Addendum to Study Strategy of February 10, 2016

RAINY-NAMAKAN LAKES RULE CURVES REVIEW
Study Board Response to Public Comments

July 7, 2016

The Rainy-Namakan Lakes Rule Curves Review Draft Study **Strategy** was available for public comment from February 25- March 21, 2016. Several comments were received from the Board's Resources Advisory Group and Public Advisory Group members, Grand Council Treaty 3 as well as members of the public. Comments ranged in nature from purely editorial to those that target content and strategy – the Study Board appreciates the time and effort taken by all who submitted comments.

The Study Board has considered each comment carefully and has issued this Addendum that responds to the general themes of comments received. It was determined that the comments fell within three main themes: Comments Considered Outside the Scope of Work, Incorporation of Past Research, and Modelling Considerations.

Study Board's Response to Comments Considered Outside the Scope of Work:

A number of the comments received on the draft Study Strategy, as well as comments received at meetings in International Falls in March 2016, centered on making changes in areas that the Study Board considers outside of its mandate or outside of the purview of the IJC, or both. These include the following suggestions:

1. Coordinating regulation with dams in the Seine River system.

The Seine River watershed is entirely within Canada. The operation of dams within this watershed is regulated by the Province of Ontario. As such, the Study Board understands that it is not within the **jurisdiction** of the IJC to pursue coordinated operations.

The Study Board will not be examining the development of coordinated regulation with Ontario as part of this study. It will, however, examine the available storage capacity in this system relative to Rainy Lake under high inflow conditions. **Peaking** and **ponding** at run-of-river dams in this system (e.g. Sturgeon Falls) have no substantial effect on the level of Rainy Lake as they are short-term (daily) deviations from the average flow. The limited quantity of water which may be stored above these dams must be released downstream quickly during rainfall events.

In a related comment, a suggestion was made to, "… explore the total water inputs to the system, and assess the contribution of total inflows to the water levels of Rainy Lake and Namakan **Reservoir**". The Study Board is producing a series of fact sheets which will provide an overview on a variety of topics that are frequently raised regarding lake level regulation. This topic, examining natural inflows into Rainy and Namakan Reservoirs, will be included in the fact sheets.

2. Regulation Board to replace Rule Curve-based regulation

There are many approaches that could be adopted to carry out the regulation of Rainy Lake and Namakan Lake with varying resource requirements. The Study Board views exploration of these topics and development of detailed recommendations for design of non-Rule Curve approaches to be outside the mandate of the Study Board. The Directive from the IJC states that the Study Board is to "…undertake the studies required to develop a rule curve **evaluation** report providing the Commission with sufficient information required to evaluate options for regulating levels and flows in the Rainy-Namakan Lakes." The investigation, therefore, will center on developing and evaluating the relative merits of different Rule Curves for the regulation of these lakes.

If, during its investigations, the Study Board identifies new approaches to the way the Rule Curve-based regulation is conducted which could result in significant improvements in outcomes, it will include these as recommendations to the Commission.

3. Channel Restrictions on the Upper Rainy River

Ranier **Rapids** and the channel cross section near the Point/Seven Oaks area in Ontario are well-described restrictions to the total rate of **outflow** from Rainy Lake. Because of these restrictions, at relatively low spring lake levels, the maximum outflow is limited, even when it is clear that inflows are rising significantly. Higher outflows require higher lake levels to provide sufficient pressure to overcome these channel restrictions.

A full analysis of modifications to these channel features is a complex undertaking. It would necessarily involve extensive engineering design and analysis, working with the rail bridge owner, state, provincial and local authorities as well as developing a full understanding of the potential effects of the changes on downstream interests, from the town of Fort Frances to the Winnipeg River. Also, there are questions about the IJC's authority to pursue such a project under the Boundary Waters Treaty or the Rainy Lake Convention. For these reasons, and given the limited time and resources of the Study Board to report on Rule Curve recommendations, this will not be pursued as part of the study. Other modelling work being undertaken by the IJC may produce some general results indicating what additional flow benefits could be achieved in theory, and the Study Board could provide recommendations for further investigation depending on the results of this analysis.

