



**International Upper Great Lakes Study  
Public Meeting  
February 19, 2008**

**Grosse Pointe War Memorial  
Grosse Pointe Farms, Michigan**

**Questions and Answers Segment**

*Note: Slides used in the presentations are posted at [www.iugls.org](http://www.iugls.org). Presenters were Kay Felt, U.S. Co-Chair of the Public Interest Advisory Group (PIAG); Dr. James Bruce, Canadian Co-Chair of PIAG; Dr. Eugene Stakhiv, U.S. Co-Chair of the International Upper Great Lakes Study Board; Ted Yuzyk, Canadian Co-Chair of the Study Board; and Jim Bredin, Assistant to the Director, Michigan Office of the Great Lakes. The moderator was International Joint Commission Communications Advisor John Nevin.*

**Question 1:** *First of all I would like to commend the group doing this Study; It's very thorough and I'm amazed at the work that's being done. My concern is this: What if the federal government says, "You're taking too long (to conduct the Study). Atlanta needs the water, or the Carolinas need the water. What's to stop the federal government from coming in and saying "We're going to take charge of the Great Lakes"?"*

**Dr. Eugene Stakhiv:** That's a tough philosophical question to answer....let me take a crack at it. The Federal government is a cumbersome beast; it has lots of regulations that prevent anyone from doing just what you said. This is a long lengthy process, you have representatives, you have senators and congressmen, many of whom simply don't want anything like that. Secondly they're working on a Great Lakes compact, which is very restrictive on water uses within the basin and the export of water from the basin – to the extent that they're thinking of preventing the export of bottled water. Now I've showed you that we import 10 times more bottled water than we export, so it's ....those are the issues that they're talking about in the Great Lakes compact. And essentially these are, let's say, state driven issues. Less Federal government than they are state. The states have much more sovereignty, control and authority over the uses of water than the federal government. So it's unlikely to happen. Anyone else? And then, now the Canadian side, they have a veto power.

**Dr. James Bruce:** Yes, we have to remember that these lakes are international. And the Canadian government has passed a law which forbids export of water from the boundary waters that we share with the United States and that includes the Great Lakes. Now, if push came to shove, I'm not sure how strongly that can be defended, but that's a law on the Canadian books, so there will be a great deal of resistance from Canada, on both political levels and the general public to any exported water out of the Great Lakes.

**Kay Felt:** I said I wasn't getting into this but a few weeks ago I was in a gathering with Senator Levin. And I asked this very same question: What about the export of water from our area to the Southern

states, the Southeast....And he said, "Over our dead body." And basically, looking at the Great Lakes Compact, and all the regulations that we have to prevent that. But one of the things that we forgot to mention in our presentation, is what this means to commercial navigation. If you have seen more boats going up and down in the navigable waters this year, than usual, it's not because there's more industry, it's because they can't get through the waterways, so they are loaded only to about 80 percent of capacity. And here we have this body of water that protects most of the manufacturing industry of the Midwest and we are at great risk of losing it. So I think that's one of the issues we all have to make sure that we transmit to our legislators is that we don't want to lose this.

**Question 2:** *My name is Mike Simmons, I live in Clinton Township and my question regards diversion and I just wondered what kind of a handle do we have on how much diversion is really occurring, both legal and illegal, and do we have any mechanisms to monitor, for example, illegal diversion of the water from the Great Lakes?*

