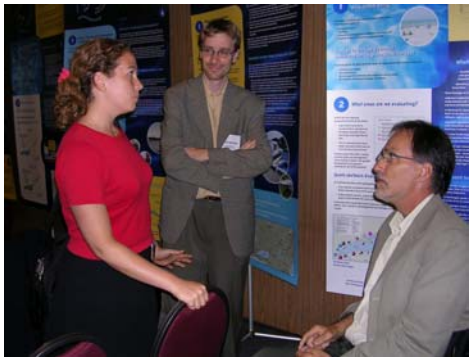
8th PROGRESS REPORT
to the
INTERNATIONAL JOINT COMMISSION
by the
INTERNATIONAL LAKE ONTARIO – ST. LAWRENCE RIVER STUDY BOARD

Covering the period
15 March 2004 through 23 September 2004



23 September 2004
Ottawa, Ontario
Buffalo, New York

INTERNATIONAL LAKE ONTARIO-ST. LAWRENCE RIVER STUDY BOARD

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Commissioners:

The International Lake Ontario-St. Lawrence River Study Board submits herein its eighth Semi-annual Progress Report, covering activities from 15 March 2004 to 23 September 2004.

1. SUMMARY

During the reporting period, the Study Team continued to refine the Performance Indicators and proposed Criteria that are being used in developing options for regulation plans and in their evaluation. In conjunction, the Public Interest Advisory Group (PIAG) organized a series of public consultation meetings across Lake Ontario and the St. Lawrence River communities in both U.S. and Canada focusing on the findings of the Study to date.

The Technical Working Group (TWG) activities were focused on finalizing the Performance Indicators (PI) and proposed Criteria and on liaising with the Plan Formulation and Evaluation Group (PFEG) to address specific issues arising as their study results are incorporated into the Shared Vision Model (SVM).

The main Board and Study team initiatives and accomplishments that took place in the reporting period are summarized below, with more detail provided under Section 2:

- Many members of the Study team participated in the May 18-19 St. Lawrence Institute Conference in Cornwall, Ontario. The theme and focus of this conference was the research conducted for the Study.
- A June 1-2 Board meeting was held in Syracuse on consolidation of the Performance Indicators and the SVM.
- Members of the Study team delivered briefings on the Study to a number of groups including US Congressional staff and the Executive Committee of the Montreal Metropolitan Community.
- The Environmental TWG made progress with the focus on incorporating results into their Integrated Environmental Response Model, linking it to the SVM, and disseminating environmental science work through peer review outlets.
- The Plan Formulation and Evaluation Group incorporated new and updated PIs in the SVM in preparation for the October 19-20 workshop. The group added stochastic and climate change hydrologic sequences to the SVM, developed four plan formulation strategies, and refined the economic and tradeoff procedures.

- The Study team interacted with the International St. Lawrence River Board of Control to establish lines of communication and address potential operational issues.
- The Year-3 Study Report was completed and released.

2. BOARD ACTIVITIES

On 6 April 2004 the Board held a conference call. At that time the Board provided guidance to the Communication team regarding the preparations for the August/September public meetings. PFEG was instructed to revise the list of Criteria, which was presented at the March workshop according to comments received. The Board also reviewed the U.S. budget and approved the final Canadian Year-4 budget.

The Board appearance at the Commission's spring semi-annual meeting in Washington DC took place on April 20, 2004.

Last May, the Board sponsored a 3-day conference at the St. Lawrence River Institute in Cornwall, Ontario with the emphasis being on the results and findings of the research conducted for the Study over the last three years. Participants presented scientific papers outlining their work as it relates to the Study mandate and the specific interest supported.

The Board held a meeting on June 1 and 2, 2004 in Syracuse, N.Y. At the meeting, the Board discussed progress and issues relating to Performance Indicators and the proposed Criteria; and reviewed plans for the summer public consultation meetings and necessary support to be provided to the PIAG in arranging these meetings. On June 3, 2004 the Study Board also held a meeting with the International St. Lawrence River Board of Control, as part of the two Boards' joint initiative to address operational issues and establish lines of communication to ensure timely input to and anticipation of Study findings. The two Boards have committed to continue meeting as opportunities arise.

Study representatives provided a briefing at the Commission's Executive Session held last June in Windsor, Ontario.

