

Notes from the Seventh Study Board Meeting
IJC Great Lakes Office
Windsor, Ontario
1-2 May 2008

1. Welcome/Attendance:

Board Members:

Jim Bredin, Dr. Jim Bruce, Dr. Jonathan Bulkley, Dr. Don Burn, Kay Felt, Jon Gee, Dr. Gene Stakhiv, Ted Yuzyk, Alan Chow

Managers:

Dr. Tony Eberhardt, Dr. Syed Moin

IJC Advisors:

Dr. Paul Pilon, Dr. Mark Colosimo

Public Information Officers:

Tom Black, John Nevin

Plan Evaluation Group & Task Team Leads:

David Fay, Wendy Leger, Bill Werick

Note: Action Items are displayed as bold and summarized in Attachment 2.

The agenda was reviewed and an additional item was added:

PIAG:

- a) Member roles and participation, and
- b) Response to PIAG member communications.

(Final Agenda is Attachment 1).

2. Review Status of Action Items from Minutes of Meeting #6 (Tony Eberhardt):

All items were described and status given. Regarding item 5, Steve Daly's proposal on ice modelling has been received and will be reviewed. Regarding item 6, Jon Bulkley mentioned recent presentations made by Jay Austin at "Great Lakes Days" at Michigan State University. **He will be invited to the Hydroclimatic Workshop in Cleveland in June.**

3. Updates from the Directors (Gene Stakhiv & Ted Yuzyk):

- a. IJC Semi-annual Progress Report – Gene gave an overview of the presentation made at the IJC Appearance in Washington on April 16th on Study progress. The presentation describes the interconnections of 24 projects and investigations. From the preliminary results, it was noted in comparing point-to-point cross-sectional data from the two data sets (1971 and 2007), that conveyance changes may account for about 13 cm the differences between Lakes Huron and Erie of rather than the 25 cm suggested by Baird. Bathymetric differences between the two data sets were also noted. Section 13 showed the greatest differences although the net cross-sectional area was about the same. The Board asked if the question of mitigation (when it would be considered) has been

answered by the IJC. Paul Pilon said that governments have not yet responded to the IJC's request for clarification.

- b. IPR Group Review on the Hydraulic and Sediment Modelling Strategy Report – Ted gave an overview of the review. Mark Colosimo and Paul Pilon are the IJC liaisons on this on-going process. The IPRG said that the level of investigations was appropriate and supported the Study's strategy. Further, the Review Group stated that the 3-D modelling was not required except in very limited, specific locations. In these situations physical modelling may be more appropriate method. They also said there is a need to approach and frame uncertainty. The IPRG consists of US Chair and reviewer, respectively - Eric Loucks and Brian Barkdoll and Canadian Chair and reviewer - Bob Halliday, and Colin Rennie.

The next review will be on hydroclimatic investigations on June 26, 2008 in Reston, Virginia at ASCE Headquarters. **The Hydroclimatic strategy paper is to be provided to the IPRG by June 20th.** Review documents will be available on the ASCE website linked through the IJC website after Commission's approval. A press release is forthcoming regarding this review.

4. Report of the St. Clair River Task Team (Syed Moin):

- a. Strategy Document: Syed outlined the approach being used to integrate all studies to answer the science questions – collection of basic & geometric data, in-situ measurements and modelling (1-D and 2-D).
 - i. HEC-RAS 1-D modelling is being performed from Fort Gratiot to Algonac. 1-D sediment modelling is using mobile based MOBED.
 - ii. 2-D RMA2 modelling is being performed from Fort Gratiot to St. Clair Shores. 2-D hydraulic modelling with TELEMAC also includes the delta into Lake St. Clair.
 - iii. Videographies of the river bottom – the “sand tongues” are actually cobbles and other features which suggested that they are stable. Dr. Dave Bennion should be able to give error bounds through his GIS analyses which would help determine our confidence regarding any bathymetric changes.
- b. On-going Work and Preliminary Findings:
 - i. Bathymetry of the St. Clair River (1971-2007) – Dr. Dave Bennion
 - 1) Work is complete and data are available on SharePoint (12 GB of data).
 - 2) Cross-sectional slices are available for visual interpretation.
 - 3) Prediction Standard Error Maps have also been created for the various data collection events and also a comparison of events – largest change was from 1971 to 2000 showing increased erosion along US shoreline and deposition along Canadian shoreline. Very little change is indicated from 2000 to 2007. Dr. Bennion, however, has cautioned the interpretation of these comparisons in view of different measurement techniques (single beam versus multi-beam), density of data (line data versus terrain), etc.
 - 4) Additional funds are being proposed to retain his services beyond his present contract.
 - ii. 1-D Basic Hydraulic Model – Dr. Jason Giovannettone