**Jim Bredin:** I'm Jim Bredin; I'm with the Michigan Office of the Great Lakes, and what we're talking about now as far as diversion we talked a little bit earlier about the Great Lakes Compact. That's the agreement, that's before the State Legislature right now. They are working on that as we speak, and what it will do is, it will provide a ban on diversion out of the Great Lakes. As far as illegal diversions that you were talking about, I don't know of illegal diversions. There are probably very small minute quantities that may be leaving the basin, maybe for farming purposes....communities that are right on the border. But we know of most of the diversions, in fact as far as I know, we know of all of the major diversions. Some of them have been approved through what's called WRDA (Water Resources Development Act) which is, every governor right now has the ability to veto, individually veto, any proposed diversion. The Compact will maintain that, although some of you may have seen articles in the paper recently. Ohio and Wisconsin are looking at trying to eliminate the single governor veto of proposed diversions. What's in the Compact, if you can picture, I wish we had a map up here of the Great Lakes basin, but if you can picture where the watershed is, where the water divide for the Great Lakes ...What the Compact allows for, is if you're in what's called a "straddling county" – that is it's a county that's partially in the Great Lakes basin and partially out. If there's a community that's outside, but yet within that single county, that community could petition the Great Lakes governors and receive approval if all the governors agree to allow the diversion. Any area outside that single county, the Compact right now would actually ban, would prohibit anyone else, like we're talking about Atlanta, Arizona, wherever it may be, the Compact that's before the Legislature would ban any type of diversion outside that area. So the single vote that's being discussed now is just for those communities that are very close to the Great Lakes, but just outside of the watershed. But as far as other diversions are concerned, yes we have actually approved diversions out of the Great Lakes. We have Akron, Ohio that what they did, we agreed they could divert water, as long as they brought an equivalent amount of water back. And in better quality. So that's what we're looking at. We are not looking at any type of diversion that would actually remove water from the Great Lakes without some type of return, which would be at least as much if not more, coming back into the basin.

**Question 3:** *My name is Christy McGillivray. I work with Clean Water Action. We are one of the interest groups that would love to be more involved. We have about 30,000 members that live along the shoreline of Lake St. Clair. And we worked very closely with people like Doug Martz who chairs Macomb County Water Quality Board... I have a question about the Compact as well...The Compact is the agreement that has to be ultimately ratified by Congress, whereas there's also implementing legislation at the state level. We're concerned at Clean Water Action that we get strong legislation at the state level because we can't count on Congress to pass the compact. With the state legislation, there's something called the Water Resource Assessment Tool...one of the things it does is regulate stream flow. My question is whether that is being used with St. Clair's stream flow and if any of those inland flows are affected by the work you're doing.*

**Jim Bredin** There is a lot of questions in there. What she's referring to, in the Compact, it requires, it sets certain limits, like you said, there's a ban. There's a ban on diversions, there is a ban on intra-basin diversions – there's a lot of information in there.

What it does is, once the Compact is approved by every single one of the eight Great Lakes states, and even there is a Canadian component to this, they've already passed their legislation, this is strictly for the eight Great Lakes states. We will have, every state has to pass exactly the same wording in the Compact. Then it will go to Congress for ratification. Then once they ratify it, then it goes into effect, and one of the things that it calls for is that within 10 years, each one of the states has to implement, has to pass implementing legislation, that would regulate the water uses within the state, and also the diversion. So we would have to do that, what she is referring to is that the Michigan Legislature has proposed, and we have a groundwater conservation advisory committee that started this process. They're developing this tool – it was called for in the original legislation. That's what's being discussed right now. So there are actually two things that are going on in the State Legislature now: One is passage, it's trying to pass the Compact itself, and the other one is this implementing language for how we actually implement the Compact, which she is referring to as the tool. And what that will do is it will take a look at all water use, whenever anyone is proposing to withdraw water from any place, either groundwater or surface water, you would use this tool to determine what type of an impact it may have. Not necessarily on another user of water, so if you had a neighbor that also had a well, it wouldn't cover that. But what it would do, it would look at the type of impact you might have on a local stream. What are the natural resource impacts of all the water withdrawals in the future? We would basically be grandfathering everything that's existing, but if you're going to withdraw water, if it's going to be a large water withdrawal, what type of impact are you having on the fish, on the wildlife in that stream? And that's what this tool is proposing to do, is to take a look at that so a proposed user could go online, sink a well on the map, find an actual spot on a map, on the Internet, drop that well down, and be able to have an idea as to what the impact is. What's being discussed right now is what's the allowable, what should we allow as far as the impact. And there's a lot of discussion going on as far as how much of an impact would we allow in each one of the streams and we're looking at it from, some streams are very sensitive, other streams are less sensitive. And so there's this whole evaluation going on of all the streams in the state, looking at all the fish, all the wildlife, all potential impacts from like I mentioned, either surface water withdrawal directly from the stream, or from a groundwater withdrawal that would eventually have an impact on that stream. So that's what's going on, and it's a little bit different than we are talking about here. We're looking at the Great Lakes themselves, so the tool that we're talking about is dealing more with inland waters and I can't say that I know right offhand, of an instance where we may be using this type of a tool for our Study....What the tool would be doing is looking at a withdrawal. We are looking at what the different water levels are, given existing withdrawals, future withdrawals, but not necessarily on one specific withdrawal. The tool is more to evaluate what the impact is of any single large capacity withdrawal. So the Study is looking at more of the Great Lakes levels than what we'd be looking at through the tool itself....The tool would be much more on a smaller scale looking at individual small watersheds throughout the state of Michigan.