With respect to the Board's efforts to reach out to all sectors of the public, including elected officials, Study representatives briefed a number of organizations including the Montreal area municipal Executive Committee, US Congressional staff, the Management Committee of the Lake Ontario Management Plan, the Environment Committee of the Seaway Navigation Study, the International Water Level Coalition, the New York State Department of Environmental Conservation, Environmental Protection Agency, and others. The August 26, 2004 Montreal area municipal Executive Committee meeting was scheduled to communicate with regional officials prior to the public meetings in Dorval and Trois-Rivieres. As in all other meetings with agencies and interest groups, Study representatives provided the Executive Committee an outline of

the work that has been done and is being completed, with more detail on local issues i.e. as they related to the Montreal area interests, including Municipal and Industrial Water Uses, the Environment, Commercial Navigation, and Recreational Boating.

Fifteen public consultation meetings were organized by PIAG and held during August and September, with participation by Board members and TWG representatives. Where it was felt to be necessary because of the nature of anticipated local issues and concerns, arrangements were made for the participation of key consultant-representatives in some of the meetings. Coming out of these meetings, the Study Board and PIAG have subsequently started to prepare a list of the issues pertinent to our mandate, the lessons learned, and follow-up actions to be taken.

The Study Board prepared, printed and released their Year-3 report focusing on findings to date in the Study as was previously requested by the Commission. The report, in both English and French, is available in hard copy and on Compact Disks. The report is also posted on the Study web site.

The Board held a conference call on September 23, 2004 during which the Board discussed the 2004 public outreach activities and follow-up actions, guidelines for Year-5 activities and related provisionary budgets.

3. PUBLIC INTEREST ADVISORY GROUP ACTIVITIES

The Public Interest Advisory Group (PIAG) underwent some member changes during this period. Anjuna Langevin stepped down from the Canadian side of the PIAG and Ivan Lantz came back to fill her vacancy. On the United States side, Paul Finnegan left and Carol Simpson from NYPA in Massena joined the PIAG. The Canadian Communication Staff had a number of changes in personnel. Stephanie Dumoulin came on board to assist Michelle Tracy. Michelle, a month later took a position with the IJC staff in Ottawa. Her replacement was Roseline Mouana. Unfortunately, Roseline, tenure was very brief and she was replaced just before the summer meeting schedule with Greg McGillis.

Members of the PIAG participated at the St. Lawrence River Institute Environmental Conference held in April to showcase findings of the Study.

During this time frame, the PIAG's subcommittee formed to formulate and recommend changes to the International St. Lawrence Board of Control's (ISLRBC) communication plan, held several teleconference calls with its members and also representatives from the ISLRBC. These recommendations were discussed at the joint meeting of the Study Board and ISLRBC held in Syracuse.

The PIAG participated in the Study Board meeting held in Syracuse, June 1st& 2nd. They also held a meeting of the PIAG to discuss the upcoming summer public meetings and see how planning was progressing. The PIAG attended the joint meeting of the Study Board and the International St. Lawrence River Board of Control meeting held June 3rd.

The PIAG presentation committee held meetings at the St. Lawrence River Institute, and in Rochester and Syracuse to discuss plans for the upcoming PowerPoint presentations to be given at the August-September public meetings. These meetings included members of the PFEG to obtain correct information regarding Criteria, Metrics and Performance Indicators, the main information communicated to the public this summer. The committee held a number of conference calls and communicated via email to work out the presentation as well as the associated scripts and logistics. The PIAG tailored the presentation this year to outline specific Draft Criteria and Metrics for each particular location of the meeting. In order to ensure that the meetings were well publicized, the PIAG and communications staff established templates for advertising and issued formal invitations to local politicians. The meetings were also publicized through the Study Website and various list services including GLIN Announce, GLIN News, the IJC Listserv, Ripple Effects Listserv and the Canada News Wire. After a low turnout at the first couple of meetings, a mailing to all New York State residents in the database occurred to promote the remaining meetings. Attendance increased following these actions.

The PIAG held 15 public meetings during this period. The meetings were held at the following locations:

- Akwesasne – on August 12, 2004
- Jordan, Ontario and Massena, New York on August 18,2004
- Toronto, Ontario and Alexandria Bay, New York on August 19,2004
- Belleville, Ontario and Henderson, New York on September 1, 2004
- Gananoque, Ontario and Oswego, New York on September 2, 2004
- Cornwall, Ontario and North Rose, New York on September 15, 2004
- Dorval, Quebec and Greece New York on September 16,2004
- Trois-Rivieres, Quebec and Olcott, New York on September 17, 2004

The PIAG linked two sites via teleconferencing so that members of the audience could get input from the opposite site about concerns and questions. The PIAG and the Technical Working Groups developed twenty Panel displays, ten bilingual for the Canadian side and ten English only for the U.S. side, to showcase some of each group's findings. The use of the panels was a means of gaining public trust in the science behind the study to help with acceptance of the results and possible tradeoffs needed for the future alternative regulation plans developed by the Study. The panels were portable, but required some setup, which the communication staff and PIAG volunteers handled well. They were certainly the focus of discussion at many of the meetings and there was

appreciable attendance during the open house sessions that were held at 6 p.m., before the formal meetings at 7 p.m.

