Comments on the March 2002 Draft of Jennifer Kramer Glynn's Report
Impacts of Food Production to Water Quantity in the Great Lakes Basin:
From Sarah Miller, Canadian Environmental Law Association
June 17, 2002

THE TITLE

- I would change the title to *Impacts of Food Production to Water Quantity in the Great Lakes St. Lawrence River Basin* in order to capture the full scope of the basin ecosystem, include downstream considerations and impacts and the role the Province of Quebec, since you use Quebec examples in the body of the report.

- Since this report and our workshop did not limit our considerations to research alone, I would change the subtitle to *Outlining Challenges and Options for Agriculture, Trade and Water Quantity Management.*

EXECUTIVE SUMMARY
SUGGESTED ADDITIONS
In order to capture the consequences and importance of water shortages, I offer a further quote for this section taken from the Introduction to Sandra Postel's book *The Last Oasis: Facing Water Scarcity*
"...limited water supplies combined with population growth appear to be eliminating the option of food self-sufficiency in more and more countries (page XV)....many countries still do not have a clear picture of water-food linkages and thus are not taking the actions needed to secure their agricultural bases (page XVII)".
I will fax you the relevant pages from this book so you can properly reference this quote should you choose to use it.
CHANGE LAST PARAGRAPH, PAGE 5
In less than forty years, the flow from the Great Lakes out the St. Lawrence River could be reduced to...

TABLE 1: Physical Features of the Great Lakes Page 9
CHECK FACTS FOR
Shoreline length Huron, Michigan, Superior
ADD
Perhaps you could add website listings to the text in the paragraph beginning For more detailed information. Environment Canada's site is:
http://www.ec.gc.ca/water/index.htm.

Page 10
I was recently shocked to hear statistics on the volume of water lost from trans-evaporation from the Great Lakes. These figures might be good to include in this section. They were in remarks made during a Great Lakes Commission workshop by Roger Gauthier G.L. Hydraulics & Hydrology Branch of the Army Corps. Phone: 313 226-3054 roger.l.gauthier@usace.army.mil.

Fluctuations In Water Levels During the 20TH Century on Each of the Great Lakes
Does the Environment Canada website have information on the St. Lawrence River fluctuations? This would be good to include. The ecosystem is usually considered to end where the fresh water changes to salt water somewhere around Trois Riviere, I think. (One of the impacts of climate change on the ecosystem I've heard cited is that with rising Atlantic ocean and lower Lake levels, the Saltwater could advance further up the St. Lawrence to the water intakes of Montreal. You might want to check this fact with Linda Mortsch and use it as a dramatic example of the impacts of potential climate change impacts.

PAGE 13
Most discussions of man-made alterations to the system include the historic diversions into the Lake Superior at Long Lac Ogoki and out at the Chicago Diversion.

Ecological and Ecosystem Changes from Manmade Activities
Additional points
Pollution of the Great Lakes has had a profound impact on the system. For many decades dilution was seen as the solution to pollution. A reduction in water levels in the lakes will result in more concentrations of harmful contaminants as well as more possibility that contaminated sediments will be disturbed. This could lead to release of harmful substances bound up in the sediment making them available to be taken up into the food chain where they bio-concentrate as they move further up the food web.
Impacts of Great Lakes pollution extend beyond the Lakes.
Paul Boland, Marine biologist has found that the health of endangered beluga whale populations in the Gulf of the St. Lawrence have been compromised by toxic chemicals originating in the Great Lakes. The "freshet", the flow of fresh water from the Great Lakes into the ocean carries nutrients that are important to fish health and migration on the Eastern seaboard of the Atlantic.

Page 17
Definition Shift
You start to talk about consumptive use here but do not define it until several pages later. Perhaps you should move the definition from page 20 forward to Section III "Global, U.S. and Canadian Water Use, page 17.

Pages 22 & 23
Clarifications needed
I find the figures 10, 11, & 12 confusing. Are they surface water only or do they include groundwater as well?
Figure 12
Is this a reflection of less livestock being raised in the GL or better watering practices?

Page 25
The statement that availability of water is generally not a problem in Canada is misleading. Currently there are extreme droughts in some areas of the Prairies and severe flooding in other areas. There are also areas with chronic water shortages such as the Kitchener Waterloo area in Ontario where there is conflict between urban and rural water needs.

