maine and the Province of New Brunswick: Maximum elevation 202.0 feet m.s.l.

3 October, 1923- Erection and repairs of fishways in the St. Croix River.

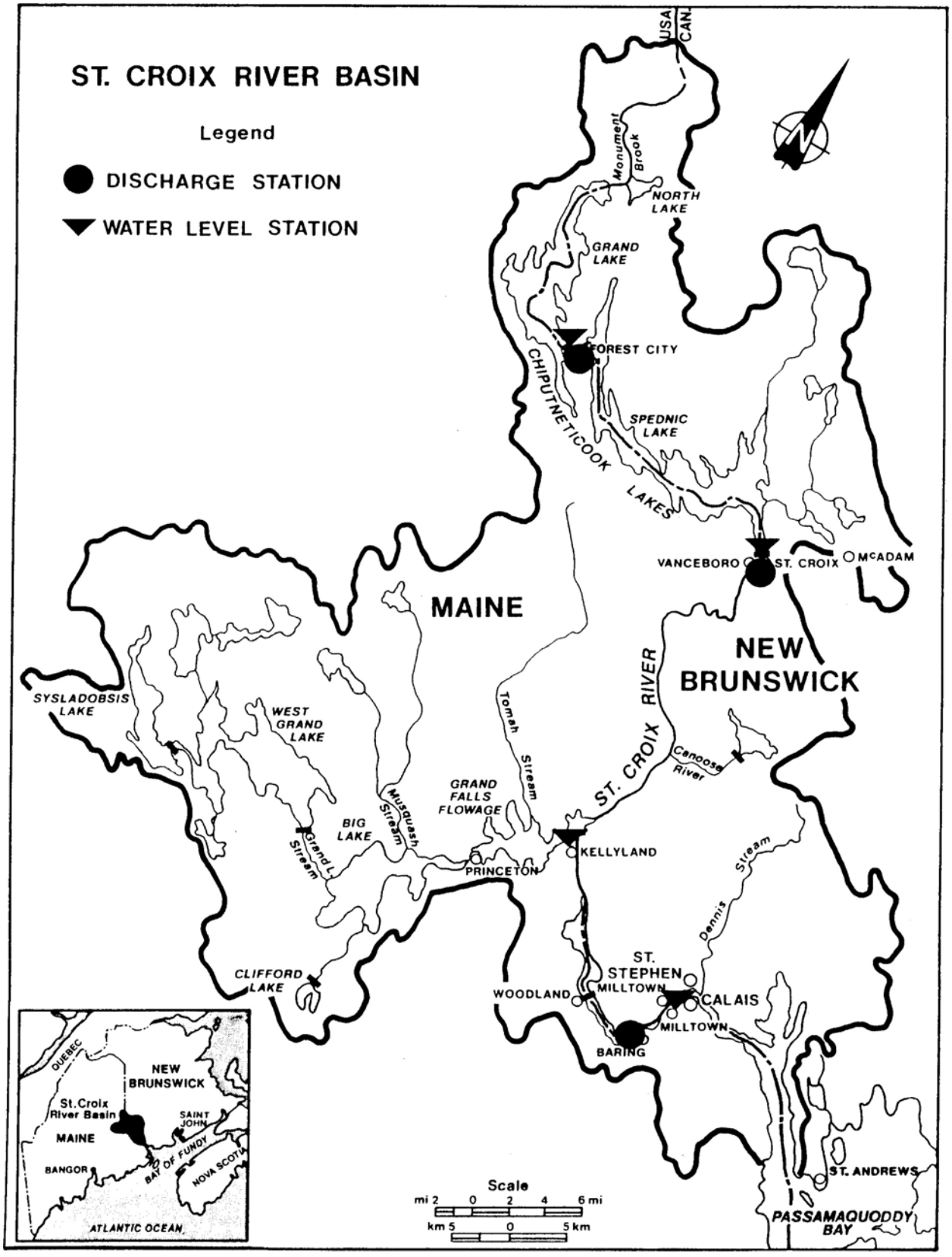
6 October, 1931- For the obstructions of the waters of the St. Croix River at Grand Falls in the State of Maine and the Province of New Brunswick. Increase in elevation to 203.5 feet m.s.l.

2 October, 1934- For the reconstruction of a dam across the St. Croix River from Milltown in the Province of New Brunswick to Milltown in the State of Maine.

15 October, 1965- For the construction of a storage dam in the St. Croix River at Vanceboro, Maine and St. Croix, New Brunswick:

Discharge from Spednic Lake-	200 cfs (5.66 m3\s) minimum
Elevation of Spednic Lake-	385.86 feet (117.611 metres) maximum
Between 1 October and 30 April-	371.50 feet (113.233 metres) minimum
Between 1 May and 30 September-	376.50 feet (114.759 metres) minimum
Discharge from East Grand Lake-	75 cfs (2.12 m3\s) minimum
Elevation of East Grand Lake-	434.94 feet (132.571 metres) maximum 427.94 feet (130.438 metres) minimum

16 November, 1982- For the reconstruction of the diversion dike in the St. Croix River near Baileyville, Maine.


ST. CROIX RIVER BASIN
Legend
DISCHARGE STATION
WATER LEVEL STATION
USA
CAN.
Monument Brook
NORTH LAKE
GRAND LAKE
FOREST CITY
CHIPUTNETICOOK LAKES
SPEDNIC LAKE
VANCEBORO
ST. CROIX
McADAM
MAINE
NEW BRUNSWICK
ST. CROIX RIVER
SYSLADOBSIS LAKE
WEST GRAND LAKE
Tomah Stream
Canoose River
GRAND FALLS FLOWAGE
Musquash Stream
BIG LAKE
Grand L. Stream
KELLYLAND
PRINCETON
Dennis Stream
CLIFFORD LAKE
ST. STEPHEN
MILLTOWN
WOODLAND
CALAIS
MILLTOWN
BARING
ST. ANDREWS
PASSAMAQUODDY BAY
Scale
mi 2 0 2 4 6 mi
km 5 0 5 km
QUEBEC
NEW BRUNSWICK
St.Croix River Basin
SAINT JOHN
MAINE
BAY OF FUNDY
BANGOR
NOVA SCOTIA
ATLANTIC OCEAN

APPENDIX 2

Milltown, Grand Falls, Vanceboro and Forest City Dams

GENERAL DESCRIPTION OF MILLTOWN,
GRAND FALLS, VANCEBORO & FOREST CITY DAMS

Milltown Dam & Fish Passage Facilities

The Milltown facility is located in Milltown, New Brunswick across the river from Calais, Maine and approximately one mile upstream from the international bridge between Calais and St. Stephen, New Brunswick. It consists of a powerhouse with 7 hydroelectric generating units, an upstream fish passage facility that goes from the lower pool around the left side of the powerhouse to the upper pool. The spillway is located to the right of the powerhouse and has 6 openings with large wooden stoplogs that can be removed or installed via a railed vertical lifting mechanism. Other sections of the spillway have been equipped with wooden flashboards that are meant to fail and increase the spillway's capacity during high flows. At the far end of the spillway, running perpendicular from the spillway to the right bank, is a gatehouse with 5 vertical lift gates used to control the forebay elevation. A wooden-chute downstream fish passage facility is located in the area between the spillway and the gatehouse.

Grand Falls Dam & Fish Passage Facilities

Grand Falls Flowage Dam is approximately 8 miles upstream of the town of Baileyville, Maine, controls the water that drains from the west branch of the St. Croix River, and can store approximately 88,000 acre-feet of water. This dam has 9 steel tainter gates on the right of the spillway, and a concrete emergency spillway approximately 800-850 feet in length running from the concrete gatehouse and ending at the left shoreline. The gatehouse is located between the gates and the emergency spillway. A floating walkway allows access to the entire upstream length of the spillway. Lake levels are recorded by a gauging station on the right bank of the dam.

The downstream side of the emergency spillway/dam has a concrete face sloping at an angle of approximately 45 degrees, and supported by concrete buttresses along its length. The space between these buttresses has been enclosed with a pressure-treated timber log system. This log system was installed to minimize the temperature differential in the downstream face area during freezing conditions to reduce possible degradation of the concrete face.

Fish passage facilities at Grand Falls are located beside the hydroelectric generating plant. Water is impounded behind Grand Falls Flowage Dam and delivered to the hydroelectric plant and fish passage facilities via a channel on the right side of the impoundment, approximately 1000 feet upstream of the dam.

Water flows to the turbines via three steel penstocks. A Denil fishway is located on the side of the hydroelectric plant. It is a concrete structure with a series of bays equipped with guide slots that allow for the installation of wooden V notched weirs to modify flows to levels acceptable for fish migration.

Vanceboro Dam & Fish Passage Facilities

Vanceboro dam consists of an earth embankment with a concrete gate structure and with rock filled gabions on the upstream face. The concrete structure is 69 feet (21 m) long, and contains a fishway and two tainter gates, each 22'-6" (6.9 m) wide by 14'-6" (4.4 m) high. These gates are operated by electrical cable lifts. The gate structure is located on the International Boundary line between the United States and Canada. Gate sill elevation is at 371.5 feet (113.23 m) NGVD. Normal full pond elevation is at 385.86 feet (117.61 m), with an impounded surface of 20,870 acres (84.5 km2). There are approximately 221,200 acre-feet (0.27 km3) of useable storage at normal full pond. The fishway is on the left side of the dam and consists of 10 bays or pools and has 5 vertical lift wooden gates to regulate flow through the ladder. The trash rack on the upstream face of the fish passage consists of steel bars spaced approximately 1 foot in the horizontal direction and 3 feet in the vertical.