Communication staff placed ads well in advance in local newspapers and issued media releases that sometimes resulted in publication in "What's On" sections of the local newspapers. On the U.S. side use of "post-it" advertising on the front page of local newspapers increased awareness of meetings. Representatives of the media attended most meetings and there was coverage on local and national radio and major newspapers in Canada and local radio, television and newspapers in the U.S. Transcripts of each meeting were created and we offered simultaneous translation of meetings in Cornwall, Montreal and Trois Riviéres to fellow participants in both the U.S. and Canadian meetings.

Aside from the participants from the Study Board, PIAG and Technical Work Groups (TWGs), IJC Commissioners attended most of the meetings. The portion of the audience from the general public at these meetings ranged from 6 to well over 120 people. At each meeting, the PIAG took note of the concerns of citizens. Study Board members, PIAG members or TWG members, sometimes from both sides during teleconference portion of meeting responded to any question raised. The PIAG also asked the citizens about their views on the Criteria, Metrics and Performance Indicators being developed for the Study.

During this time frame, the PIAG developed and printed its year 2-3 report. It published two issues of the Ripple newsletter (Issue 8 developed during prior reporting period) to publicize the meetings.

Some of the factors that may result in changes to the PIAG's communication plan as we go into the last year of the Study include:

- Arrangement of a PIAG-PFEG workshop with invited guests from some of the organizations that attended the summer meetings to get their input into possible regulation plans prior to the January 2005 PFEG/Study Board Workshop.
- Arrangement of a half-day workshop on the south shore with the Coastal Erosion group to discuss the findings of this technical working group in more detail with riparian associations. Tradeoffs that will be required will also be considered at these workshops.
- The need to follow-up issues raised during the public consultations and develop action items to address the specific concerns of interests in the system that have come up through the meetings.
- A review of "Lessons Learned" will include issues of technology, location, timelines, issues management and outreach, among others.

The success of the meetings has been a direct result of the openness and transparency of the process. Ongoing efforts to reinforce these principles in the process going forward will lead to greater participation in the process and

enhancement of the Shared Vision Model among stakeholders and the general public.

4. TECHNICAL WORK GROUP ACTIVITIES

The Technical Working Groups continued to provide the Study Board the support and advice relating to appropriate studies, research and findings. In turn, as in past years, the Board provided the TWGs the necessary outside support in the delivery of the actual studies and research. Outside support was provided either by consultants or experts from government agencies.

The TWGs worked closely with the Board, PIAG, and the Plan Formulation and Evaluation Group in interpreting results and findings, in the integration of the findings into the development of proposed Criteria and Performance Indicators, and in addressing concerns stemming from their findings.

Below are summaries of the activities of these TWG, which took place during the reporting period.

4.1 Coastal TWG

Two consultants under contract are conducting the investigations for the Coastal TWG. Pacific International Engineering is contracted by the Canadian section, in conjunction with Environment Canada Quebec Region, for the work on the Lower St. Lawrence River. The consulting firm W. F. Baird and Associates is contracted by the U.S. section for the work covering Lake Ontario and the Upper St. Lawrence River. Work during the current reporting period has been primarily focused on development of impact functions and their integration into the Shared Vision Model. The group's consultants met with PFEG members to discuss output of technical investigations and to assist in the development of algorithms for input to the SVM. The TWG also developed a contextual narrative for PFEG.

4.2 Environmental TWG

Last summer there was a change in the Canadian membership of this group. Brad Parker took on other challenges with the Canadian federal government. Dr. Jeff Watson was engaged as a consultant to lead this group.

With most field work now completed, the focus of the group during the reporting period was to finalize model development, to prepare final reports that synthesize and document the completed studies, and to disseminate the work through peer reviewed outlets. Work on the muskrat (PIs) was recently completed and submitted to the Integrated Ecosystem Response Model (IERM) developers. The

only remaining fieldwork to be incorporated involves fish studies in the Akwesasne area. These studies are scheduled to be completed by October 2004. Development of the lake fish model has progressed well and is scheduled to be completed this fall. A current version is providing useful input for the IERM development.