- 1) Calibrated and verified model is ready to hand over to other investigators – hand off to Dr. Art Schmidt (Univ. of Illinois).
 - 2) The V.T. Chow Hydrosystems Lab has created “hydraulic performance graphs” (Schmidt) for various flows in the St. Clair River and the elevations of Lakes Huron and Erie. Comparisons will be made of 1971, 2000 and 2007.
 - 3) A one-dimensional (1-D) unsteady flow model of St. Clair River was used to infer temporal variations in conveyance from 1962 to 2007. Annual estimates of parameters associated with conveyance were developed for years in which available flow and water-level data supported estimation. Trends in the magnitudes of parameters in each of seven reaches, delimited by water-level gauging stations, were investigated to assess trends in the corresponding conveyance. Data limitations prior to 1996 made identification of patterns or trends in parameters and conveyance difficult. Improved data from 1996 to 2007 provided a continuous 12-year period in which estimated parameters converged uniquely for all reaches. Preliminary results indicate that conveyance generally increased from 1996 to 2007 in the reach from gauging stations at Dunn Paper and Point Edward, a trend that was generally consistent with scattered parameter estimates dating back to 1962. Parameter trends in the reaches from gauging stations at Fort Gratiot and Dunn Paper and from Dry Dock and St. Clair State Police were used to infer that conveyance increased from about 1996 to 2002 followed by a decrease until 2007. Conveyance ratios are being computed from water-level data at gauging stations for the period 1962 to 2007 to extend the modeling results. **Discussion centered on completing his 1-D work in a timely manner and Syed will talk with Jim Nicholas about this.**
 - 4) **Steve Daly’s proposal to determine conveyance changes due to ice in the St. Clair River will be reviewed for possible approval (\$50 to \$71K).**
- iii. 2-D Hydraulic Modelling with RMA2 – Jacob Bruxer
 - 1) Draft final report was submitted showing preliminary results on water levels under different time periods
 - 2) Further work required to develop the hydraulic performance graphs
 - iv. 2-D Hydraulic Modelling with TELEMAC - this item was already discussed indicating lesser differences comparing lake levels with 1971 and 2007 data – that conveyance changes may account for about 13 cm of the differences between Lakes Huron and Erie of rather than the 25 cm suggested by Baird. Bathymetric differences between the two data sets were also noted. (for both TELEMAC and RMA2). Sensitivity analyses have also taken place.
 - v. Video transects, sediment and data collection – Dr. Krish Krishnappan
 - 1) Project progressing without delays
 - 2) Sediment samples being taken and interpreted
 - 3) Repeated experiments from 1967 and 1987 will begin

4) Syed will ask Scott Thieme to retrieve David Duane's 1967 data from USGS.

- vi. 1-D Sediment Modelling with MOBED – Dr. Krish Krishnappan
 - 1) Project slightly behind schedule for resource issues
 - 2) Flow in St. Clair River is being simulated: 4735 m³/s predicted compared to 4701 m³/s measured (Dec. 10, 2007)
- vii. Glacial Isostatic Adjustments – Dr. Frank Quinn & Chuck Southam
 - 1) Lake-to-lake has been rationalized
 - 2) Difference from the GIA could be 5.5 to 10 cm
- viii. NBS Comparison and Water Balance Closure – Al Pietroniro and Debbie Lee
 - 1) Draft report being finalized that explains the uncertainties and errors in estimating NBS
 - 2) Need to understand residual values
 - 3) Gridded (MESH) hydrologic data set for 1997-2006 compared to GLERL estimates
- ix. Uncertainty
 - 1) **Expert workshop proposed (Syed to follow-up)**– possible attendees: Dr. Marion Muste, Univ. of Iowa, Dr. Yakov Haimes, IWR and Dr. Michel Slivitsky.
 - 2) Possibly in May or June.
- c. Proposed Investigations:
 - i. Data: Rating Curves Review – reassessing relationships, improving curves on connecting channels (e.g., St. Marys & Niagara rating curves) – USACE-LRE (\$50K); EC-CCIW (\$20K) and EC-GLO (\$20K). Needs further review regarding who will perform the work (USGS?).
 - ii. Monitoring: Side-looking gauges – new location for a St. Clair River ADCP (funding in place - \$20K); Jim Bredin to provide assistance. This will be used instead of the gauge previously established by NOAA (damaged by ice).
 - iii. Hydraulic:
 - 1) 2-D modelling & visualization to be performed by CHS, funded by Canada, but too preliminary (arrived at noon - May 1, 2008) to review at meeting.
 - 2) Ice Effects proposal by Steve Daly of USACE-CRREL. \$68K
 - iv. Sediment:
 - 1) Side-scan sonar – Woods Hole Proposal. \$72K. The Board approved this proposal by e-mail.
 - 2) Sediment Coring & Substrate Test, Ship Effects on Erosion and Bed Velocity from ADCP proposals were all considered together– not considered critical by the Study Board. The proposal from Gary Parker requires further information.
 - 3) Surficial geology & sedimentation proposal – not approved.