Forest City Dam & Fish Passage Facilities

Forest City Dam is a small timber crib rock filled structure with three wooden sluice gates operated with a wooden ratchet lever system that lifts the gates using a steel cable or steel chain. These gates have openings of 8'-4" (2.54 m) and a sill elevation of 427.94 feet (130.44 m) NGVD. Full pond elevation is at elevation 434.94 feet (132.57 m) NGVD, and impounds 105,300 acre-feet (0.130 km3) of water. The fishway is located on the left side (facing downstream) of the dam and consists of timber baffle system with an upstream timber trash rack. A gauging station, located immediately downstream on the right bank, measures stage, which is converted to discharge from East Grand Lake through use of a rating table. A second gauging station upstream measures the lake's water level.

APPENDIX 3

HYDROGRAPHS

YEAR: 2005 STATION: 01AR009 – GRAND LAKE AT FOREST CITY

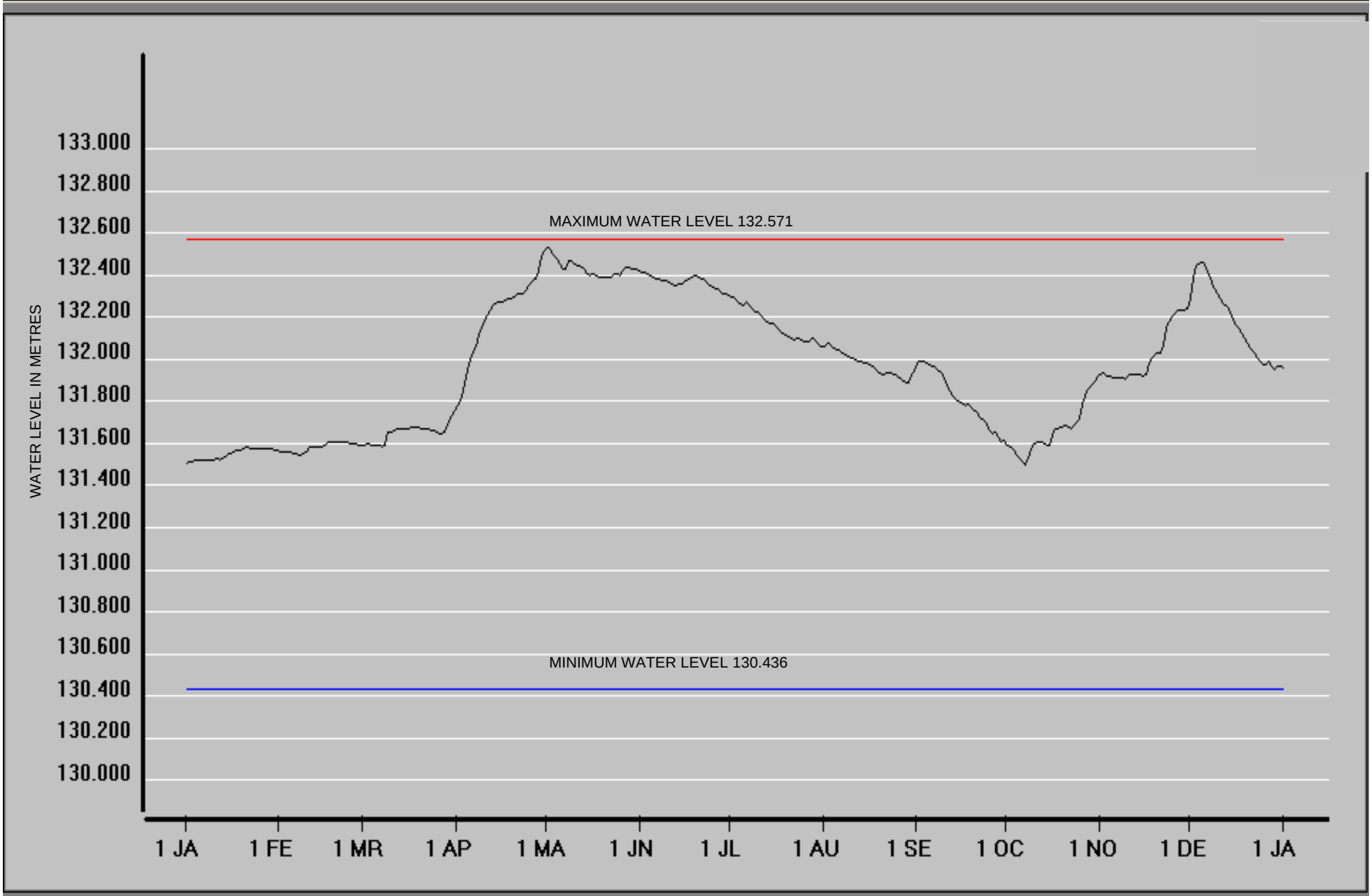


FIGURE I

YEAR: 2005 STATION: 01AR011 FOREST CITY STREAM BELOW FOREST CITY DAM

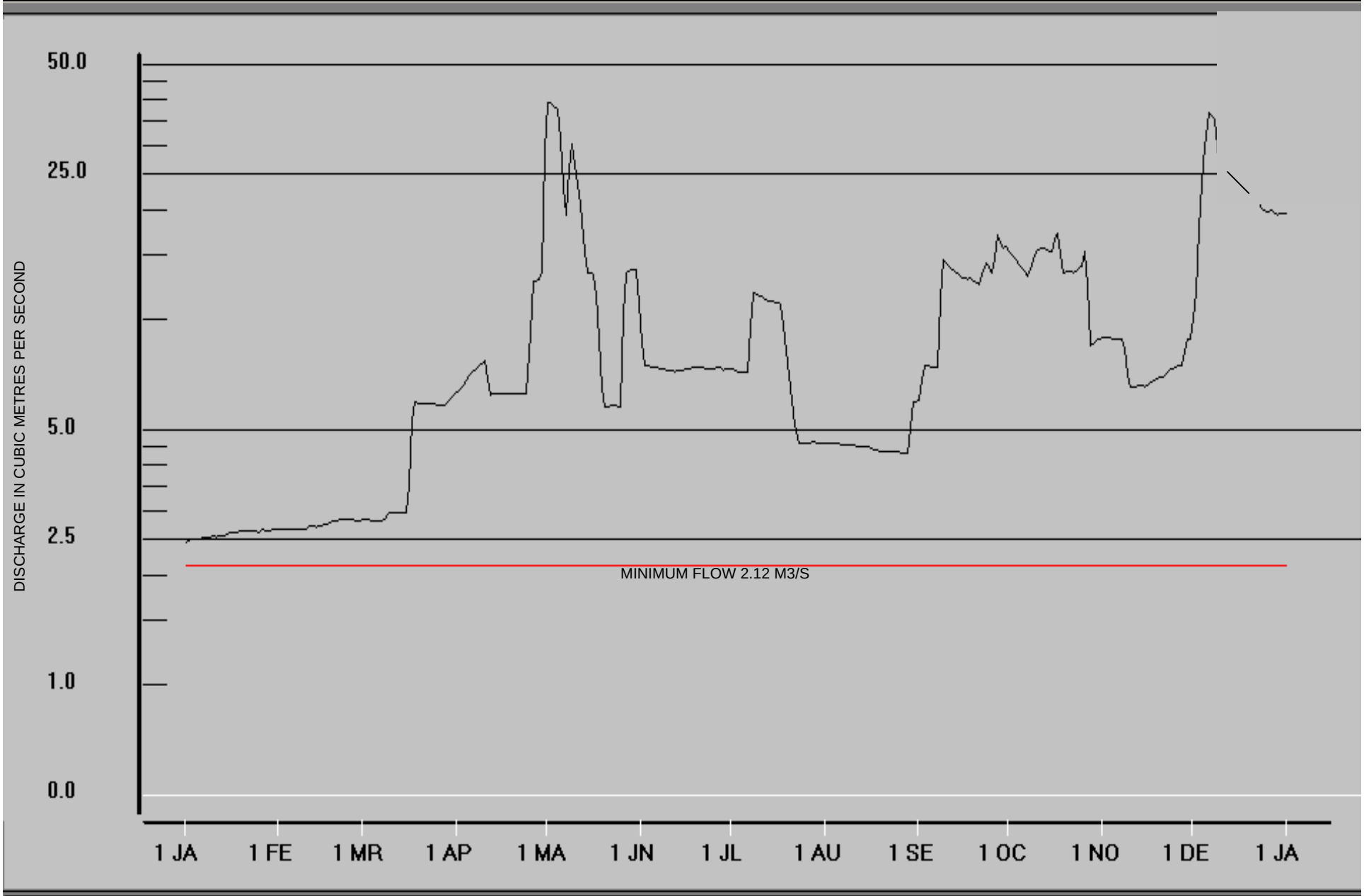


FIGURE II

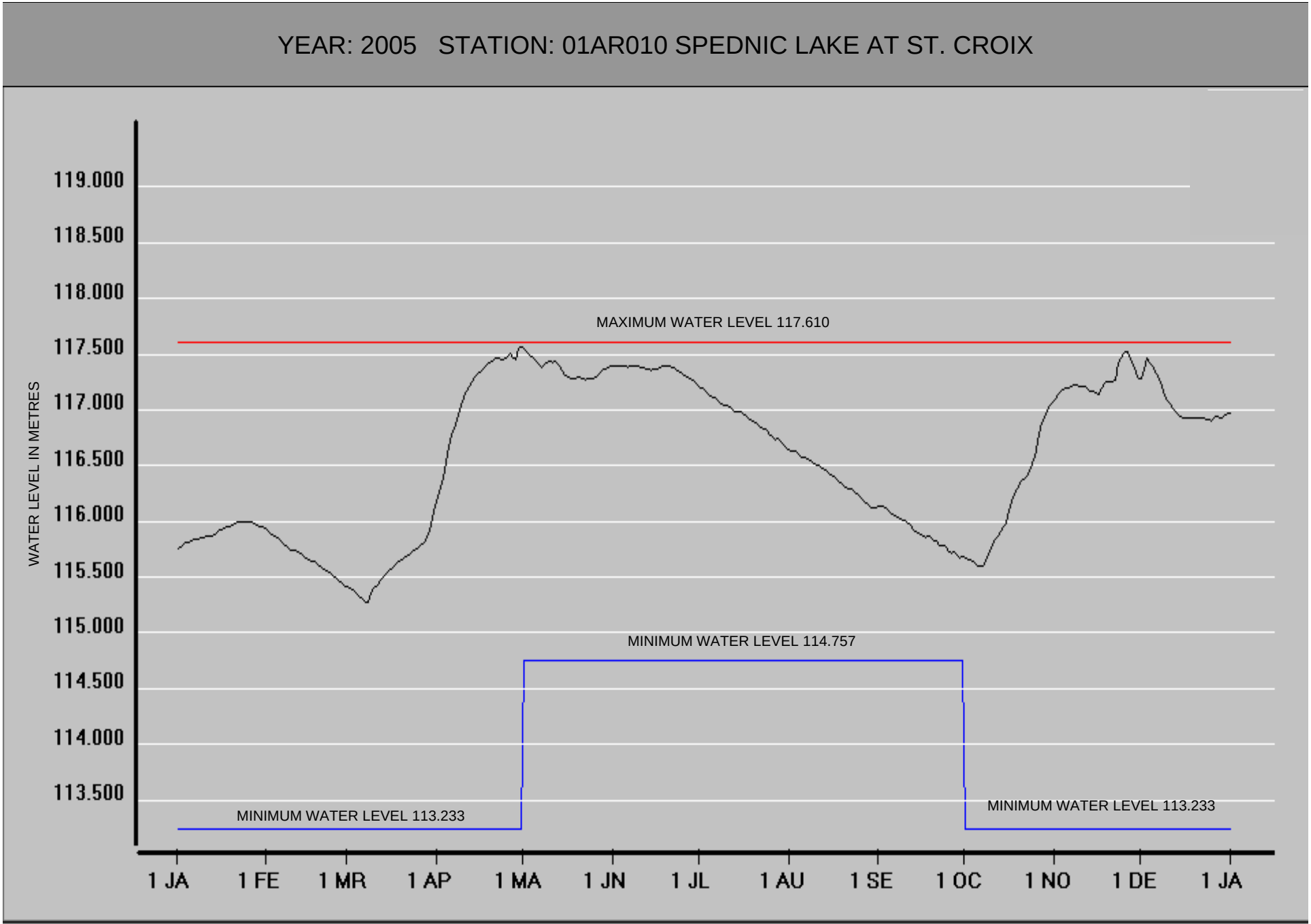

YEAR: 2005 STATION: 01AR010 SPEDNIC LAKE AT ST. CROIX
WATER LEVEL IN METRES
119.000
118.500
118.000
117.500
117.000
116.500
116.000
115.500
115.000
114.500
114.000
113.500
MAXIMUM WATER LEVEL 117.610
MINIMUM WATER LEVEL 114.757
MINIMUM WATER LEVEL 113.233
MINIMUM WATER LEVEL 113.233
1 JA
1 FE
1 MR
1 AP
1 MA
1 JN
1 JL
1 AU
1 SE
1 OC
1 NO
1 DE
1 JA