The initial version of the IERM was distributed to the Environment TWG (ETWG) members in late June, and a conference call was held July 7 to discuss any problems with downloading the program or interpreting results. In conjunction with the model release, an "IERM Discussion Board" was set up for ETWG members to be able to post queries or other comments about the model. The Discussion Board also provides a means for documenting refinement of the model through ETWG member input and responses. Also in June, a web page for ETWG use was initiated, to provide better access to documents, to maintain other communication between ETWG members, and provide information on meetings. This site is for internal use of the ETWG members.

The modeling integration sub-group met on August 18th in Buffalo to compare progress on modeling PIs; to determine what needed to be done to prepare for the October 19-20 workshop; and to discuss how PIs would be aggregated (from over 200 different PI metrics in the model) to simplify the presentation of the relative impact of alternative plans on the ecosystem. Aggregating PI's will involve identifying a relatively small group of PI's or PI averages that capture the ecosystem response in terms of sustainability, diversity, and productivity. It will also involve evaluating PI sensitivity and uncertainty/variability. The job of organizing the process for PI aggregation and averaging was assigned to each of the PI subgroup leads (i.e., wetlands quantity and quality, fish, mammals, birds, special interest species), and discussions were held to try to determine how best to approach incorporating the region just upstream of the Moses-Saunders dam, where no specific studies have been conducted.

Version 2.0 of the IERM was issued on September 17 as the basis for discussions at a full ETWG meeting on September 27 in Montreal where the IERM evaluation will be finalized as much as possible. The resulting version of the IERM model will be incorporated into the SVM for the October 19-20 study workshop.

The ETWG has made provisional plans for peer reviews as the numerous environmental studies near completion this fall. One initiative planned is to publish overviews of some of the studies in a special issue of the publication "Environmental Monitoring and Assessment" which is peer reviewed. Another is by presentations at the 5th International Symposium on Eco-hydraulics in September. These presentations will be published in Symposium proceedings. The group is also proposing to submit a session for next year's International Association for Great Lakes Research (IAGLR) conference, which will focus on the organization and results of the LOSL study as a whole.

The IERM can be downloaded by accessing the URL www.limno.com/ierm/. Information for this download can be found on the ETWG web page.

4.3 Recreational Boating/Tourism TWG

During the reporting period, the group met in Cornwall in May 2004 and Gananoque in July 2004. During these meetings, proposed criteria were revised by the TWG based on the group's review of the combined U.S. – Canadian PIs by reach.

The TWG leads met with the Economic Advisory Committee in Burlington in June 2004. The economic advisory group suggested different performance indicators be used in the Shared Vision Model than those originally submitted by the TWG. Data for these performance indicators were submitted to PFEG for their use in the Shared Vision Model.

A survey of recreational boating impacts specific to the area below the Moses-Saunders Power Dam was developed and implemented. Members of the St. Regis Mohawk Tribe were the primary recipients of the survey. Survey returns are currently being analyzed and a report will be written.

A final report from the TWG is currently being drafted and is anticipated to be complete in the next few months.

4.4 Commercial Navigation TWG

During the reporting period, the Commercial Navigation TWG received the Economic Impact Model (EIM) and concentrated its efforts on the review of the model and the development of Commercial Navigation cost curves for incorporation into the SVM.

The TWG met three times to review the Impact Model. Numerous suggestions were made to the contractor on the Operating Manual, as well as input on the logic the model used to calculate transportation costs. These suggestions were incorporated by the contractor into the Operation Manual and the models' computational logic.

The development of Commercial Navigation cost curves for incorporation into SVM involved numerous discussions and a meeting in Washington D.C. with the contractor, a PFEG and a TWG representative. The group produced the Scope of Work for developing the cost curves. The curves would be developed for three general geographical areas:

- Lake Ontario (from Port Weller to Cape Vincent)
- The Seaway, (from Cape Vincent to the Seaway entrance)

- Montreal to Batiscan (from the Seaway entrance to Batiscan)

The data set needed for the SVM requires that simulation model operations be simplified so that total transportation cost depends on one variable only, namely, water levels. A number of simulation runs will be made to isolate commercial navigation costs arising from three factors: costs due to ship loading according to available water level, costs due to currents and costs due to high gradient delays.