**Kay Felt:** I'm a lawyer, and one of the things that I have to say about the Great Lakes Compact is that we have to get it passed, period. And while it may not be perfect, there might be little things here and there, we will want to do, we should tell our legislators, don't nitpick this, *just do it*. Because we can make it better later, but if we don't get it done, then we don't have an agreement with our Canadian partners. We just have to do it.

**Question 4:** *I have two questions actually. In considering any sort of weirs or any other constrictions if that would come about, is there any thought of either not doing it in the St. Clair River and doing it down at the end of the Detroit River? That would take care of Lake St. Clair, and not have us suddenly have a shortage of water. Or a combination of restrictors... First of all, the only smart thing to do is create something that would be flexible, not a permanent thing that needs to be gigantic .....gates of some sort that are moveable. And I'm saying put some at St. Clair and also put some downriver so that you can control the Detroit River and Lake St. Clair. So my question, is that at least in the mind thought? And the other thing...when they did that dredging...they ended up with what*

*we're seeing today where it's only larger stones...Does anyone know the basic consistency of what they dredged out the last time? Was it sand or stone?*

**Dr. Eugene Stakhiv:** First question, a lot of the work done earlier to compensate for the 1962 dredging, I showed you some of that in those previous reports. That was the basics for those reports. And you know, the Army Corps of Engineers, they like to build big structures, not little structures. It's not worth their while building little things. So part of it is there was a bias in those reports towards the larger structures. There's no question now that solutions like semi-permanent weirs that kind of lie flat and are hydraulically lifted during low-flow periods – that can be done. It still costs a lot of money...they're called semi-permanent, inflatable dams. And yes, the other part was presumably, if there is a new study that would be done, would be looking at what is the best position to place these weirs? Where is it going to do the greatest good, in the St. Clair River or down in the Detroit River. So people are right now vaguely thinking about it. So, I've heard conversations, but there's nothing substantive yet. Someone ultimately will get to it and start studying it. The second part of the question is most of the deep parts that you saw in that film are below the channel navigation levels, so those weren't dredged. It was really the upper part of the river, the approach from Lake Huron that was relatively shallow, that was dredged, and then lower down in the river, that was dredged to the 27-foot channel. And mostly it's just sandy material and shells. Lots of shells, and right now, we saw pictures of zebra mussel shells. Millions of them, tons of that stuff. That's what the composition is.

**Question 5:** *My name's Marcus Styles, I'm from Grosse Pointe. You discussed earlier the evaporation situation going on in the lakes now, and you talked about the drought situation back in the 1930s. You also mentioned a tree-ring study could be done to determine levels going on prior to that...Is that part of your mandate to go back and study the situation (many years ago)?*

**Ted Yuzyk:** That's a good question. Yes, we know that there are records that go back through dendrochronology and looking at tree rings and looking at the history of water levels. When we go to our more precise information, our hydrometric information, we go back about 100 years, and for the IJC we are looking at consistency in records, so we are kind of looking at that last 100-year period to make sure that we are comparing apples to apples, so most of our focus is on there, but we will be looking at some of that to look at some of these historical trends, but not in a really big way, because as I said, we are looking at information when we have, you know, it is very precise, and that's more of our focus. When we have these studies, we are also have very specific terms in what we can do and look at to make it consistent, and looking at the length of period is one of those things that is set by the IJC. Certain things are cast in stone and a few areas we have latitude in just kind of opening up the door and looking at all kinds of things.