FIGURE III

YEAR: 2005 STATION: 01AR004 – ST. CROIX AT VANCEBORO

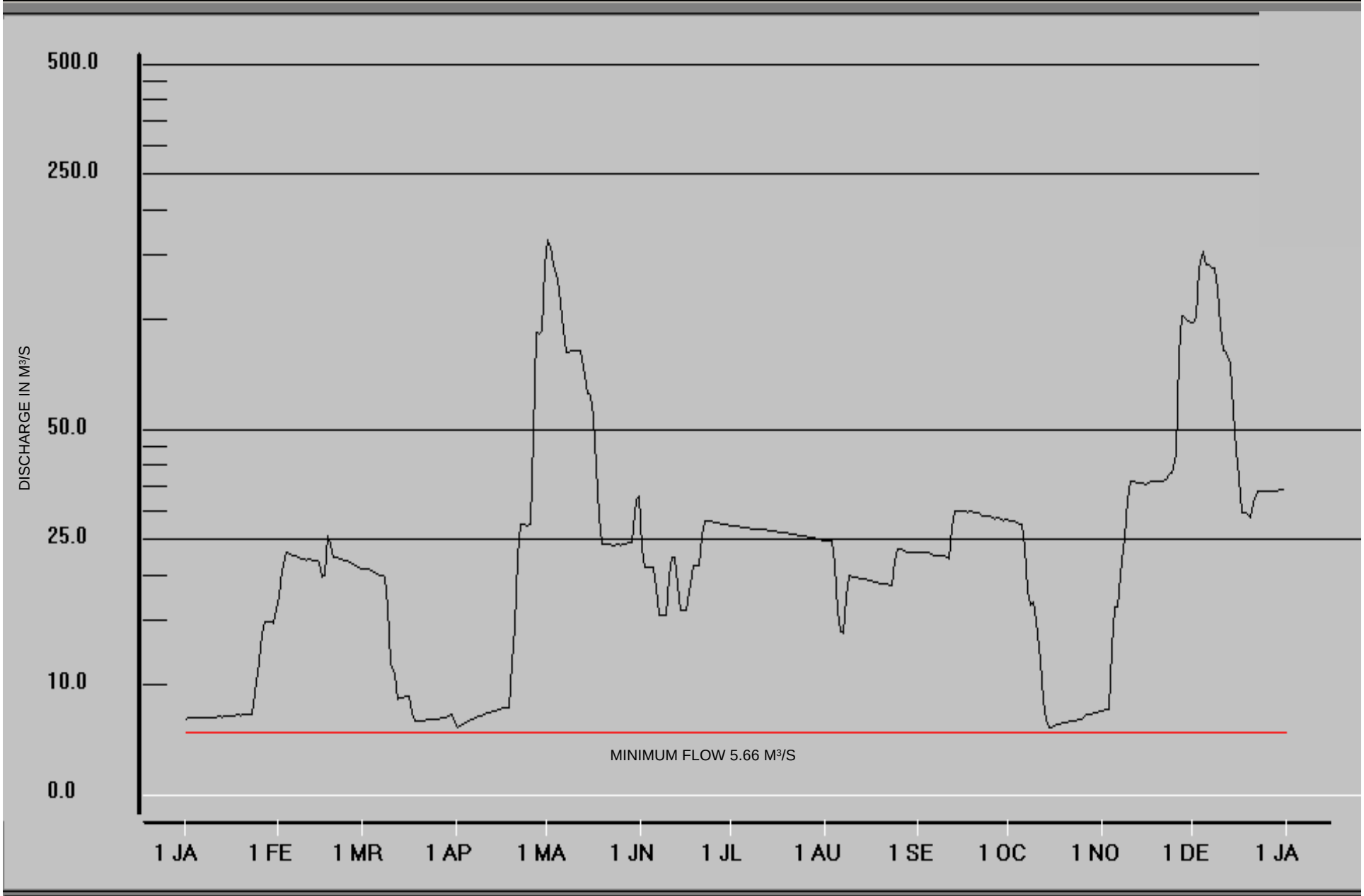


FIGURE IV

YEAR: 2005 STATION: 01AR013 GRAND FALLS FLOWAGE AT GRAND FALLS

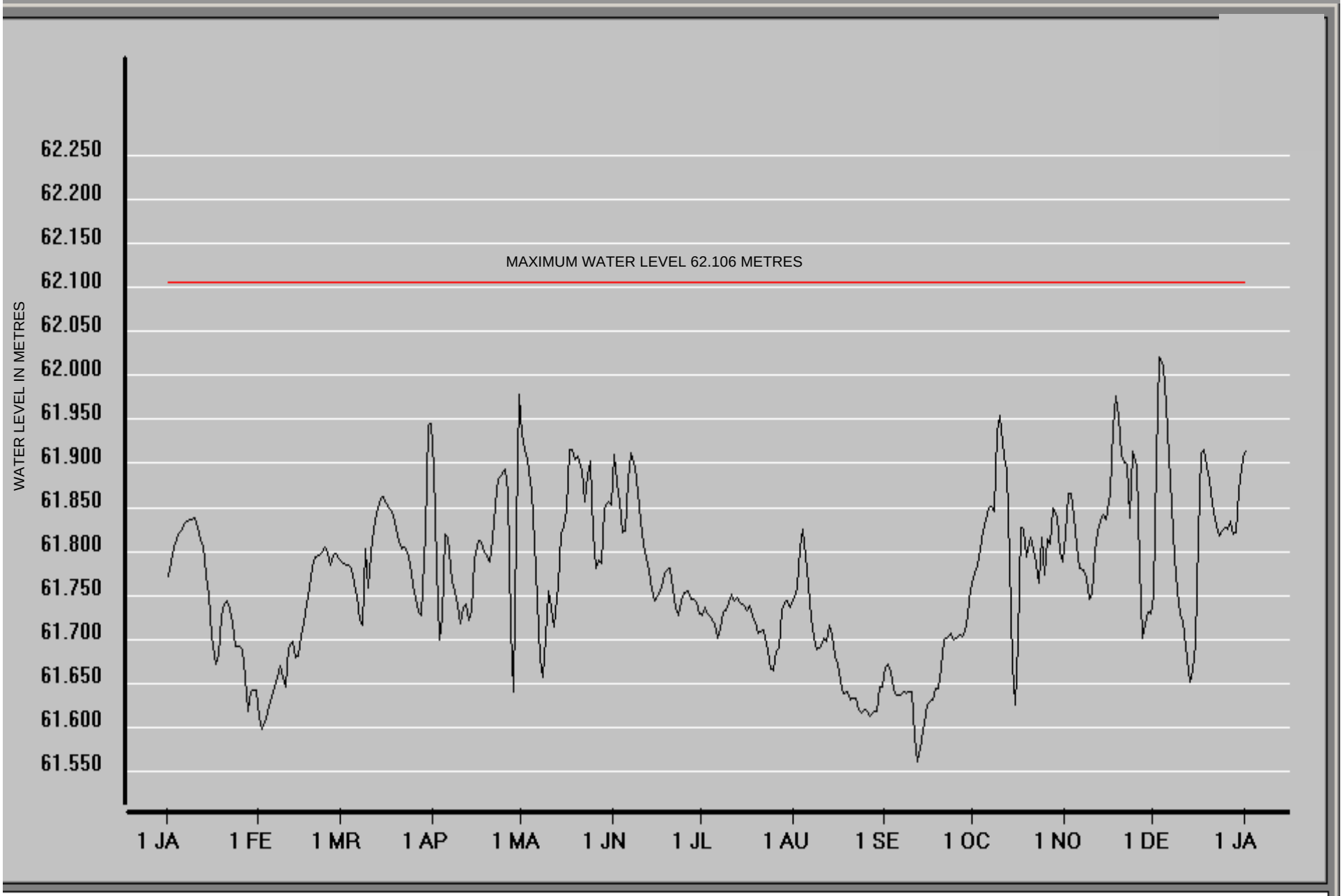


FIGURE V

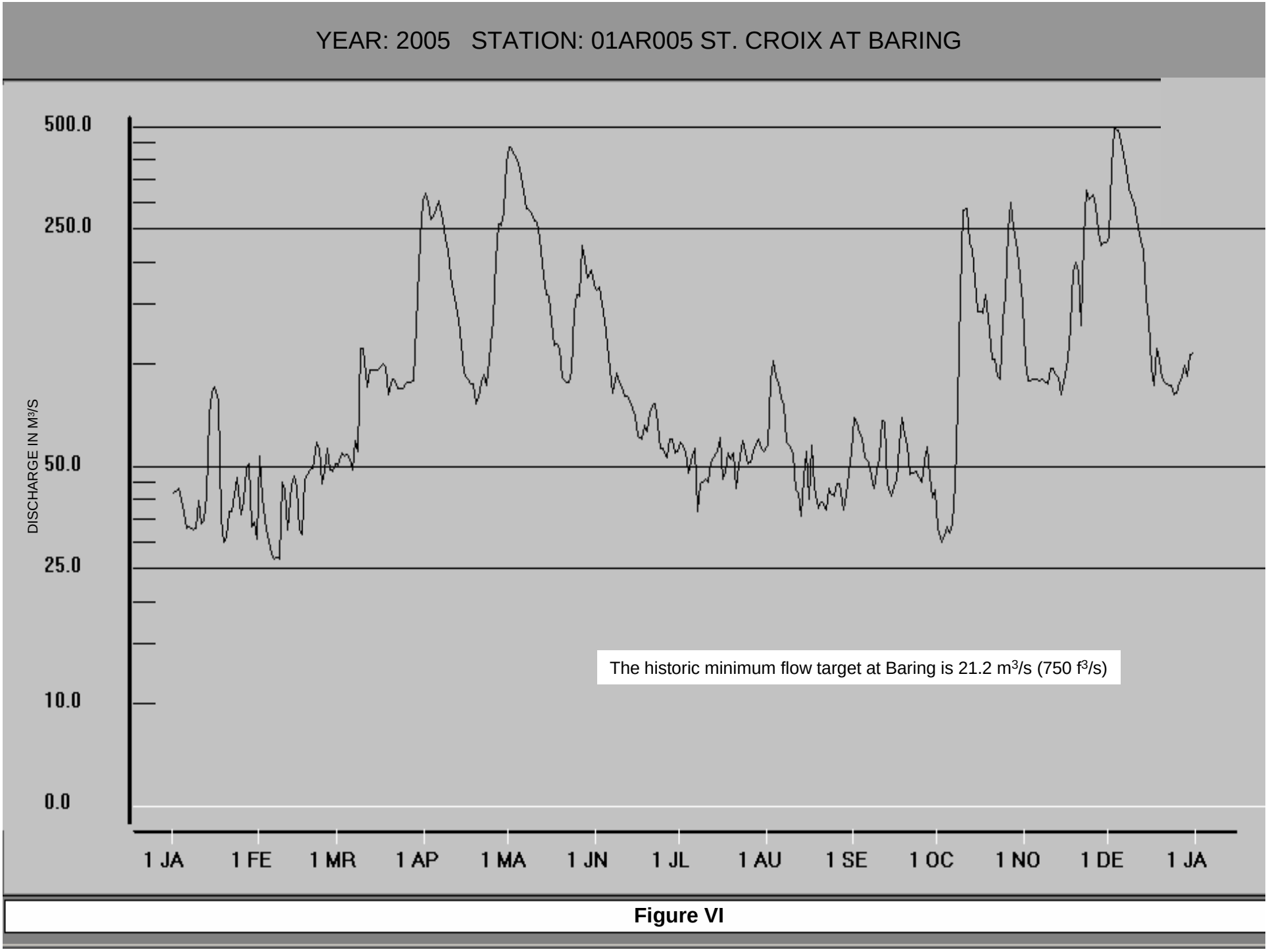

YEAR: 2005 STATION: 01AR005 ST. CROIX AT BARING
500.0
250.0
50.0
25.0
10.0
0.0
DISCHARGE IN M³/S
1 JA
1 FE
1 MR
1 AP
1 MA
1 JN
1 JL
1 AU
1 SE
1 OC
1 NO
1 DE
1 JA
The historic minimum flow target at Baring is 21.2 m³/s (750 f³/s)