4.5 Hydroelectric Power Generation TWG

During the reporting period, the Hydropower TWG continued to provide input to the Study Board and PFEG.

- The TWG reviewed Peaking and Ponding issues, including those presented at the June 2 Study Board meeting in Syracuse and provided clarifications.

- Members of the Hydropower TWG participated in meetings with PFEG and the Economic Advisory Committee (June 29/30), with primary focus on valuation of hydropower for input into the Shared Vision Model. As a result of close consultations with and advice from the Economic Advisory Committee, there was progress made regarding application of marketing prices.

4.6 Water Uses TWG

The activities of the TWG during the reporting period were focused on coordination with and support of the PIAG and PFEG, through various meetings and conferences.

Following a meeting held earlier with the Quebec Department of Public Security, two meetings were organized to inform the Montreal area municipalities (the Study area covering the Lower St. Lawrence River) about the vulnerability of the water treatment plants with respect to water level variations. The first meeting took place on April 15 and was intended for the seven most vulnerable plants identified in the Study. The objective of that meeting was to explain to the municipalities how the critical levels were obtained and to make them aware of the relative vulnerability of their plants, as well as obtain feedback on the findings.

The second meeting was held especially for the Montreal Metropolitan Community, in order to raise the issue to the municipal elected officials, before the public meeting organized by the PIAG in Dorval (September 16, 2004). The meeting took place with the Executive Committee members of the Montreal Metropolitan Community on August 26, 2004. Representatives of the Board and

members of the Ecole Polytechnique who have provided consulting support to the TWG gave a presentation to the Executive Committee.

A document was also sent to all the Lower St. Lawrence River participating municipalities, including the upstream Akwesasne communities up to Becancourt downstream, informing them about the main findings of the Study (Executive Summary). This was a commitment given to the municipal representatives at the time the consultants obtained their help and collaboration in collecting water uses data.

A TWG meeting took place on May 5th in Montreal to present the integrated report (Lower St. Lawrence and Lake Ontario) and the progress with the integration of the PIs in the SVM. Following that meeting, the PIs were refined and documented with the production of PI summaries (1-page, metadata type document) for each PI retained (infrastructure costs, lower quality, taste & odors).

Regarding work on the U.S. side, a consultant report concerning the Ginna power plant, was also presented at the meeting. Suggested corrections and revisions were incorporated and a final version was presented in June 2004.

In addition, the critical levels gathered in the earlier consultant studies (Phase I & II) for the Rochester area were revisited in order to identify any vulnerable plants. It was identified in these two reports that no plant was susceptible to reaching its critical level (where this was known) under lower water level regulation boundaries (241.08 ft).

4.7 Hydrologic and Hydraulic (H&H) Modeling TWG

Activities of the Hydrologic and Hydraulic TWG were focused on finalizing several projects initiated in the previous years.

- *Stochastic Flow Generation*

This major component of generating net basin supplies (NBS) achieved several milestones with minor fine-tuning and adjustments continuing. Dr. Oli Sveinsson reissued the Stochastic Analysis Modelling and Simulation (SAMS) to improve the employment of unequal record lengths on the Great Lakes and Ottawa River systems. Using SAMS, Hydro Quebec produced the synthetic time series for the net basin supplies (NBS) for the four Great Lakes basins and about fifty Ottawa River watersheds categorized into five hydrologic regions. A meeting was held in July 2004 to finalize the results and scope out the final report for the three years of project. Two sets of data are being produced, one analyzed set of 20,000 years of stochastic supplies and a second set of raw 50,000 years length.

Flow routing of the NBS was carried out in Environment Canada's Cornwall office that required code adjustments in the model to account for hydrologic conditions

beyond the capabilities of the model. Sample data for 20,000 years of flow sequences were employed and information for the net total supplies from Lake Erie and NBS into Lake Ontario were provided to PFEG. The model developed by the Ministry of Environment of Quebec (MENVIQ) required similar code changes. The flows are now available for the use of PFEG.

- *Climate Change Scenarios*

This NBS component of the climate change project was finalized in year 3 of the Study. Routing of flows to Lake Ontario and Ottawa River system was finalized during this reporting period. Ice roughness factors reflecting the new climate regime were finalized for use in the routing model. Results are now available for use in the SVM.