**Moderator:** *Can you elaborate a bit on glacial rebound, which Dr. Stakhiv mentioned earlier?*

**Ted Yuzyk:** Glacial rebound – actually it's glacial adjustment, because rebound is only going in one direction. But when the glaciers, 10,000 years ago started to recede over this area, there was like a kilometer of ice, which is a tremendous amount of weight, so the ground actually compressed under this weight of the ice. So as the glaciers receded the land was actually rebounding slowly. On the Canadian side it's rebounding up. On the U.S. side which was more the deposition from the glaciers, it actually is receding; the ground is compressing over time. So we actually have different adjustments of the elevations on both sides of the border. So if you're on the U.S. side you're actually seeing the water level that looks like it's going up because your ground is actually sinking. On the Canadian side, you're seeing the water, it looks like it's going farther away....In small amounts we're looking at 10 centimeters or so over 100 years. But these are some of the factors that we have to look at in terms of looking at the whole lake level. So it's one of those things because the lakes are interconnected, it has quite an influence on how the water levels move back and forth.

**Dr. Eugene Stakhiv:** It's about 35 centimeters [about a foot], say in Georgian Bay over the last century. So in Georgian Bay you're going to think over the last century that lake levels have dropped

by a foot. When in fact, your land has risen by a foot, but where this is really important is, we've been taking measurements from various gauges around the lake, They have to adjusted and compensated for that amount of glacial rebound and recomputed so that we can recompute all the lake levels. That's a big job. And that's one of these data quality things that I showed you. And while it's just a lot of number crunching, you have to be very careful. You have to know exactly at what spot, how much that glacial rebound was. And we have another team looking at what are the newer measurements because now they have satellite measurements. They can measure it to millimeters per year of glacial rebound. So using that new data, they're readjusting all of the lake levels, measuring gauges, so that we can be a lot more accurate.

**Question 6** *My name is Gord Harding. My involvement in this goes back to 1959 as a student. I did survey work for the dredging that went on in the Detroit River. My question is, why are the Canadian First Nations not involved on your advisory group...And if they're not, you're in for trouble.*

**Dr. James Bruce:** We have tried very hard to get a First Nations representative on the Public Interest Advisory Group. So far, they have declined to participate. However I had a meeting last week with Indian and Northern Affairs and some First Nation representatives. And I think we may see a way now of involving them as perhaps an indigenous knowledge input group to our studies. But it's been a long tortuous road to try and get First Nation people involved. Ted, my colleague, has been to meetings on a number of occasions to try to get them to name a representative ...we've been talking mainly to the Ontario chiefs, who haven't been so far willing to name a representative ... There's some excellent First Nation groups there, we should have involved. I agree with you entirely.

**Kay Felt:** Maybe we should add that we have kept one position open in the Public Interest Advisory Group on the Canadian side for First Nations representative, and our U.S. Native American representative, Dan Tadjerson, has also been working very diligently. The problem, of course, is that the First Nations really don't want to acknowledge that they should affiliate with either of our governments because they believe that they are, indeed their own government, and that they own the lake. So, it's a delicate problem. You raised something that we are just continuously trying to work with, and have them know that we're open at all times to their participation.