Study Board's Response to Comments Regarding Incorporation of Research Studies Leading up to Review:

The Study Board's final report will benefit from the years of research that preceded this study, and the **peer review** of studies commissioned by the IJC to support the Study Board's work. The Study Board's assessment of what information the various studies provide and how important that information is in evaluating rule curve performance has begun and will continue throughout 2016. The Study Board has no preconceptions about where that assessment will lead. The Study Board's goal is to hear from stakeholders, decision makers, indigenous communities and other experts about what these studies say and how they should be used in making recommendations about the rule curves. To that end, the Study Board will develop an initial assessment of how each study can be applied to the Study Board's task and present that assessment in plain language to the Public Advisory Group and the Resources Advisory Group as well as the original report authors. This assessment will include the first Weight of Evidence table and an initial list of performance indicators that will be used in the Integrated Ecosystem Response **Model** (**IERM**) and the **Shared Vision Model** (SVM).

To encourage collaboration in the development of the initial assessment, the Study Board will make all the reports that will be considered available online, including both those commissioned by the IJC and those performed by others, so that others can read them and present their opinions, questions and advice to the Study Board as they develop the initial assessment. For currently available reports, please continue to monitor posted background reports at http://ijc.org/en_RNLRCSB.

Knowing the concern that resulted from the high water event of 2014, the SVM will be used to directly compare the effects of the 1970 and 2000 rule curves on water levels during the 2000 to 2014 time period. A range of rule curve alternatives will be analyzed using the SVM to assess the tradeoffs from lower Namakan levels. The SVM will also have graphs that show how the 1970 rule curves would have worked had they been used after 2000.

Simultaneously, the Study Board will develop performance indicators based on this research and encode them into the IERM and SVM. These models will be used in practice decisions that will help clarify how the Study Board's interpretation of the research will affect its findings on the rule curve assessment. The practice decisions will be structured to encourage open and thorough challenges to the Study Board's interpretations including what the research shows and the weight that it carries in the Study Board's recommendations.

The Study Board has been directed to consider **climate change** in its recommendations and agrees that it should. Because the performance of one set of rule curves relative to another can change based on the inflows to the lakes, the Study Board has to test rule curves with different plausible inflows. The impact of climate change on these lakes is uncertain, but not implausible.

Study Board's Response to Comments Regarding Weight of Evidence and Modelling Inputs:

The majority of comments received with regard to the modelling strategy focused on suggested data and/or reports that should be considered as the models are refined. The Study Board has been in discussion with resource agencies to ensure any available datasets and reports that would benefit this review be provided to the Study Board in a timely fashion.

Other comments focused on modelling input suggestions, such as the development of performance indicators for fish mercury content of walleye and northern pike populations in Rainy Lake and Namakan Reservoir, whitefish spawning success, and whitefish spawning **habitat**. The Study Board will ensure that if enough data exist to develop these performance indicators and adequate time and resources are available, all possible indicators will be considered. However, given the complexity of developing an accurate fish population model and the very limited time available until the end of the study, the Study Board will focus on the development of performance indicators for whitefish spawning and will consider the potential to develop performance indicators for fish mercury content. The Board will work with the RAG and others before making its decision on whether a mercury PI can be constructed, but it seems unlikely. Weight of evidence studies identified a significant relationship between mercury concentrations in young of the year yellow perch and water levels in Sand Point, Crane, and Namakan lakes but this was not found to be the case in Little Vermilion, Kabetogama or Rainy lakes. Effects of water levels on mercury concentration in older walleye and northern pike, which are high enough to make consumption advisories necessary, have not been studied intensely. The culpability of water levels in mercury concentrations in walleye and pike is also not disproven by these studies and given the harm caused by high mercury concentrations in fish, the Study Board would like to work with others to determine whether actions such as additional monitoring, enhanced fish advisories or recommendations for future

investigation would be worthwhile.

The Study Board is currently reviewing a large number of additional reports and datasets received recently to determine relevance, **robustness** and utility for modelling efforts.

The Study Board received comments on the need for the Study Strategy to integrate Traditional Ecological Knowledge (TEK) into the study criteria and the weighed criteria analysis. It was noted that TEK generally relates to the environment but there are also broader values including economic and livelihood impacts that are of importance to Anishinaabe people. The Study Board is interested in learning more about TEK integration opportunities and is currently working to organize a learning forum with Grand Council Treaty 3 in July 2016 to ensure the rule curve review process is clear and that sharing of information on TEK and values of importance with regard to impacts of rule curves are discussed and integrated into the study wherever possible.