- *Water Temperature Modelling*

This project consists of three components. In the first part overall lake temperature regime is being developed using a 3-D hydro-thermodynamic model developed at Ohio University. A contract with Dr. Robert Chu of Aqualinks and Ohio State University was developed and the work is in progress for the temperature modeling of the selected sections of Lake Ontario. Necessary information was forwarded to Fisheries scientists for their use.

For the second project, the fisheries group of the Environmental TWG requested temperature series for the Bay of Quinte region. The Burlington office of Environment Canada developed a hydrodynamic-temperature linked model. The model was made operational during this reporting period, calibration and verification runs were carried out, as were 52 years of simulations. Results were processed and made available to researchers working on completing other work for the Study relating to the Environmental TWG issues.

For the third project, thermal loads out of St. Lawrence River at Cornwall were required to continue similar modelling in the downstream reaches of the river. Dr. H.T. Shen spearheaded this project and developed a separate model. This project is now complete with information residing on the Study ftp site.

- *Local Tributaries Forecasting*

Project work for downstream snowmelt forecast was finalized. The work under the lead of Dr. Denis Lefaivre from DFO was a combined effort of several agencies using hydro climatic models to develop flows from tributaries into St. Lawrence River below Cornwall.

Work has progressed on modelling of the local inflows using Sacramento Soil Moisture Accounting Model, the Snow-17 model, RES-J reservoir operations model and other relevant routing tools for the U.S. watersheds. The basins being studied are – Racquette, Oswegatchie, Grass, Salmon and Saint Regis.

- *Meta Data*

All project leads are developing the Meta Data description for the data being acquired, altered or generated as part of the study process. Meta Data for the hydrodynamic modelling of the St. Lawrence River was developed and posted on the Study FTP site.

4.8 Information Management

The focus of the Information Management TWG during the reporting period was to implement key components of the Study's integrated information management (IM) strategy. These components include the advancement of Internet-based geographic information systems (GIS), development of bilingual metadata listings of study data and reports, design of a comprehensive document management system and initial development of web-based information discovery tools.

- *Distributed Web Mapping Application*

A distributed web mapping application is currently being enhanced for the study to integrate data from the Province of Ontario – Land Information Office (LIO), serving data for Ontario, and Environment Canada - Quebec Region, serving data for the Quebec and the Great Lakes Commission, serving data for New York State. The application is currently built on the University of Minnesota's Mapserver. The Quebec node of the IM TWG has already developed a web mapping service. Additional web services are currently being developed.

- *Metadata Compilation and Posting*

The Great Lakes Commission, in conjunction with the Ontario node of the TWG has been developing input templates for metadata collection of the data and documents. After developing a draft of the templates, the TWG sought input from the Environmental TWG. The templates are currently being fine tuned, at which time development of the database will take place. Upon further review and testing an on-line tool will be in place.

- *Document Management System*

The IM TWG is currently integrating the above components into a comprehensive system for the study that will include access to study documents, reference materials, and metadata records and project results.

- *Database Management*

The Great Lakes Commission, Environment Canada - Ontario Region, Ontario Ministry of Natural Resources, and Environment Canada – Quebec Region have been providing FTP support to facilitate data sharing.

- *Linkages with the Shared Vision Model*

During this period, the TWG began to conceptualize functional linkages between the IM strategy and the SVM. The TWG produced detailed options for long-term information management strategies for the IJC to consider.

4.9 Plan Formulation and Evaluation TWG

- *The Shared Vision Model*

The Plan Formulation and Evaluation Group (PFEG) worked on updates and improvements to the Shared Vision Model in preparation for the next Practice Decision Workshop to be held with the Study Board in October 2004.

Members of the PFEG liaised with the various TWGs to incorporate PIs into the Shared Vision Model (SVM). Recreational Boating, Hydropower and Water Uses PIs have all been modelled in the SVM.

PFEG is working with the Hydro Power TWG, along with the Economics Advisory Committee and the three hydro companies, to improve on the market prices used in the model.

The Economics Advisory Committee also provided advice regarding the use of input/output model results from the Recreational Boating TWG. They advised that the IMPLAN results could not be added to willingness to pay and should only be reported as additional information in the contextual narratives.

PFEG incorporated all Lower St. Lawrence River flooding PIs into the SVM and expects to have the Lower St. Lawrence erosion PIs incorporated shortly. Work is also underway to link the SVM with the Flood and Erosion Prediction System the model used by the Coastal TWG for flooding and erosion damages on Lake Ontario. Time was spent with the Coastal TWG in addressing how to measure economic benefits of erosion damages.

