Manuscript: _St Clair River Draft Report Chapter 6 – Hydroclimatic Conditions and Patterns_

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Name of Reviewer: ___Eric D. Loucks_____

1. Are the objectives of the work clearly stated? 1

   The objective is clear but the manner in which the analysis responds to the science question is not clear

2. Are the methods employed valid, appropriate and sufficient to address the questions, hypotheses or the problem? 1

   Similarly, the methods are appropriate and sufficient but the Chapter does not present a logical progression of results leading to a specific answer to the science question. Section 6.1.3 should be rewritten to accomplish this. It should probably precede section 6.1.2 as the issue of uncertainty in the supplies should not affect the approach. Figure 6-1 should be in the NBS section. Section 6.1.3 is too preoccupied with technical issues rather than how the available data and models will be used to answer the science question.

3. Are the observations, conclusions and recommendations supported by the material presented in the manuscript (e.g., data, model and analyses)? 2

The question is clearly answered and well-supported for the 1996-2005 period, but this is not the stated objective. Isn't the real answer that the M-H to Erie Fall varies with Climate and is reduced during dry periods? Any change in the relationship between climate and fall would have to be physical and would have been covered in chapters 4 and 5.

4. Are the assumptions used valid and are the mathematics presented correct? 2

Results are presented in terms of both residual and component NBS. Is one better than the other or are they equally valid within measurement and estimation uncertainty? Should a bold decision be made to select one or to use their average to cut down on confusion? The differences could be quantified in the uncertainty analysis.

5. Is the manuscript well organized, material precise and to the point, and clearly written using correct grammar and syntax? 4

Analysis is very difficult to follow due to the lack of a roadmap to the analysis

6. Are all of the figures and tables useful, clear, and necessary? 2

Figures generally informative and useful but there are many inconsistencies in format particularly with regard to NBS. Figure 6-3 is in units of mm while 6-7 and 6-9 are in cms. The introduction in Section 6.1.2 states that NBS in expressed in cms-months. There are too many significant figures shown in the equations of Figure 6-9 and the data in Table 6-6. Table 6-4 and Figures 6-14 and 6-15 are also inconsistent in their units of measurement. In Figure 6-12, the content of the blue boxes is not explained. Table 6-1 contains the unclear labels HGB, MHG and MIC.

7. What is the quality of the overall work? 3

Some organizational improvements would greatly improve quality

Recommendation (please circle your response)

A - acceptable
B - acceptable with suggestions for revision
C - acceptable if adequately revised
D - unacceptable

If you have selected **C**, do you wish to receive the revised manuscript for further review? no

Rating (Circle the rating you would like to give this manuscript. Unacceptable work should be given a score of 40 or less.)

100 90 80 **70** 60 50 40 30 20 10 0

Comments (limit responses to one paragraph for each question; reference pages, charts, and data. Please distinguish if responses are of major or minor concerns.)

A. What is the best/most unique part of the analysis?
Illustration of various historical supply trends including level of persistence and rapidity of change in Great Lakes Supplies

B. What is the most critical aspect of the study/analysis? Why?
Presenting the relationship between climatology and lake levels

C. Which aspect of the analysis/modeling is weakest? Why? How can it be improved?

Introduction and definition of NBS and NTS. NBS should be defined as the volume of water that the environment provides to a particular lake during a particular time period. It cannot be measured but there are two estimations methods which are both subject to significant measurement and estimation uncertainties. While best expressed as a volume it can also be expressed as an average flow. As illustrated in figures 6-8 and 6-12, the differences between the methods are similar in magnitude to the uncertainty in the estimated values. It is unclear why NTS is useful in the analysis as it confounds and dependent process with a dependent one. NTS is introduced abruptly on page 156 with little foundation.

D. Are there any other suggestions that are related to how this analysis may be used more effectively or the results explicated in a more understandable manner?

Many trends are identified in the work. Somewhere it should be made clear that short (5-10 year) trends are part of the normal historical climatology of the Great Lakes and not indicators of fundamental change.

Please indicate any confidential comments to the Co-Chair(s) of the Independent Peer Review Group in the space below. Comments for transmission to the author(s) should be on a separate sheet attached.

Signature:  Date: September 7, 2009

Comments for Transmission to Authors

It would be useful to have both general comments and specific comments for major and minor revision. Please use additional sheets should they be required.

Specific Comments are provided in the discussions above.