**Question 7:** *I'm Phil Wehrmeister, a professional engineer. Every morning I listen to the National Weather Service, and they predict the weather. They usually predict two days ahead that, on this hour you're probably going to get wind and rain, etc. They have some pretty good computers covering the whole country. Hopefully you guys are using that kind of computer power to do the Great Lakes. Secondly, I really agree with doing something downstream, probably at the Welland Canal, to slow down the flow out of the Great Lakes, because I think the whole Great Lakes has to be considered. Not just the St. Clair River. I have a vested interest because I have a boat on Lake St. Clair. I just hope that somebody looks at the whole picture and just doesn't make a two-year study and say that the St. Clair River is the problem, because I don't really think it is.*

**Dr. Jim Bruce:** I would just say in answer to your first question, yes, we have people working on some of the most powerful computers on the continent, trying to determine what is causing the kind of changes we have been seeing that resulted in the lower lake levels and whether those lake levels might go up again soon. They use these to find and look at El Nino and La Nina and they use them to look at climate change. So there are very powerful computers at work in helping us to understand what's going on.

**Dr. Eugene Stakhiv:** We are actually looking to the NOAA regional circulation model. The Canadians have their model. We're actually testing competing models to see which ones produce what types of outputs and results, and how good they are in "hindcasting," one of the basic ways you measure the validity of the model is how it does in previous climates – a year ago, or 10 years ago, and then we have more confidence in the forecasting ability as well, so we've got a whole range of models that we're testing and applying to this problem, and that's one of the peer review questions: Which is the

standard, which one are they going use? What if they come up with different results? They're both absolutely good models, and yet they're coming up with different results. What do you then? And we see this in the IPCC, both Jim Bruce and I, the Intergovernmental Panel on Climate Change. There are something like 32 different general circulation models that have been produced by all kinds of agencies all over the world and they all come up with different numbers. So there's a cloud of numbers, on temperature, on precipitation, on everything. So how do you decide and judge which is the best model?

**Question 8:** *My name is Al Van Kerckhave, I live in the Rouge Basin, which is in the Great Lakes basin. You talked about Lake Superior, the St. Mary's River where it was down, the minimum outlet flow. I was just wondering, the Niagara River ... there's a lot of electricity made there, and what kind of latitude do we have to keep that minimum? What kind of variation do we have?*

**Dr. Eugene Stakhiv:** The IJC has these control boards: The Niagara Control Board, the St. Lawrence Control Board, and the Lake Superior Control Board. Each of these rules, these operating rules were set by studies very similar to ours. And basically they do these studies every 20 or 30 years, when you get into trouble, so and essentially the people who do these operating rules, look at downstream and upstream impacts. Remember, they're limited by the historical data. When we redid the St. Lawrence plan, we now had an additional 40 years of data, since it was set into motion in 1960. And in those subsequent 40 years, the lake levels actually went higher and lower than they had in the previous 100 years. So with this new set of hydrologic data, we were able to come up with a better regulation plan that increases the benefits to all of the sectors including the environment. The same thing is likely to happen to the Niagara Control Board. At some point they're going to run into trouble. And then there will be a study and they'll start manipulating the rules, so that's part of the best that I can answer because we're doing the Lake Superior regulation plan which was set in 1977. That's a relatively new plan and so in the subsequent 30 years, people have started asking questions. Maybe you can do a better job regulating the two lakes.

**Dr. James Bruce:** We should make it clear that there's no control of levels at Niagara. The board there in effect made sure that the water is divided appropriately between the power plants on the New York side and the power plants on the Ontario side and that sufficient flow goes over the falls for the benefit of the tourists. But there's no control of the amount of water going down that river except for the amount of water that passes through the Welland Canal. So it's a little different from the regulation of levels in Lake Superior and the levels of Lake Ontario.

**Question 9:** *My name is Don Leonard and I'm with the North Star Sail Club. What part of the Study was assigned to the Livingston Channel and the straightening of it going into Lake Erie, and the St. Clair cutoff coming out of the St. Clair River? When you straighten those out and increase those flows it had to do something. I'd like to know what that Study has shown.*

**Dr. Eugene Stakhiv:** We're not studying that. That's not within our mandate. You're talking about the delta region from the lower end of the St. Clair River. Yeah, you're right. We know that there were cutoffs yes and they probably increased the flow conveyance. When the Corps of Engineers did those studies back in the 1960s, they actually estimated what the changes in the flow would be and the reduction in the lake levels. So they know that it's roughly about 7 inches. Due to the dredging and the cutoffs, approximately. I hadn't read those reports, I read some of it.