Figure VI

YEAR: 2003 STATION: 01AR000 - MILLTOWN

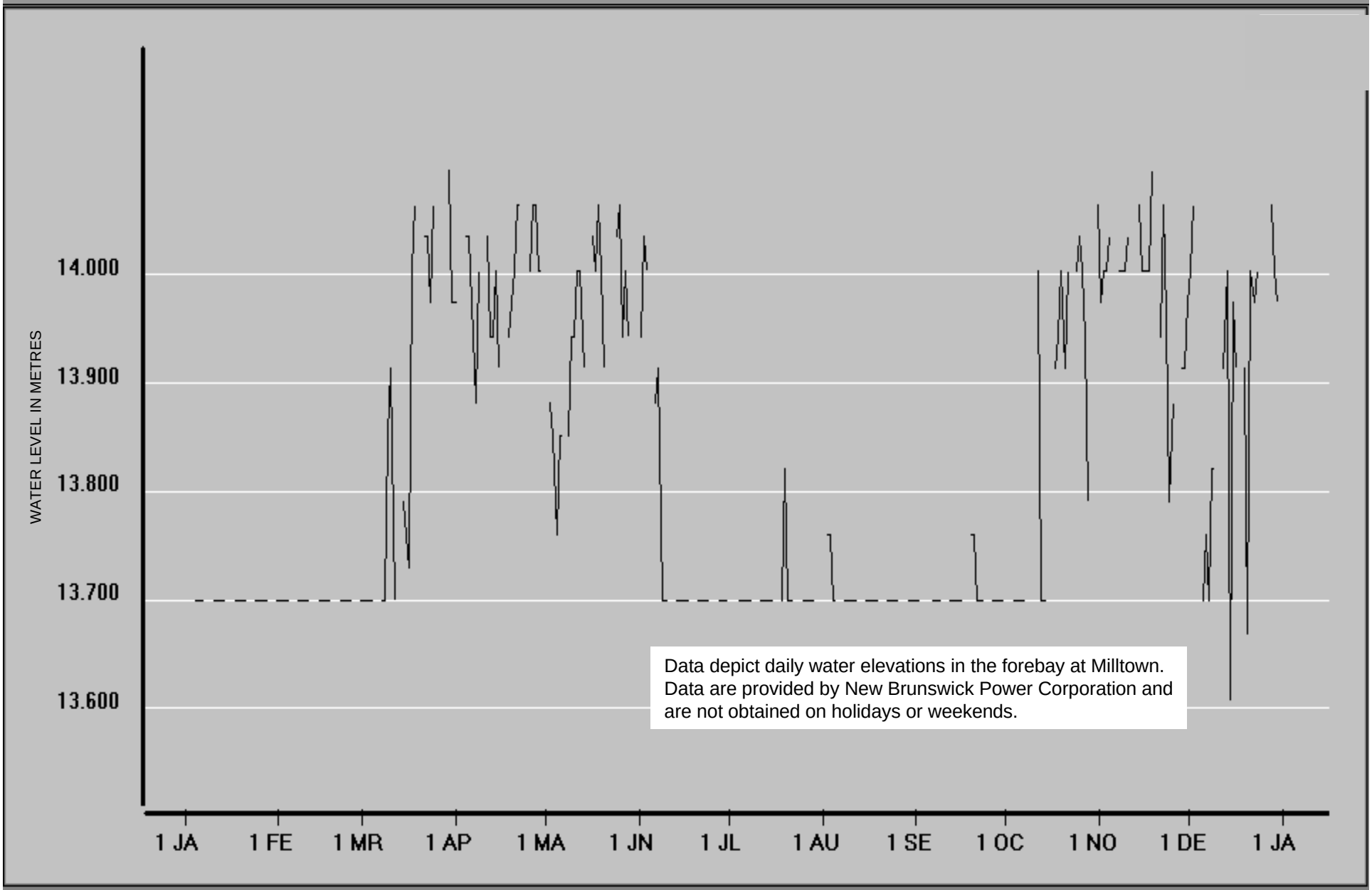


FIGURE VII

APPENDIX 4

WATER LEVELS AND FLOWS

GRAND LAKE AT FOREST CITY
DAILY MEAN WATER LEVELS IN METRES FOR 2005

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	131.506	131.564	131.594	131.777	132.528	132.416	132.295	132.063	131.984	131.594	131.928	132.286	1
2	131.510	131.561	131.596	131.803	132.519	132.410	132.294	132.076 A	131.988	131.580	131.934	132.381	2
3	131.515	131.559	131.595	131.848	132.501	132.404	132.281	132.070	131.989	131.564	131.920	132.445	3
4	131.519	131.557	131.592	131.920	132.476	132.398	132.266	132.056	131.984	131.545	131.917	132.457	4
5	131.520	131.554	131.590	131.974	132.449	132.390	132.252	132.044	131.976	131.529	131.913	132.456	5
6	131.520	131.551	131.587	132.020	132.430	132.381	132.273	132.043	131.968	131.513	131.911	132.434	6
7	131.524	131.547	131.585	132.064	132.425	132.378	132.258	132.032	131.956	131.496	131.913	132.407	7
8	131.524	131.545	131.594	132.113	132.466	132.377	132.239	132.023	131.945	131.527	131.912	132.370	8
9	131.524	131.550	131.650	132.150	132.464	132.371	132.228	132.016	131.932	131.572	131.905	132.334	9
10	131.524	131.555	131.656	132.183	132.454	132.363	132.225	132.005	131.910	131.599	131.919	132.311	10
11	131.525	131.583	131.659	132.208	132.444	132.358	132.213	131.999	131.881	131.609	131.928	132.286	11
12	131.524	131.582	131.666	132.232	132.444	132.350	132.196	131.991	131.851	131.606	131.931	132.266	12
13	131.525	131.581	131.667	132.253	132.429	132.354	132.181 A	131.986	131.823	131.600	131.927	132.245	13
14	131.535	131.580	131.669	132.265	132.408	132.356	132.171	131.982	131.801	131.595	131.927	132.222	14
15	131.550	131.583	131.671	132.269	132.400	132.357	132.172	131.982	131.792	131.591	131.920	132.195	15
16	131.553	131.587	131.672	132.273	132.401	132.372	132.155	131.974	131.787	131.642	131.928	132.166	16
17	131.564	131.604	131.677	132.278	132.394	132.383	132.139	131.963	131.782	131.669	131.981	132.146	17
18	131.566	131.604	131.676	132.284	132.390	132.392	132.123	131.956	131.787	131.671	132.009	132.121	18
19	131.566	131.604	131.674	132.289	132.388	132.393	132.113	131.939	131.773	131.676	132.019	132.099	19
20	131.576	131.604	131.670	132.297	132.391	132.389	132.110	131.925	131.753	131.687	132.028	132.077	20
21	131.581	131.604	131.668	132.309	132.390	132.381	132.102	131.928	131.745	131.679	132.033	132.054	21
22	131.577	131.604	131.666	132.309	132.392	132.380	132.091	131.935	131.723	131.673	132.067	132.031	22
23	131.577	131.604	131.663	132.314	132.405	132.368	132.103	131.935	131.710	131.688	132.149	132.009	23
24	131.578	131.601	131.660	132.323	132.405	132.353	132.092	131.930	131.691	131.702	132.179	131.993	24
25	131.577	131.600	131.655	132.360	132.399	132.344	132.081	131.925	131.663	131.713	132.208	131.973	25
26	131.578	131.597	131.648	132.375	132.424	132.338	132.083	131.914	131.647	131.789	132.222	131.978	26
27	131.576	131.593	131.645	132.381	132.436	132.326	132.080	131.904	131.657	131.829	132.233	131.989	27
28	131.574	131.589	131.650	132.417	132.433	132.314	132.100	131.889	131.634	131.855	132.234	131.969	28
29	131.571		131.707	132.488	132.430	132.307	132.088	131.892	131.607	131.879	132.234	131.954	29
30	131.568		131.731	132.518	132.427	132.305	132.078	131.931	131.612	131.897	132.240	131.969	30
31	131.566		131.753		132.423		132.065	131.941		131.921		131.964	31
TOTAL	4077.993	3684.247	4081.186	3966.294	4105.365	3971.008	4097.147	4091.249	3954.351	4081.490	3960.569	4097.587	TOTAL