Page 26
More information? It would be good to have more understanding of the reasons for the growth in exports, the growth in trade agreements or drought conditions in water short nations. For instance is the 56% jump in Canadian exports in anyway attributable to aid to drought stricken countries?

Other Consumptive Uses
You may want to make the point here that agricultural exports are seen to be consumptive uses. You make the point later but it is worth making as well in this section.

Water Policy Timeline
I would rename this section Water Policy Framework.

Page 31
In your description of *The 1909 Boundary Waters Treaty Act* you should include that a hierarchy of uses is established in Article VIII
1. domestic and sanitary
2. navigation
3. power and irrigation

This list is outdated and does not reflect uses currently valued by society such as the ecological integrity of the GL and recreational uses. This could be a barrier to egalitarian action on water quantity issues.

Page 32
Your information on permitting systems in each of the jurisdictions should be bought together in one chart and be made more details on the state of water allocation systems in the basin. This is particularly important at this time because Pennsylvania, Ohio and Michigan do not have systems that track most withdrawals and it is these states where we should be looking for the most changes coming out of the Annex 2001 work. If these changes are not made we will not have adequate data to track changes in use or trends in the future demographics and use.

Water Use Policy and International Trade Implications
Your portrayal of Quebec is inaccurate.
Quebec has had a moratorium on bulk water exports that they have continued to renew while they are putting together a new package of regulations on water known as the BAPE. It is my understanding that it has now been introduced into the

assembly for passage into law. You should update this information for the report. You will probably have to get this information through personal interviews, as none of it is available in translation. Quebec also has a moratorium on factory hog farms.

Our resident Trade staff often takes issue with Maude Barlow's generalizations on trade as they sometimes include inaccuracies or are misleading. I asked our trade Lawyer Michelle Swenarchuk to review pages 34 and 35 which she marked up with her changes (I will fax her changes to you as well).
I would suggest that you ask Mark Ritchie to review the original and Michelle's comments so there is a double check for accuracy in this section. Since Trade issues inevitably and quickly become subjects for debate, we should be clear in our portrayal of the agreements.

To further clarify one of Michelle's points. She objects to the sentence near to the end of the last paragraph on page 34 that states "Only by specifically exempting water from NAFTA would the Canadian government be free to place a real ban on water exports. The Canadian Government like other Great Lakes jurisdictions has chosen not to persue an outright ban of export because this action would evoke trade agreements. Instead they have acted to exercise their constitutional right to protect their water as natural ecosystems (not export commodities) through law. In December 2000 Canada moved to effectively prevent bulk water exports of boundary waters between Canada and the US by passing *An Act to Amend the International Boundary Waters Treaty Act* . This act gives the Canadian Minister of Foreign Affairs and International Trade veto powers over and water export proposals. Other legal opinions done for the Great Lakes Governors have concurred that promulgating water protection regimes, such as the binding regulations recommended by Annex 2001, are the most profound water protection that can be exercised in the Great Lakes. Changing NAFTA clauses alone would not accomplish this. It should be pointed out that GATS provisions that have been in existence long before NAFTA also could impact water export. Her other corrections are that WTO challenges have to be made by countries of another countries' action but cannot be made independently by the WTO.

Page 35
Water Use Legislation
Add a sentence at the end of the first paragraph. In Annex 2001 negotiations now underway, the States and Provinces are endeavoring to have a more uniform system of protections to remedy these disparities.

Page 36
The de minimus clauses will not necessarily be included in the final outcome of the Annex 2001 negotiations as it is very contentious. Discussions of it seem to have been dropped for the moment.

Page 38
Acknowledgement of the close scrutiny and regulation of the Chicago Diversion should be made here.
Also mention should also be made of the new Army Corps of Engineers Study of Extending the winter navigation season on the Great Lakes by increasing depths by dredging the Seaway and ports. This could have huge impacts for all users of the Great Lakes. There should be information available on the internet on this study.

Page 40
Re: Figure 21
The information on small and medium cities is certainly not accurate for Ontario. Is there any way we can make this more reflective, of the growth pressure we are already feeling here? For instance there have been several pipeline proposals made to move water from the Lake Huron/ Georgian Bay watersheds into the Erie Ontario watershed to assure "perpetual sources of water" for future development in southern Ontario.