**Question 10:** *My name is John Hart, I live in Grosse Pointe city. The question is, in your presentation, you mention that sand coming from Lake Huron over time has made a difference. Can you explain that?*

**Dr. Eugene Stakhiv:** It's impossible for anyone to know everything that there is to know about this study, and I'm not the hydrologist. In general, when you have the flow coming through the system, it's transporting sand --suspended sediment and bedload. What has happened, and generally we know

this to be true, that when you have building around the shoreline, and armoring of the shoreline; you have groins and jetties, they restrict the sand, the flow of sand into the St. Clair system, therefore reducing the supply. That could be one possible cause of the erosion, subsequent erosion in the St. Clair River. Because if you starve the river of its sediment supply, it's still flowing, it's picking up all those sediments. So those deep areas that you saw in that film could have been the result of long-term erosion patterns because of the reduction of sediments supplied to the system. But there are many people who say that those deep pockets have been there for a long time. Because you can see them in channel surveys from the 1860s. We've got a map from the 1860s that shows those deep holes – almost in exactly the same position as they're in now. But it's still a question, that's what we are pursuing. I can't tell you with any certainty what exactly happened. So these are all possibilities that we examining.

**Kay Felt:** Is it not true that we are doing surveys at various points of the St. Clair River to look at what is the history of the sediments and whatever is going on there and has been for however many years, and at what intervals?

**Ted Yuzyk:** We actually have quite elaborate sediment studies going on. We're doing cross-sections to look at what's going on from an erosional point of view. We're doing sediment measurements; we're doing bed material to see what portion that is. We're looking at suspended sediments. There's monthly measurements going on. By the end of these two years, we're going to have a sediment budget so we'll know if everything is balancing out, and if it's not balancing out, what are the implications of that? If you're starving the system without sediment and it's picking up from the bed, we'll understand all of the relationships. We're pretty comfortable with having a pretty good story line at the end of these two years with this data we've been collecting. We're taking some sediment cores to speculate if this bed is armored; if you remove the armor, what's underneath? So that will be part of the analysis. We're going to run sediment models, too, so we will be able to do some scenarios where we say, 'Okay, if we increase the flow or decrease it, what will happen to the bed?' So, we will be able to piece together part of the history.

**Dr. Eugene Stakhiv:** We've got a \$15 million budget for probably, I don't know, 50,000 miles of shoreline which translates to something like \$2.30 per mile. So what we're doing is – and there have been previous studies done, for example, on erosion impact, high lake levels, recreational boating impacts, wetlands ecosystem impacts, and fluctuating lake levels. So the people around the lakes from the various agencies know pretty well where the priority critical areas are, and they have some data for that. So we're looking specifically at those critical areas that have been identified previously, and we'll adjust the models to that, so if for example, we find that some remediation structure or the Lake Superior Regulation Plan will change lake levels by 3, 4, 5 inches, we'll be able to tell pretty much where most of the damages will be and where most of the benefits will be to save the wetlands. But that doesn't necessarily mean that Lake St. Clair is one of those priority areas, but we'll know pretty well what the physical impacts are of any change within a centimeter, and then, put on top of that a storm surge and waves...we'll be able to predict on a long-term basis whether your erosion and deposition or any geomorphic changes will be significant; over and above what you've been experiencing. So it will be a comparison to what is the historical baseline and will any of our actions change the historical baseline.

**Moderator:** Just to follow up, if this study should find that there should be an initial look at remediation, the clock will start ticking all over again, and the two countries would come together and say, 'All right, let's look at that, and there would be another study, saying "Exactly what would you do, and what would the impacts be?"' And that's very far down the road.

## **CONCLUSION**

**Kay Felt:** It has been a privilege to work with these people, these wonderful scientists...I can't tell you about how happy I am that you are all here. I know the frustration is that none of this discussion tonight answers all our questions. And I'm not so sure that the end of the Study will answer all of our questions. But it is so much better that we are doing it. Thank you for coming, and for staying.

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