5. Report from Hydroclimatic Group (Syed Moin):

- a. Syed provided information from the first draft of the Hydroclimatic Strategic Report for the IPR Group
- b. Further work suggested from that report:
 - i. Understand differences in NBS (component & residual) and perform sensitivity analysis
 - ii. Establish best – current estimates of over-lake and over-land precipitation:
 - 1) Dr. Fortin – use a combination of Canadian GEM model and observations to estimate precipitation
 - 2) Dr. DeMarchi – assimilated Radar and Observations for overlake
 - 3) Compare with standard - GLERL
 - iii. Establish independent estimates of evaporation:
 - 1) Canadian GEM/MESH (7 years) analysis
 - 2) CHARM analysis (30 years)
 - 3) CRCM analysis (30 years)
 - 4) Observations
 - iv. Establish independent estimates of runoff: EC-MESH system (30 years)
 - v. Establish and understand trends in all components
- c. Climate Workshop: June 9-10 in Cleveland, exact location to be determined.
- d. A summary of **Frank Quinn’s work on NBS** was also presented. This **report should be reviewed by the Data TWG and Hydroclimatic Group Leads before it is distributed widely.**

6. Report of the Lake Superior Task Team (David Fay & Tony Eberhardt):

- a. A summary of the Year 2 Work Plans was presented.
- b. Regarding specific comments and approvals:
 - i. Coastal Processes
 - 1) Approved (\$116,500 US & \$57,000 Cdn)
 - 2) Need to review the report completed last year by Chris Stewart
 - 3) Great Lakes Environmental Research Lab should be contacted for their wave data
 - 4) Need for required interim reports on progress.
 - ii. Commercial Navigation
 - 1) Approved (\$45,000 US & \$40,000 Cdn)
 - 2) Similar to Coastal TWG, need for required interim reports on progress
 - iii. Hydropower
 - 1) Approved (\$16,000 US & \$8,000 Cdn)
 - 2) Need to determine how thermal power will be considered and future condition of the industry – likely in conceptual narratives
 - iv. Ecosystem
 - 1) Partially approved:
 - a. the first item regarding an **interim assistant will be considered at Study level**, assistant to help all TWGs rather than specifically the Ecosystem TWG

- b. the part-time investigator to perform a literature review to develop a strategy proposal was approved (\$25,000 US).
 - c. data collection item requires more detailed description of what specifically will be collected
 - d. TWG travel and meeting expenses were approved (\$15,700 US and \$15,700 Cdn)
- v. Recreational Boating
 - 1) Approved (\$137,000 US and \$94,700 Cdn)
 - 2) Interim reports required.
- vi. Water Uses
 - 1) Approved (\$70,000 US) for water demand study
 - 2) Ben Dziegielewski may be the contractor for this work
- vii. Lakes Superior Regulation Task Team – funds were approved for coordination of the task team with plan development and other coordination with the Plan Evaluation Group (\$15,000 US – to USACE-Detroit District and \$30,000 Cdn – to EC-Cornwall)