MEAN	131.548	131.580	131.651	132.210	132.431	132.367	132.166	131.976	131.812	131.661	132.019	132.180	MEAN
MAX	131.581	131.604	131.753	132.518	132.528	132.416	132.295	132.076	131.989	131.921	132.240	132.457	MAX
MIN	131.506	131.545	131.585	131.777	132.388	132.305	132.065	131.889	131.607	131.496	131.905	131.954	MIN

SUMMARY FOR THE YEAR 2005
Mean water level, 131.968 Metres
Maximum daily water level, 132.528 Metres On 2005-05-01
Minimum daily water level, 131.496 Metres On 2005-10-07

NOTES: THE DISCHARGE ARE PROVISIONAL AND ARE SUPPLIED BY ENVIRONMENT CANADA IN COOPERATION WITH DOMTAR.
A - PARTIAL DAY

TABLE I

FOREST CITY STREAM BELOW FOREST CITY DAM
DAILY MEAN DISCHARGE IN CUBIC METRES PER SECOND FOR 2005

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2.48	2.67	2.84	6.35	39.3	8.66 A	7.34	4.59	6.05	15.4	8.93	10.0	1
2	2.49	2.67	2.84	6.44	39.1	7.48	7.27	4.59	6.82	15.0	8.98	11.9	2
3	2.52	2.67	2.82	6.60	38.5	7.46	7.21	4.59	7.49	14.6 E	8.92	17.8	3
4	2.52	2.67	2.83	6.83	37.6	7.45	7.20	4.59	7.48	14.2	8.90	27.1	4
5	2.52	2.67	2.82	7.01	31.2	7.44	7.20	4.58	7.46	13.9	8.86	31.8	5
6	2.53	2.67	2.83	7.19	23.2	7.43	7.20	4.53	7.45	13.5	8.85	36.8	6
7	2.55	2.67	2.81	7.36	19.4	7.36	9.52	4.53	7.42	13.1	8.87	36.1	7
8	2.56	2.67	2.83	7.49	25.8	7.30 A	11.8	4.53	11.3	13.7	8.35	35.2	8
9	2.55	2.68	2.94	7.60	30.3	7.27	11.7	4.53	14.6	14.7	7.10	29.9	9
10	2.57	2.68	2.97	7.71	26.3	7.27	11.6	4.53	14.4	15.4	6.56	25.1	10
11	2.56	2.73	2.97	6.88	23.6	7.25	11.6	4.49	14.0	15.7	6.58	24.7	11
12	2.58	2.73	2.98	6.19	20.5	7.20	11.4	4.47	13.8	15.7	6.58	24.4	12
13	2.58	2.72	2.97	6.24	15.3	7.22	11.3	4.46	13.5	15.6	6.60	24.1	13
14	2.59	2.73	2.97	6.24	13.5	7.27	11.2	4.45	13.2	15.4	6.59	24.1	14
15	2.60	2.74	2.97	6.30	13.4	7.27	11.2	4.44	13.1	15.3	6.58	24.1	15
16	2.62	2.76	3.55	6.30	13.3	7.33	11.1	4.43	13.0	16.5	6.66	24.1	16
17	2.62	2.78	5.34	6.30	11.7	7.35	11.0	4.43	12.9	17.2	6.77	24.0	17
18	2.63	2.79	5.94	6.30	8.85	7.38	9.60	4.38	13.0	15.0	6.84	24.0	18
19	2.65	2.83	5.92	6.29	6.47	7.43	8.21	4.38	12.8	13.4	6.90	24.0	19
20	2.66	2.83	5.91	6.27	5.79	7.42	7.07	4.37	12.6	13.6	6.94	24.0	20
21	2.66	2.85	5.91	6.26	5.79	7.38	6.00	4.37 A	12.5	13.5	6.99	24.0	21
22	2.66	2.86	5.90	6.30	5.80	7.35	5.14	4.37	13.3	13.4	7.12	22.6	22
23	2.66	2.85	5.88 A	6.30	5.82	7.35	4.59	4.37	14.3	13.5	7.29	20.5	23
24	2.66	2.85	5.89	6.30	5.73	7.35	4.59	4.37	14.0	13.8	7.37	20.0	24
25	2.63 E	2.84	5.85	9.14	5.74	7.35	4.59	4.34	13.4	14.0	7.43	19.7	25
26	2.66 E	2.83	5.84	12.7	10.3	7.37	4.59	4.32	14.8	15.4 A	7.50	19.8	26
27	2.65 E	2.82	5.84	12.7	13.4 A	7.37	4.60	4.32	17.0	12.6	7.53 A	19.9	27
28	2.67	2.83	5.86	12.9	13.6 A	7.29	4.62	4.32	16.4	8.51	8.16	19.6	28
29	2.67		6.03	13.4	13.6 A	7.30	4.59	5.02	15.8	8.68	8.86	19.3	29
30	2.67		6.14	28.9	13.7 A	7.35	4.59	5.93	15.8	8.82	8.88	19.6	30
31	2.67		6.25		11.0 A		4.59	5.96		8.87		19.5	31
TOTAL	80.64	77.09	135.44	248.79	547.59	221.70	244.21	141.58	369.67	427.98	228.49	727.7	TOTAL
MEAN	2.60	2.75	4.37	8.29	17.7	7.39	7.88	4.57	12.3	13.8	7.62	23.5	MEAN
DAM3	6970	6660	11700	21500	47300	19200	21100	12200	31900	37000	19700	62900	DAM3
MAX	2.67	2.86	6.25	28.9	39.3	8.66	11.8	5.96	17.0	17.2	8.98	36.8	MAX
MIN	2.48	2.67	2.81	6.19	5.73	7.20	4.59	4.32	6.05	8.51	6.56	10.0	MIN

SUMMARY FOR THE YEAR 2005
Total discharge, 298000 DAM3
Mean discharge, 9.46 M3/S
Maximum daily discharge, 39.3 M3/S On 2005-05-01
Minimum daily discharge, 2.48 M3/S On 2005-01-01

NOTES: THE DISCHARGES ARE PROVISIONAL AND ARE SUPPLIED BY ENVIRONMENT CANADA IN COOPERATION WITH DOMTAR.
E - ESTIMATED
A - PARTIAL DAY