Initial cost curves have been derived for Commercial Navigation from their operational model and incorporated into the SVM, however PFEG is still awaiting the actual PI functions from this TWG.

The Environment TWG made significant progress in developing the Integrated Environmental Resource Model (IERM) and it is anticipated that the IERM will be linked to the SVM by the October workshop. In addition, PFEG worked out a strategy with the Environment TWG for reducing the number of PIs used in the decision process through a 3-bin process. The ETWG will run a number of plans through the IERM and identify which PIs are not affected by changes in the plan, which PIs all move in the same direction and can be grouped, and which PIs are

influenced by changes in the plan and react differently than other PIs. It is hoped that this process will allow the Environment TWG and PFEG to zero-in on those PIs that really influence the decision process.

The SVM was updated with all new baseline hydrology fixing a number of errors. The Stochastic time series was modelled and a number of 100-year time series were pulled out that represent extremely high or extremely low periods. The Climate Change time series were added to the SVM. Hydro operations of Hydro Quebec were added to the SVM and the model was changed to calculate added flow to Lac St. Louis from the Ottawa River for the non-historic supply sequences.

- *Plan Formulation*

The PFEG is following four strategies towards plan formulation. They are working on quasi-optimization plans based on Performance Indicator results. So far a Recreational Boating optimizer and a Hydro optimizer have been developed. Further work on the optimization plans is continuing, but has been difficult without all the PIs in the SVM. The second method for plan formation is to tweak plan 1998, the third is to begin with the pre-project plan to see if more natural regulation of the system is possible. Finally, PFEG is accepting plan ideas from various interest groups and the public who have suggestions about how the system could work better.

- *Economics Advisory Committee*

The Economics Advisory Committee developed a draft report addressing a number of outstanding economic issues. PFEG directed the expert economists to discuss and debate the issues and develop a consensus recommendation on how the issue should be addressed within the Study. Thirteen issues have been dealt with including fungibility, or the ability to compare performance indicators, discounting, input/output model results, adaptability, capping of damages, beach accretion, mitigation, value of peaking, simulation time, analytical time and sampling, value to society, value of lost energy production, and reporting metrics. The full report from the Economics Advisory Committee is expected be available by October 2004.

Of particular note is the guidance provided with respect to fungibility. The economists recommend that all economic indicators use dollars as the units of measurement and the concept of net economic benefit be used to provide comparability between the PIs of different interests such that a positive number means an interest gains net benefits from a plan and a negative number means an interest loses net benefits from a plan relative to Plan 1958D with deviations. All economic PIs within the SVM will be reported in terms of average annual benefits. The one exception will be the environmental TWG that will report in terms that accurately portray the environmental consequences of alternative water management plans (e.g. population size, habitat area etc.)

- *Plan Ranking and the Necessary Trading of One Type of Benefit for Another*

Dr. Frank Lupi of Michigan State University is providing expert assistance in the decision process. At the June 2004 Study Board meeting, Dr. Lupi presented three trade-off approaches that could be pursued including:

> *1. Following the process done in March with no additional tradeoff techniques;*
> *2. Building on the process at March using straight forward ranking techniques and;*
> *3. Implementing more formal trade-off procedures.*

The Board agreed to pursue the second option for the October workshop, but requested that Dr. Lupi present on the benefits of more formal trade-off procedures in this process. Dr. Lupi will continue to work with the Board throughout the rest of the Study to help design a clear and defensible approach that reflects the values people assign to various levels of economic and non-economic impacts.

- *Other Activities*

PFEG prepared a template for the contextual narratives to be prepared by each of the TWGs. The contextual narratives are to explain baseline conditions, key trends in an area of interest, how an interest adapts to changing water levels, and how an interest is affected by a management plan. PFEG also develop templates for 2-3 page PI summaries, to give an overview of each PI.

5. COMMUNICATIONS

During the reporting period, the communications team supported the work of the Study Board, Public Interest Advisory Group, and the Technical Work Groups, including the following:

- Organized the Public Interest Advisory Group's U.S.-Canada twinned public meetings in 15 locations in August and September.
- Produced a PowerPoint presentation for the summer 2004 public meetings, which explained recent findings and the Shared Vision Model.
- Coordinated the preparation of panels for display during the public consultations on the Study and each of the Technical Work Groups.
- Developed targeted media localization strategy and acted proactively to create opportunities for media relations efforts.
- Prepared a survey on the presentation and different aspects of the meetings and comments to be fed back to the Study for adjustments
- Wrote an article for *FOCUS* that reviewed the progress of the Public Interest Advisory Group Consultations.