Page 41
First paragraph
You may want to mention the concept of environmental refugees, people fleeing from water-short countries to countries not yet experiencing widespread water supply problems and the political, economic and societal instability that accompanies a lack of these essential resources.
Climate Change
3rd paragraph, first sentence
add <u>cumulative</u> small-scale water removals...

Page 42
Bulk Water Removal/ Export
Suggested rewrite
Although the US and Canada currently oppose bulk water export from the Great Lakes, Future conditions globally and on the continent could well lead to humanitarian pressures to reconsider these policies. In the last sentence in this section I would replace ongoing with future.

Page 43
We need to distinguish here between the fundamental differences in the between western and eastern water law and policy. Prior appropriation is the basis for western water management i.e.: the first to gain water rights has first rights to the water and may sell those rights independent of the land. Many of these western water rights date back to claims made when the west was settled and may not reflect societal use or needs for water today. The eastern riparian approach binds the rights to water to those owing property adjacent to or in the case of groundwater over the resource. The riparian rights can only be transferred with the sale of the land.

The different systems pose different barriers to water conservation.
Add.
There is a need to better understand what water conservation targets could work to reduce and prevent future in-basin needs for increased withdrawals.

Page 44
VII Cumulative Impacts of reduced Water Levels
There needs to be a section added to section VII that identifies the need for a data collection system that results in adequate information on impacts to be collected in a way that can inform policy and practice.

The Chart on page 44 is.....goofy
This is obviously biased but in no way captures the full range of constraints on agricultural expansion related to water such as:
Shared groundwater aquifers and water sources with others concerned about sustainability,
Competition with urbanization for water and land use.
Public mistrust of pollution from factory and other intensive farming.
Risks of livestock pathogens and diseases transmittable through water to humans or other animals.
Pesticide and herbicide contamination of water.
Poor tillage practices leading to soil loss and erosion into waterways.
Filling in wetlands and sensitive water habitats.
Application of sewage sludge and other fertilizers to farmland that can cause contamination of water.

Page 45
Ecological
The Great Lakes Commission work on a decision-support system for Annex 2001 suggests that the impacts of water diversions, withdrawals and lower lake levels will be felt on the watershed and sub-watershed level first and few if any will have detectable impacts basin-wide.

Page 45
For your transportation example it would be good to use a grain rather than a steel example.

Page 47
I would not limit these examples to voluntary measures. Water Law reforms may also result from changed attitudes.
An example:
In the Great Lakes Basin, public awareness has been heightened by the Walkerton Ontario tragedy in 2001 where at least seven people died from e-coli 0157 poisoning of their drinking water by livestock. Massive water reforms are underway in Ontario as the result of an exhaustive Inquiry following this tragedy.

One major recommendation is that farms should be required to draft management plans for their operations that comply with watershed based source protection plans.

Page 48 - 51
Very recently the US EPA has issued a watershed Trading Policy which I reluctantly mention in order that we be comprehensive. I have many concerns about the impacts of this policy for the Great Lakes, riparian doctrine, trade implications and ecological impacts. I would not support any policy that sets out to allocate all available water no matter how much the margin of error.
The IJC in the release of their reference findings stated that ecologically, there is no such thing as too much or too little water in the Great Lakes to make the point that is the fluctuations in the system that make it resilient and healthy.
Espousing interstate water trading is dangerous. It is watershed boundaries that are key to water trading not political ones. In order to have water transfer or trade requests evaluated for their ecological impacts they need to be scrutinized at the watershed and sub-watershed level.
Could you elaborate on how interstate trading has resulted in Australia.

I would only consider water trading as the last resort and I think strong conservation comes first. Rather than out right trading, water-banking systems like the ones being utilized by neighbours in the US Midwest are preferable. Water borrowed is owed as a loan and is paid back in times of plenty. All efforts need to be made to ensure that water banking and trading is not promoting unsustainable uses like growing avocados in the desert. This banking should be among near neighbors and not result in pipelines to distant sources. Attention needs to be given to reversibility of arrangements if conditions at the source were to diminish water availability.