TABLE II

SPEDNIC LAKE AT ST. CROIX
DAILY MEAN WATER LEVELS IN METRES FOR 2005

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	115.758	115.917	115.408	116.227	117.543	117.395	117.197	116.627	116.143	115.664	117.102	117.277	1
2	115.773	115.899	115.385	116.310	117.521	117.397	117.196	116.631	116.132	115.654	117.146	117.370	2
3	115.790	115.874	115.365	116.395	117.492	117.398	117.169	116.628	116.125	115.637	117.163	117.462	3
4	115.804	115.855	115.343	116.532	117.466	117.396	117.142	116.596	116.104	115.623	117.182	117.414	4
5	115.815	115.835	115.321	116.669	117.437	117.389	117.116	116.576	116.082	115.606	117.191	117.384	5
6	115.823	115.810	115.296	116.777	117.401	117.379	117.104	116.575	116.059	115.598	117.197	117.328	6
7	115.837	115.784	115.278	116.871	117.373	117.390	117.077	116.559	116.040	115.594	117.230	117.283 A	7
8	115.843	115.762	115.267	116.961	117.403	117.396	117.058	116.545	116.023	115.638	117.233	117.207	8
9	115.850	115.745	115.361	117.037	117.426	117.389	117.039	116.524	116.016	115.698	117.208	117.133	9
10	115.854	115.737	115.395	117.105	117.434	117.385	117.037	116.508 A	116.007	115.775	117.206	117.087	10
11	115.862	115.744	115.424	117.165	117.422	117.372	117.028	116.503	115.981	115.838	117.215	117.052	11
12	115.866	115.717	115.465	117.216	117.429	117.363	117.012	116.479	115.964	115.874	117.198	117.012	12
13	115.871	115.699	115.497	117.255	117.395	117.360	116.990	116.459	115.926	115.912	117.175	116.974	13
14	115.884	115.674	115.526	117.295	117.349	117.353	116.977	116.443	115.898	115.951	117.173	116.948	14
15	115.904	115.658	115.554	117.324	117.314	117.359	116.978	116.427	115.885	115.985	117.152	116.934	15
16	115.917	115.647	115.575	117.350	117.293	117.366	116.954	116.404	115.872	116.089	117.146	116.925	16
17	115.937	115.642	115.597	117.377	117.284	117.381	116.934	116.394	115.859	116.180	117.204	116.930	17
18	115.947	115.622	115.621	117.410	117.280	117.392	116.914	116.370	115.867	116.238	117.243	116.931	18
19	115.952	115.603	115.645	117.423	117.283	117.392	116.899	116.338	115.852	116.291	117.248	116.933	19
20	115.970	115.584	115.666	117.442	117.288	117.389	116.889 A	116.308	115.827	116.357	117.252	116.934	20
21	115.982	115.563	115.685	117.469	117.276	117.381	116.864	116.300	115.828	116.379	117.251	116.933	21
22	115.987	115.543	115.703	117.463	117.262	117.378	116.840	116.290	115.789	116.405	117.274	116.925	22
23	115.997	115.523	115.723	117.454	117.273	117.357	116.834	116.277	115.780	116.451	117.417	116.917	23
24	115.999	115.504	115.740	117.454	117.281	117.332	116.807	116.254	115.764	116.521	117.472	116.915	24
25	115.994	115.483	115.758	117.477	117.279	117.321 A	116.768	116.234	115.727	116.578	117.525	116.907	25
26	115.987	115.461	115.776	117.511	117.293	117.296 A	116.751	116.210	115.708	116.715	117.517	116.922	26
27	115.980	115.437	115.791	117.471	117.330	117.275 A	116.734	116.179	115.722	116.842	117.471 A	116.941	27
28	115.969	115.414	115.818	117.450	117.353	117.259 A	116.736	116.146	115.695	116.919	117.406	116.931	28
29	115.956		115.922	117.546	117.370	117.246	116.712	116.127	115.668	116.983	117.342	116.926	29
30	115.945		116.028	117.563	117.385	117.219	116.687	116.130	115.685	117.037	117.286	116.960	30
31	115.933		116.131		117.389		116.656	116.120		117.069		116.971	31
TOTAL	3592.986	3238.736	3583.064	3514.999	3638.324	3520.705	3625.099	3608.161	3477.028	3601.101	3517.825	3628.766	TOTAL
MEAN	115.903	115.669	115.583	117.167	117.365	117.357	116.939	116.392	115.901	116.165	117.261	117.057	MEAN
MAX	115.999	115.917	116.131	117.563	117.543	117.398	117.197	116.631	116.143	117.069	117.525	117.462	MAX
MIN	115.758	115.414	115.267	116.227	117.262	117.219	116.656	116.120	115.668	115.594	117.102	116.907	MIN

SUMMARY FOR THE YEAR 2005
Mean water level, 116.567 Metres
Maximum daily water level, 117.563 Metres On 2005-04-30
Minimum daily water level, 115.267 Metres On 2005-03-08

NOTES: WATER LEVELS ARE IN METRES AND ARE REFERENCED TO GEODETIC SURVEY OF CANADA DATUM. THE WATER LEVEL DATA ARE PROVISIONAL AND ARE SUPPLIED BY ENVIRONMENT CANADA IN COOPERATION WITH DOMTAR.
A - PARTIAL DAY

TABLE III

ST. CROIX RIVER AT VANCEBORO
DAILY MEAN DISCHARGE IN CUBIC METRES PER SECOND FOR 2005

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	6.94	17.5	20.9	6.17	165	23.9	27.3	24.9	23.2	28.2	7.69	98.5	1
2	6.97	20.6	20.7	6.27	158	21.1	27.3	24.9	23.1	28.0	7.78	101	2
3	6.99	23.0	20.6	6.41	142	21.1	27.2	24.9	23.1	27.9	7.84	138	3
4	7.03	22.9	20.4	6.58	129	21.1	27.1	21.4	23.0	27.7	12.6	154	4
5	7.04	22.7	20.2	6.73	112	21.1	27.0	16.0	22.9	27.6	16.3	142	5
6	7.05	22.5	20.0	6.87	94.6	18.5	27.0	14.0	22.7	23.8	16.3	141	6
7	7.06	22.4	19.9	7.00	81.3	15.6	26.8	13.9	22.6	18.1	21.8	139	7
8	7.09	22.2	19.8	7.12	81.7	15.6	26.8	17.5	22.5	16.5	25.3	138	8
9	7.08	22.1	16.4	7.24	81.9	15.6	26.7	19.9	22.5	16.8	32.1	121	9
10	7.09	22.0	11.5	7.34	82.0	19.7	26.7	19.8	22.4	15.1	36.1	96.1	10
11	7.10	22.1	10.7	7.42	82.0	22.4	26.6	19.7	22.2	11.7	36.1	82.2	11
12	7.11	21.9	8.74	7.50	82.1	22.4	26.6	19.6	27.1	8.53	35.9	81.5	12
13	7.10	21.8	8.82	7.61	70.4	18.8	26.5	19.5	30.1	6.89	35.8	75.8	13
14	7.15	21.6	8.87	7.69	62.7	16.1	26.5	19.5	29.9	6.06	35.7	56.2	14
15	7.20	19.7	8.94	7.78	62.2	16.1	26.4	19.4	30.0	6.11	35.5	44.2	15
16	7.19	20.0	8.99	7.86	54.2	16.1	26.3	19.3	30.0	6.29	35.6	37.0	16
17	7.22	25.7	7.56	7.92	39.7	19.0	26.3	19.2	29.8	6.39	36.0	29.7	17
18	7.28	24.4	6.67	8.01	29.1	21.2	26.1	19.2	29.9	6.47	36.2	29.7	18
19	7.25	22.4	6.73	11.5	24.3	21.3	26.1	19.0	29.7	6.54	36.3	29.2	19
20	7.28	22.3	6.75	14.4	24.3	21.2	26.0	18.9	29.5	6.63	36.3	28.7	20
21	7.32	22.1	6.79	22.3	24.3	25.6	25.9	18.9	29.5	6.66	36.2	31.5	21
22	7.32	21.9	6.80	27.5	24.2	28.1	25.8	18.8	29.1	6.68	36.5	34.0	22
23	7.34	21.8	6.83	27.5	24.2	28.1	25.7	18.7	29.1	6.77	37.5	33.9	23
24	9.26	21.6	6.89	27.4	24.3	28.1	25.6	21.9	29.1	6.85	38.0	33.9	24
25	11.6	21.4	6.91	27.6	24.2	27.9	25.5	23.7	28.7	6.93	42.7	33.9	25
26	13.7	21.3	6.94	48.5	24.3	27.9	25.4	23.6	28.5	7.14	80.3	34.0	26
27	14.9	21.1	6.97	92.0	24.4	27.7	25.3	23.4	28.7	7.27	102	34.1	27
28	14.9	20.9	7.03	91.8	24.6	27.7	25.3	23.2	28.4	7.37	101	34.1	28
29	14.9		7.25	93.4	24.6	27.6	25.2	23.1	28.2	7.46	99.8	34.0	29
30	14.8		7.39	140	32.1	27.4	25.1	23.2	28.4	7.55	98.7	34.2	30
31	16.0		6.67		32.8		24.9	23.1		7.60		34.4	31
TOTAL	274.26	611.9	349.64	753.42	1942.5	664.0	813.0	632.1	803.9	379.59	1215.91	2134.8	TOTAL
MEAN	8.85	21.9	11.3	25.1	62.7	22.1	26.2	20.4	26.8	12.2	40.5	68.9	MEAN
DAM3	23700	52900	30200	65100	168000	57400	70200	54600	69500	32800	105000	184000	DAM3
MAX	16.0	25.7	20.9	140	165	28.1	27.3	24.9	30.1	28.2	102	154	MAX
MIN	6.94	17.5	6.67	6.17	24.2	15.6	24.9	13.9	22.2	6.06	7.69	28.7	MIN

SUMMARY FOR THE YEAR 2005
Total discharge, 914000 DAM3
Mean discharge, 29.0 M3/S
Maximum daily discharge, 165 M3/S On 2005-05-01
Minimum daily discharge, 6.06 M3/S On 2005-10-14

NOTES: DATA ARE SUPPLIED BY THE UNITIED STATES GEOLOGICAL SURVEY AND ARE PROVISIONAL.