- Created advertisements for public meetings in local newspapers on Public Consultations.
- Created media kits, arranged interviews and provided speaking notes and advice to spokespeople, as required.
- Published the Study Newsletter Ripple Effects in May 2004 (Vol.8), which announced the PIAG public meetings, explained the SVM and the environmental challenges.
- Organized a meeting in Khanawake
- Published Volume 9 of the Newsletter in July 2004, which again announced the public meetings, discussed the St. Lawrence River Institute of Environmental Sciences Conference, survey results on Recreational Boating and covered PI suggestions and responses. It also included a mail-back piece to request the Year Three Reports.

6. BUDGETS AND TIMELINE

The year-four work plans and associated budget was provisionally approved during the January 28, 2004 Board teleconference, with subsequent revisions. The table below shows the distribution of funds among the various Study groups. For Canada, the table shows the status of commitments to date. For the U.S., the table gives approximate values of the amounts committed as of the end of the fourth U.S. fiscal year. The U.S. shortfall identified in the last semi-annual report has been eliminated since in several cases the actual required funding for activities was less than the approved estimates. Similarly, the Canadian shortfall shown in the table below is expected to be eliminated by the end of the Canadian fiscal year.

Canadian – U.S Funding Report
(as of 23 September 2004)

	CANADA ($Canadian)		U.S. ($US)	
	Budget (1 June 2004)	**Committed**	**Budget** (1 June 2004)	**Committed**
Commission [(1)]	197,000	197,000	25,000	25,000
Study – Secretariat [(1)]	324,000	324,000	260,000	260,604
PIAG [(1)]	300,000	300,000	250,000	196,045
Environment [(2)]	750,000	754,000	343,538	340,207
Coastal	81,338	83,838	200,000	207,371
RecBoating	40,000	37,500	120,000	120,935
Hydrologic & Hydraulic	88,000	28,000	60,000	62,370
Commercial Navigation	40,000	35,243	42,000	43,901
Water Uses	62,000	59,976	20,000	20,000
Power	0	0	0	0
IM (Common Data)	115,000	90,000	50,000	50,000
Plan Formulation & Evaluation	430,000	303,400	340,000	347,546
Others	4,000	4,000	0	0
Grand Total Budget	2,431,338	2,216,957	1,710,538	1,673,979
Available	2,368,000	151,043	1,675,135	1,156
Shortfall	63,338		35,403	

Notes:

[(1)] Canada: Commission, Secretariat and PIAG - Full budgets shown as "Committed", since for these activities, most of the expected expenses are estimates.

[(2)] U.S. Environmental values include Akwesasne Studies, which are not entirely environmental.

Respectfully submitted,

_____ DOUGLAS CUTHBERT Canadian Co-Director	_____ EUGENE STAKHIV U.S. Co-Director
_____ ANDRE CARPENTIER	_____ FRANK QUINN
_____ LYNN CLEARY	_____ PETE LOUCKS
_____ IAN CRAWFORD	_____ FRANK SCIREMAMMANO
_____ HENRY LICKERS	_____ SANDRA LeBARRON
_____ MARCEL LUSSIER	_____ DAN BARLETTA
_____ STEVEN RENZETTI	_____ JAMES SNYDER
_____ ED ERYUZLU Canadian General Manager	_____ ANTHONY EBERHARDT U.S. General Manager

APPENDIX #1

Attendance at Board meetings and Conference Calls

6 April 2004 – Conference Call

Doug Cuthbert
Steven Renzetti
Andre Carpentier
Marcel Lussier
Ed Eryuzlu
Eugene Stakhiv
Frank Quinn
Al Schiavone (for Sandra LeBarron)
Dan Barletta
Tony Eberhardt

1 and 2 June 2004 – Syracuse, N.Y.

Doug Cuthbert
Lynn Cleary
Andre Carpentier
Ian Crawford
Ed Eryuzlu
Eugene Stakhiv
Pete Loucks
Frank Quinn
Sandra LeBarron
James Snyder
Dan Barletta
Tony Eberhardt

23 September 2004 – Conference Call

Doug Cuthbert
Steven Renzetti
Andre Carpentier
Ian Crawford
Marcel Lussier
Lynn Cleary
Ed Eryuzlu
Eugene Stakhiv
Frank Sciremammano
Sandra LeBarron
Dan Barletta
Tony Eberhardt