7. Report from the Plan Evaluation Group (Bill Werick & Wendy Leger):

- a. Decision Framework described
- b. Fencepost Plans – pre-project; Michigan-Huron plan; Superior-for-Superior plan, etc.
- c. Need to define Study guidelines as soon as possible**
- d. Study Board interviews were presented.
 - i. Common agreement on overall expectations regarding St. Clair phase
 - ii. Less certainty for Lake Superior regulation phase
 - iii. Diversity of opinions on how climate change will be addressed
 - iv. Agreement on need to rapidly establish guidelines
 - v. Gene will write a paper regarding the topic of considering dredging, pre-and post dredging conditions, erosion, climate change, scope of Study Orders (or Terms of Reference) and options for potential Study recommendations.**
 - vi. Economic evaluation of environmental performance indicators – general opinion was that this is not required. Ecosystem TWG will be informed that they won't be required to do this.
- e. Year 2 Work Plan –
 - i. Work with TWGs on developing contextual narratives
 - ii. Develop decision framework – tying to conceptual narratives
 - iii. Hire an economic panel (3) – possibly Stephen Renzetti
 - iv. Decision workshops – October 2008 & March 2009
 - v. Circle of Influence workshops
 - vi. Interim Shared Vision Evaluation Model
 - vii. Budget Approved: \$100K US and \$110K Cdn

8. Public Interest Advisory Group (Kay Felt & Jim Bruce):

- a. Four public meetings held with one more scheduled in Muskegon, MI on May 3rd.
- b. Need a general presentation that PIAG members can use at meetings.**

- c. Three PIAG meetings held.
- d. Jim Anderson has developed a three-prong approach toward addressing public officials.
- e. The PIAG would like more face-to-face meetings
- f. PIAG members commented that some have not yet been contacted by the co-leaders of the TWGs to which these PIAG members have been assigned as liaison. **Task Team leaders will remind all TWG co-leaders of the need to include the PIAG, as well as Study Board, liaisons in communications and involve them in meetings.** It was reported that PIAG members were informed that some TWGs for the Lake Superior Task Team are just beginning their work and some PIAG liaisons have not yet been contacted for that reason.
- g. Need to determine values of stakeholders
- h. Need to have Canadian First Nation representation.
- i. Need to make it clear to PIAG members that when talking to officials or agencies, if they are unsure about an issue raised, they should state that they will refer the questions to Study Management.
- j. Communications (John Nevin):
 - i. Public Meetings in June (17-20) and August (12-16)
 - ii. More strategic approach
 - iii. Most success comes from meeting with media representatives prior to public meetings
 - iv. Strategic communications plan will be provided by John Nevin and Tom Black.**
 - v. PIAG Member Roles, Responsibilities and Conduct. There was a discussion of the guidelines for conduct of PIAG members, with particular reference to their ability or inability to keep personal or interest group views adequately differentiated from their roles as members of PIAG, and to maintain confidentiality of draft Study documents. It was agreed that communications would be developed in order to remind PIAG members of these guidelines, which were approved at the first two PIAG meetings, and to develop means for effecting compliance with the guidelines. **A draft communication will be prepared by Ted Yuzyk for review by the Study leadership and shared with IJC lead Commissioners.** Where applicable, this letter will also respond to particular PIAG member communications to the Study Board, PIAG and others. It was also suggested that in particular cases, it might be advisable to consider involving an expert on dispute resolution.

9. Phase I Final Report Outline (Ted Yuzyk):

- a. Draft Outline:
 - i. Chapter 1: Background/ History – authors to be determined
 - ii. Chapter 2: St. Clair Hydraulic Regime – Thierry Faure, Jacob Bruxer, Jason Giovannettone & Syed Moin
 - iii. Chapter 3: St. Clair Sediment Studies– Krish Krishnappan, Peter Ashmore, Marcelo Garcia, Ted Yuzyk

- iv. Chapter 4: Hydroclimatic and Implications for Michigan-Huron and Erie Levels – Al Pietroniro, Debbie Lee, Jim Nicholas, Carlo DeMarchi, Brent Lofgren, Murray MacKay and Vincent Fortin
- v. Chapter 5: Integrated Findings & Conclusions Synthesis of Chapters 2-4 – Gene Stakhiv, Ted Yuzyk, Syed Moin and Tony Eberhardt
- vi. Chapter 6: Remedial Options – Gene Stakhiv, Ted Yuzyk, Syed Moin and Tony Eberhardt
- vii. Chapter 7: Recommendations – Gene Stakhiv, Ted Yuzyk, Syed Moin and Tony Eberhardt