TABLE IV

GRAND FALLS FLOWAGE AT GRAND FALLS
DAILY MEAN WATER LEVELS IN METRES FOR 2005

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	61.772	61.611	61.789	61.895	61.934	61.910	61.727	61.748	61.668	61.769	61.820	61.750	1
2	61.788	61.598	61.785	61.783	61.916	61.879	61.736	61.758	61.671	61.784	61.865	61.904	2
3	61.805	61.610	61.784	61.700	61.904	61.856	61.730	61.805	61.662	61.803	61.866	62.021	3
4	61.813	61.623	61.781	61.726	61.867	61.821	61.725	61.826	61.645	61.823	61.839	62.011	4
5	61.822	61.635	61.765	61.819	61.810	61.824	61.718	61.796	61.637	61.837	61.807	61.965	5
6	61.825	61.646	61.749	61.816	61.746	61.881	61.701	61.761	61.636	61.849	61.781	61.908	6
7	61.832	61.657	61.721	61.766	61.679	61.912	61.712	61.726	61.640	61.851	61.778	61.853	7
8	61.836	61.670	61.716	61.755	61.656	61.896	61.731	61.701	61.638	61.845	61.769	61.794	8
9	61.837	61.656	61.803	61.737	61.701	61.867	61.732	61.689	61.640	61.935	61.745	61.754	9
10	61.838	61.646	61.758	61.719	61.756	61.835	61.742	61.692	61.641	61.955	61.752	61.729	10
11	61.827	61.690	61.814	61.736	61.737	61.808	61.750	61.700	61.590	61.907	61.799	61.721	11
12	61.814	61.697	61.834	61.739	61.713	61.794	61.743	61.698	61.560	61.892	61.824	61.691	12
13	61.806	61.678	61.850	61.722	61.763	61.778	61.748	61.715	61.576	61.787	61.834	61.651	13
14	61.774	61.681	61.860	61.733	61.820	61.756	61.741	61.705	61.605	61.672	61.842	61.664	14
15	61.750	61.704	61.861	61.789	61.828	61.744	61.738	61.681	61.626	61.625	61.836	61.696	15
16	61.702	61.719	61.854	61.812	61.846	61.749	61.733	61.672	61.628	61.697	61.866	61.818	16
17	61.672	61.739	61.850	61.811	61.916	61.759	61.738	61.652	61.632	61.826	61.940	61.911	17
18	61.683	61.759	61.846	61.800	61.916	61.775	61.728	61.638	61.643	61.824	61.976	61.916	18
19	61.726	61.783	61.834	61.795	61.905	61.778	61.719	61.641	61.644	61.793	61.952	61.896	19
20	61.741	61.793	61.813	61.787	61.909	61.781	61.707	61.631	61.667	61.815	61.910	61.881	20
21	61.745	61.796	61.802	61.814	61.892	61.759	61.709	61.633	61.700	61.803 A	61.900	61.855	21
22	61.735	61.798	61.805	61.854	61.857	61.737	61.711	61.633	61.701	61.786	61.898	61.829	22
23	61.718	61.804	61.800	61.882	61.885	61.728	61.688	61.620	61.706	61.764	61.839	61.818	23
24	61.691	61.800	61.787	61.886	61.903	61.744	61.667	61.617	61.699	61.815	61.914	61.823	24
25	61.691	61.784	61.763	61.894	61.822	61.753	61.665	61.620	61.702	61.773	61.898	61.826	25
26	61.689	61.795	61.747	61.868	61.781	61.754	61.686	61.617	61.704	61.814	61.785	61.825	26
27	61.658	61.797	61.730	61.714	61.790	61.746	61.689	61.614	61.703	61.808	61.701	61.834	27
28	61.618	61.791	61.727	61.640	61.785	61.745	61.732	61.618	61.708	61.849	61.718	61.819	28
29	61.639		61.822	61.825	61.849	61.742	61.742	61.618	61.727	61.839	61.730	61.822	29
30	61.643		61.943	61.978	61.857	61.729	61.744	61.647	61.756	61.800	61.730	61.870	30
31	61.641		61.945		61.854		61.735	61.646		61.788		61.906	31
TOTAL	1914.131	1727.960	1915.938	1853.795	1916.597	1853.840	1913.367	1912.118	1849.755	1916.128	1854.914	1916.761	TOTAL
MEAN	61.746	61.713	61.804	61.793	61.826	61.795	61.722	61.681	61.659	61.811	61.830	61.831	MEAN
MAX	61.838	61.804	61.945	61.978	61.934	61.912	61.750	61.826	61.756	61.955	61.976	62.021	MAX
MIN	61.618	61.598	61.716	61.640	61.656	61.728	61.665	61.614	61.560	61.625	61.701	61.651	MIN

SUMMARY FOR THE YEAR 2005
Mean water level, 61.768 Metres
Maximum daily water level, 62.021 Metres On 2005-12-03
Minimum daily water level, 61.560 Metres On 2005-09-12

NOTES: WATER LEVELS ARE IN METRES AND ARE REFERENCED TO GEODETIC SURVEY OF CANADA DATUM. THE WATER LEVELS DATA ARE PROVISIONAL AND ARE SUPPLIED BY ENVIRONMENT CANADA IN COOPERATION WITH DOMTAR.
A - PARTIAL DAY

TABLE V

ST. CROIX RIVER AT BARING
DAILY MEAN DISCHARGE IN CUBIC METRES PER SECOND FOR 2005

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	41.8 B	54.0 B	50.6	319	436	165	59.0	57.7	69.8	33.0	102	235	1
2	42.4 B	40.7 B	54.6	301	430 E	169	57.8	89.4	67.3	29.9	89.6	379	2
3	43.0	32.6 B	54.0	268	416 E	151	55.3	102	62.5	31.3	89.4	493	3
4	40.2	30.2	54.5	274	394	135	47.8	92.4	60.6	33.4	90.0	490	4
5	36.5	27.5	52.7	289	359	115	54.0	88.3	53.3	32.0	90.2	456	5
6	32.9	26.7	48.8	303	322	96.2	56.3	79.8	51.4	34.1	89.7	413	6
7	33.1	27.0	59.8	265	288	82.1	37.0	76.7	47.0	44.7	90.0	376	7
8	32.7	26.8	55.3	235	285	94.3	44.3	59.0	43.0	75.4	88.3	331	8
9	32.8	45.2	111	216	278	89.0	44.8	58.0	48.2	160	87.4	313	9
10	39.5	42.7	111	182	265	85.7	46.1	54.8	53.3	286	97.0	299	10
11	34.0	32.5	86.0	164	261	80.8	45.0	42.5	68.5	287	97.3	268	11
12	34.7 B	44.2	96.0	149	235	80.8	51.4	41.6	67.2	229	93.7	242	12
13	41.1	46.7	95.8	134	183	78.2	53.4	35.8	44.6	218	91.3	217	13
14	70.8	43.5	96.3	115	161	73.9	55.1	46.4	41.0	178	81.2	158	14
15	82.6	32.6	96.0	94.5	159	70.7	61.0	55.6	43.6	143	88.9	135	15
16	86.1	31.4	98.2	90.2	134	61.6	45.8	40.0	45.5	143	103	98.1	16
17	78.2	45.9	100	87.6	114	60.5	48.6	57.7	57.6	141	129	87.0	17
18	34.9 B	47.2	98.4	87.5	115	66.1	54.8	43.6	69.8	160	187	112	18
19	30.1 B	48.8	81.4	76.2	112	63.5	52.7	37.5	62.1	137	200	103	19
20	30.9 B	49.2 B	90.5	80.0	91.6	71.8	55.0	39.1	57.6	104	188	91.4	20
21	36.8 B	58.7 B	89.2	88.3	89.0	75.5	43.1	38.9	47.6	104	130	88.5	21
22	37.0 B	56.3	85.0	93.0	88.8	76.7	50.4	37.3	47.7	92.5	237	87.1	22
23	41.5 B	44.6	85.1	86.4	95.3	67.0	59.6	43.0	48.5	90.6	327	86.5	23
24	46.6 B	48.9 B	85.2	103	143	56.7	55.2	41.4	46.4	134	305	81.6	24
25	36.2 B	56.4 B	87.8	136	160	56.7	51.1	41.0	45.2	161	316	82.3	25
26	39.6 B	49.1	88.5	203	159	53.2	51.3	44.4	52.1	248	295	88.2	26
27	48.7 B	48.3 B	88.7	259	224	60.3	55.4	44.7	57.0	299	246	91.3	27
28	51.2 B	50.8 B	89.1	256	204	60.1	58.0	37.4	47.0	255	225	99.0	28
29	33.3 B		158	281	179	54.6	60.0	41.5	40.5	217	228	92.3	29
30	34.2 B		234	393	190	55.3	56.6	47.8	42.9	181	228	107	30
31	30.5 B		304		173		55.7	55.6		151		108	31
TOTAL	1333.9	1188.5	2985.5	5628.7	6743.7	2506.3	1621.6	1670.9	1588.8	4432.9	4710.0	6308.3	TOTAL
MEAN	43.0	42.4	96.3	188	218	83.5	52.3	53.9	53.0	143	157	203	MEAN
DAM3	115000	103000	258000	486000	583000	217000	140000	144000	137000	383000	407000	545000	DAM3
MAX	86.1	58.7	304	393	436	169	61.0	102	69.8	299	327	493	MAX
MIN	30.1	26.7	48.8	76.2	88.8	53.2	37.0	35.8	40.5	29.9	81.2	81.6	MIN

SUMMARY FOR THE YEAR 2005
Total discharge, 3520000 DAM3
Mean discharge, 112 M3/S
Maximum daily discharge, 493 M3/S On 2005-12-03
Minimum daily discharge, 26.7 M3/S On 2005-02-06