One thing has become clear to me as one of the Advisory Committee members to the Great Lakes Commission. This is that even though the Great Lakes is one of the most studied bodies of water in the world, scientists can make very few cause and effect relationship because of the complexities of the web of life supported by the lakes. Scientists have little knowledge of how water changes impact aquatic life and are unable to say what might be the straw that causes the next species crash in the Great Lakes. Sound science may never be available for policy makers to use effectively in water allocation decisions. This is why the precautionary principle should apply to water quantity as well as water quality decisions in the Great Lakes.

Page 52
I hope I am not being too obnoxious and preachy. Another of my concerns is that we are no longer asking what can we still do to PREVENT the degree of climate change by altering present human and agricultural practices. Surely there is a list we could begin to generate. This list should include getting away from the use of diesel fuels in agricultural equipment, limiting CO2 and methane generating sources on farms, and moving to alternative energy sources like wind power on farms.
The section on irrigation water conservation policies seems a little slim. Could we

list practical ways to do this?

- Low tillage to preserve soil loss and enhance the ability of the soil to retain water,
- Farm pond for watering livestock and crops,
- Drip irrigation
- Timed irrigation to maximize loss through evaporation
- Replacing crops with drought tolerant varieties

Water conservation need not only be voluntary. It can be part of regulation and by-laws. For sometime in Ontario grants for infrastructure were only given to municipalities with conservation programs.

Page 56

After the Mississippi example you may want to include this example. The NOVA Group proposal to ship water in bulk from Lake Superior was originally presented as a way to address water crises in China. However, after all the costs of shipping and treating the water were considered, that water would be unaffordable to those most in need. Other bulk water companies in Alaska are seeking bulk water contracts for glacial water with the operators of large hotels in China to serve their growing tourism needs. The industrialization of China has meant that industry has gone to the headwaters of many of the rivers to capture the cleanest water for their use. This has not left enough water downstream for farmers and has caused dramatic impacts both to the economy and ecology of the region. The Yellow River no longer runs to the sea. China who used to grow enough grain to export to other countries can no longer grow enough grain to feed their own population.

Page 57

Trade in Agricultural Products

Have trade agreements caused advantages and disadvantages to Canadian and US farmers that might stand in the way of their developing basin-wide cooperative agricultural initiatives in the future?

I do think we need a better understanding of farm subsidies to understand the future of farming in the Great Lakes. Are President Bush's new Farm Bill and recent funds allocated for farmers by the Canadian Government deepening subsidies? Is it possible with the high cost of farming today that agriculture will always have to be subsidized? Cheap water has always been one of hidden subsidies of farming. As we try to move toward charging the full cost of water will we be putting our farms out of business?

Page 61

I would make mention of research into how we can adjust current agricultural contributions to climate change that I outlined above.

Page 61 Management Plans

In the Annex 2001 negotiations, the parties are discussing the need for a Great Lakes Restoration Plan to be the foundation of decision-making, particularly in determining what (if any) improvement standard could be applied to withdrawal proposals. It is still unclear how extensive this Restoration Plan could be but it will go beyond the scope

of the management plan we speak of in this section. If we are seeking further funding from sources involved in these negotiations we would be wise to acknowledge that we need an overarching restoration plan the gives us the scope and vision to restore the manmade damage to the quality and quantity of the ecosystem as a framework for decision-making.

Page 62
Great Lake managers will also increasingly need to analyze data from outside their region to fully understand trends and water shortages continentally and globally that might bring requests for Great Lakes water export

Page 63
As the result of the Annex 2001 negotiations I would rename 6) to Study the need to Enhance the Role of the IJC.
I have been working with the Annex 2001 Committee working on International Arrangements. At the last meeting we had a presentation from IJC Lawyers from Canada and the US. and of other legal opinions about how water allocation disputes would be resolved in the basin. There was discussion of using different dispute resolution mechanisms depending on the scope and seriousness of the disputes. The IJC was suggested as the final arbitrator for the most serious disputes. However the IJC lawyers did not think they needed further powers and would require a reference from both countries to become involved. Others would argue they already have these powers to act unilaterally in the *1909 Boundary Waters Treaty Act.*
What was interesting about discussions was the recognition that the Great Lakes needs an adjudication process similar to international trade panels. The Great Lakes needs their own dispute panels made up of experts in aspects of Great Lakes water quantity. There was concern that Great Lakes disputes be heard by this tribunal rather than by an international trade panel or court systems that may not have the understanding of the issues.