10. Other Business and Next Meeting: Sept. 17-18 in Chicago or Niagara Falls, Ontario.

Notes Prepared by Tony Eberhardt and Syed Moin

May 5, 2008

Revised May 14, 2008

Issued May 27, 2008

International Upper Great Lakes Study

Study Board Meeting

IJC Regional Office, Windsor, Ontario

May 1-2, 2008

Draft Agenda

Day 1 –Thursday, May 1, 2008

Item	Time	Topic	Lead
1	9:00 - 9:10	Welcome/ Review & Approve Agenda	Yuzyk/ Stakhiv
2	9:10 - 9:30	Review Status of Action Items from Minutes of Meeting #6	Moin/ Eberhardt
3	9:30 - 10:30	Updates from the Directors <ul style="list-style-type: none"> ▪ IPR Group on the Hydraulic and Sediment Modelling Strategy Report ▪ IJC Semi-annual Hearing & Progress Report 	Yuzyk/ Stakhiv
	10:30 - 10:45	Health Break	
4a	10:45 - 12:15	Report of the St. Clair River Task Team <ul style="list-style-type: none"> ▪ Status of Work ▪ Preliminary Findings ▪ Proposed Studies/ Activities 	Moin/ Nicholas
	12:15 - 1:15	Lunch	
4b	1:15-3:15	Continuation of St. Clair River Task Team discussions	Moin/ Nicholas
	3:15 - 3:30	Health Break	
5	3:30 - 5:00	Report from the Hydroclimatic Group <ul style="list-style-type: none"> ▪ Status of Work ▪ Preliminary Findings ▪ Second Workshop on Climate Variability and Change (June 4-5 in Cleveland) 	Pietroniro/ Lee

Day 2 – Friday, May 2, 2008

Item	Time	Topic	Lead
6	8:30 –10:15	Report of the Lake Superior Task Team <ul style="list-style-type: none"> ▪ Status of Work ▪ Year 2 Work Plans 	Fay/ Eberhardt
	10:15-10:30	Health Break	
7	10:30-11:30	Report from the Plan Evaluation Group <ul style="list-style-type: none"> ▪ Status of Work – Fencepost Plans ▪ Results of Questionnaires ▪ Year 2 Work Plan 	Leger/ Werick
8	11:30-12:00	SharePoint	Moin
	12:00-12:30	Lunch	
9	12:30-2:15	Report from PIAG <ul style="list-style-type: none"> ▪ Communication Plan ▪ Public Meetings ▪ Other issues 	Bruce/ Felt
10	2:15-2:45	Phase I Final Report Outline	Yuzyk/ Stakhiv
11	2:45-3:00	Other Business and Next Meeting (Tentatively Sept. 4-5 - Chicago)	All

Action Items from 7th Study Board Meeting – Windsor, Ontario

No.	Description of Action Item:	Action Lead:	Due by:
1	Discussion regarding terminating Dave Holtschlag's 1-D work	Syed Moin/ Jim Nicholas	Proceeding
2	Steve Daly's proposal to determine conveyance changes due to ice in the St. Clair River	Syed Moin/ Tony Eberhardt	Board approval received
3	David Duane's 1967 data from USGS.	Syed Moin/ Scott Thieme	Completed
4	Determination of logistics regarding an Expert Workshop on Uncertainty in May or June	Syed Moin	Completed
5	Review of Frank Quinn's NBS work	Nannette Noorbakhsh	Conducted by Hydroclimate TWG
6	Hiring of a Logistics Assistant (s)	Tony Eberhardt/ David Fay/ Syed Moin	Ongoing
7	Determination of Study Guidelines	Study Board members	May 30
8	Paper regarding the topic of considering pre- and post-dredging conditions, climate change and mitigation.	Gene Stakhiv	Circulated
9	Implementation of approved proposals and funding mechanisms	Tony Eberhardt/ Syed Moin	Completed
10	General presentation for PIAG members	John Nevin/ Tom Black/ Tony Eberhardt/ Syed Moin	Completed
11	Strategic Communications Plan	John Nevin/ Tom Black	June 15
12	Letter to Member(s) on PIAG Guidelines	Ted Yuzyk/ Gene Stakhiv/ Kay Felt/ Jim Bruce	May 30