NOTES: DATA ARE SUPPLIED BY THE UNITED STATES GEOLOGICAL SURVEY AND ARE PROVISIONAL.
B - ICE CONDITIONS
E - ESTIMATED

MILLTOWN
DAILY MEAN WATER LEVELS IN METRES FOR 2005

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	13.699	13.699	13.974	---	13.943	---	---	13.699	---	13.974	14.004	1
2	---	13.699	13.699	---	13.882	14.035	---	13.760	13.699	---	14.004	14.065	2
3	---	13.699	13.699	---	13.852	14.004	---	13.760	---	13.699	14.004	---	3
4	13.699	13.699	13.699	14.035	13.760	---	13.699	13.699	---	13.699	14.035	---	4
5	13.699	---	---	14.035	13.852	---	13.699	13.699	---	13.699	---	13.699	5
6	13.699	---	---	13.974	13.852	13.882	13.699	---	13.699	13.699	---	13.760	6
7	13.699	13.699	13.699	13.882	---	13.913	13.699	---	13.699	13.699	14.004	13.699	7
8	---	13.699	13.699	14.004	13.852	13.699	13.699	13.699	13.699	---	14.004	13.821	8
9	---	13.699	13.852	---	13.943	13.699	---	13.699	13.699	---	14.004	13.821	9
10	13.699	13.699	13.913	---	13.943	13.699	---	13.699	---	---	14.035	---	10
11	13.699	13.699	13.699	14.035	14.004	---	13.699	13.699	---	14.004	---	---	11
12	13.699	---	---	13.943	14.004	---	13.699	13.699	13.699	13.699	---	13.913	12
13	13.699	---	---	13.943	13.913	13.699	13.699	---	13.699	13.699	---	14.004	13
14	13.699	13.699	13.791	14.004	---	13.699	13.699	---	13.699	13.699	14.065	13.608	14
15	---	13.699	13.760	13.913	---	13.699	13.699	13.699	13.699	---	14.004	13.974	15
16	---	13.699	13.730	---	14.035	13.699	---	13.699	13.699	---	14.004	13.913	16
17	13.699	13.699	14.004	---	14.004	13.699	---	13.699	---	13.913	14.004	---	17
18	13.699	13.699	14.065	13.943	14.065	---	13.699	13.699	---	13.943	14.096	---	18
19	13.699	---	---	13.974	14.004	---	13.821	13.699	13.760	14.004	---	13.913	19
20	13.699	---	---	14.004	13.913	13.699	13.699	---	13.760	13.913	---	13.669	20
21	13.699	13.699	14.035	14.065	---	13.699	13.699	---	13.699	14.004	13.943	14.004	21
22	---	13.699	14.035	14.065	---	13.699	13.699	13.699	13.699	---	14.065	13.974	22
23	---	13.699	13.974	---	---	13.699	---	13.699	13.699	---	13.960	14.004	23
24	13.699	13.699	14.065	---	14.035	13.699	---	13.699	---	14.004	13.791	---	24
25	13.699	13.699	---	14.004	14.065	---	13.699	13.699	---	14.035	13.882	---	25
26	13.699	---	---	14.065	13.943	---	13.699	13.699	13.699	14.004	---	---	26
27	13.699	---	---	14.065	14.004	13.699	13.699	---	13.699	13.943	---	---	27
28	13.699	13.699	---	14.004	13.943	13.699	13.699	---	13.699	13.791	13.913	14.065	28
29	---		14.096	14.004	---	13.699	13.699	13.699	13.699	---	13.913	14.004	29
30	---		13.974	---	13.943	13.699	---	13.699	13.699	---	13.974	13.974	30
31	13.699		13.974		---		---	13.699		14.065		---	31

NOTES: THE WATER LEVELS ARE SUPPLIED BY NBPOWER CORPORATION.

TABLE VII

APPENDIX 5

MILLTOWN WATER QUALITY GRAPH

01021050 St. Croix River at Milltown, ME

Discharge data from: 01021000 St. Croix River at Baring, ME

Discharge, in cubic feet per second

8,000
1,000

Minimum
Maximum
Mean/Median

Specific conductance

150
100
50
0

Water Temperature C

30
25
20
15
10
5

Dissolved oxygen mg/L

11
10
9
8
7
6
5
4

pH

7.2
7.1
7
6.9
6.8
6.7
6.6
6.5
6.4
6.3
6.2

7 14 21 28 7 14 21 28 7 14 21 28 7 14 21 28

June 2005 July August September

APPENDIX 6

BOARD MEETING NOTES

DRAFT 1.2

KEY RESULTS

International St. Croix River Board Meeting
August 16, 2005
Downeast Heritage Center
Calais, Maine

Attendees:

Col. Curtis Thalken	Co-chair, U.S.
Ed Logue	U.S. Board Member
Joan Trial	US Board Member
Carol Wood	U.S. Board Member
Bill Appleby	Co-chair, Canadian
Joe Kozak	Canadian Board Member
Jessie Davies	Canadian Board Member
Bill Ayer	Canadian Board Member
Joe Arbour	Canadian Board Member
Robert Gourd	IJC - Canadian Commissioner
Allen Olson	IJC - U.S. Commissioner
Lisa Bourget	IJC – U. S. Secretary
Murray Clamen	IJC – Canadian Secretary
Stephen Keat	IJC Staff - Washington
Rudy Koop	IJC Staff - Ottawa
Peter Johnson	Canadian Board Secretary
Barbara Blumeris	U.S. Board Secretary

Invited Guests:

Matt Walsh	US Army Corps of Engineers
Lee Sochasky	St. Croix International Waterway Commission
Kim Hughes	NB Department of Environment and Local Government
Theo Willis	Maine rivers Alewife Research Project

GIS Project:

Matt Walsh gave a presentation on the status of the St. Croix GIS project. Matt, in collaboration with Tom Giffen of the U.S. EPA, is making excellent progress on the project. A base map has been prepared and work is continuing on the development of key layers. Maps will be distributed as PDFs

Actions:

- *Matt requested group to provide information on Water Quality monitoring stations e.g. type of stations and coordinates.*

- ***Bill Ayer to obtain air and water pollution source data and air and water quality monitoring sites for Matt from the New Brunswick Department of Environment and Local Government.***
- ***Kim Hughes can provide advance copy of WQ classification if desired; however this cannot be released till voted by Province.***

LNG Proposals

At the present time no permits have been applied for with respect to any of the proposed LNG facilities in the Passamaquoddy Bay and until such time as they are, the Board will continue to maintain a watching brief on these proposed projects.

Alewife Studies

Dr. Theo Willis presented the results of his work to-date on small mouth bass and alewife interactions. Joan Trial circulated copies of a document she had prepared based on the literature survey work of Allen Curry. It is planed that this will become a Board document available to public once Board review is completed.

Action:

Board members to review the Alewife document prepared by Joan Trial and respond to Joan as soon as possible with any comments they might have.

Air Quality

The Board discussed its possible role in relation to perceived air quality issues in the basin. It was decided that the matter would be deferred and addressed in the future as part of the proposed State of the Environment Report for the basin.

Saint John River

The IJC's recent request for the Board to consider assuming an oversight and advisory role for the Saint John River was discussed. There has never been any IJC Board oversight for this Order and the dam is considered by the IJC as an "orphan dam". It was decided that the Board would adopt a phased approach to this by reviewing the Order and identifying the activities the Board may be willing

to engage in regarding the IJC order. The Grand Falls dam has operated under an IJC Order since 1926. The Board will need funds from IJC to support the Secretarial support function for this additional effort. Once the board has reviewed orders and identified support that might be provided a response letter will be sent to IJC.

Actions

- ***Board Secretaries to circulate Order and request Board input on activities they might be willing to participate in/perform and any costs associated with this that would need to be covered by the IJC. Issues raised at meeting are is Dam operated in compliance with order and are there any concerns regarding dam safety.***
- ***Board Secretaries will then draft a letter from the Co-Chairs responding to the IJC's request for Oversight at Grand Falls dam indicating any financial resources that will be needed.***

Status of 2004-2007 Work Plan

Atmosphere Hydrology Model

Concerns were raised regarding the high cost of such models and issues such as determining who will run and maintain the model once it is developed. It was suggested that the model should be somewhere in between having all the bells and whistles and a spreadsheet (i.e., a Volkswagon – not a Cadillac).

Action:

- ***Lisa Bourget to see if year-end IJC funding might be available to get a start on this project.***

State of the Watershed Report

The proposal prepared by the Board Secretaries was discussed briefly. It was also suggested that a workshop could be held in the basin to determine priority issues / indicators for the report.

Action:

- ***Board Secretaries to organize a conference call to discuss the path forward in relation to this project.***

Outreach (web site)

The lack of functionality and the dated information on the Board's web site was raised as an issue. IJC staff advised that they are in the process of hiring someone with web site design expertise. It was suggested that links

be made to the various government environmental and resource agencies with responsibilities in the St. Croix basin.

Action:

- ***Board Secretaries to organize a conference call to discuss next steps.***

Expanding Board Presence in the Basin

Action:

- ***Board members to indicate to Board Secretaries which other Boards in the Basin, which they sit on.***

OTHER - International Bridge Crossing

Me DOT is moving forward with the new international Bridge crossing project between Calais and St. Stephen in conjunction with Canadian counterparts. Stephen Keat and Jim Chandler have spoken to Maine DOT to notify them that they need to notify the State Department and regarding the proposed action. If the State Department wished they may refer the project to the IJC for review.

OTHER - IJC Meeting/ Next Board meeting

The IJC requested the Board attend the IJC semi-annual meeting in Ottawa this Fall (October 2oth) as the IJC Spring meeting will be held in Seattle. Both Co-Chairs are unavailable at that time. The Board Secretaries will coordinate with the IJC on the spring meeting and perhaps the Board Co-chairs can participate in the spring meeting by VC.

Summary notes Prepared by Peter Johnson and Barbara Blumeris