-SUMMARY OF PUBLIC COMMENT APPENDIX-

~ FIRST TRIENNIAL ASSESSMENT OF PROGRESS OF PROGRESS REPORT ON~

GREAT LAKES WATER QUALITY

INTERNATIONAL JOINT COMMISSION

Prepared by
The International Joint Commission Pursuant to Article 7 (1) (k) of the 2012 Great Lakes Water Quality Agreement

NOVEMBER 28, 2017

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I. Introduction

The IJC believes strongly that public engagement is the foundation of good public policy and governance, and that achieving the Agreement's purpose and goals will only happen if all sectors of the Great Lakes community are involved. Because of this belief and its Agreement responsibilities as laid out in Article VII to consult on a regular basis with the public, increase awareness of the lakes' inherent value, and prepare a summary of comments on the Parties Report on Progress, the IJC conducted several public engagement activities as part of its review of Agreement progress. This included input on the Parties Report on Progress (PROP) after it was released in September 2016, and further input on the IJC's draft Triennial Assessment of Progress (TAP) Report after it was released in January 2017. In total, thirteen public meetings, roundtables and listening sessions were held throughout the Great Lakes region. Public comment was also encouraged and received through our online democracy platform, Participate IJC, our newsletters, social media and website, and via email and mailed letters.

Appendix Overview

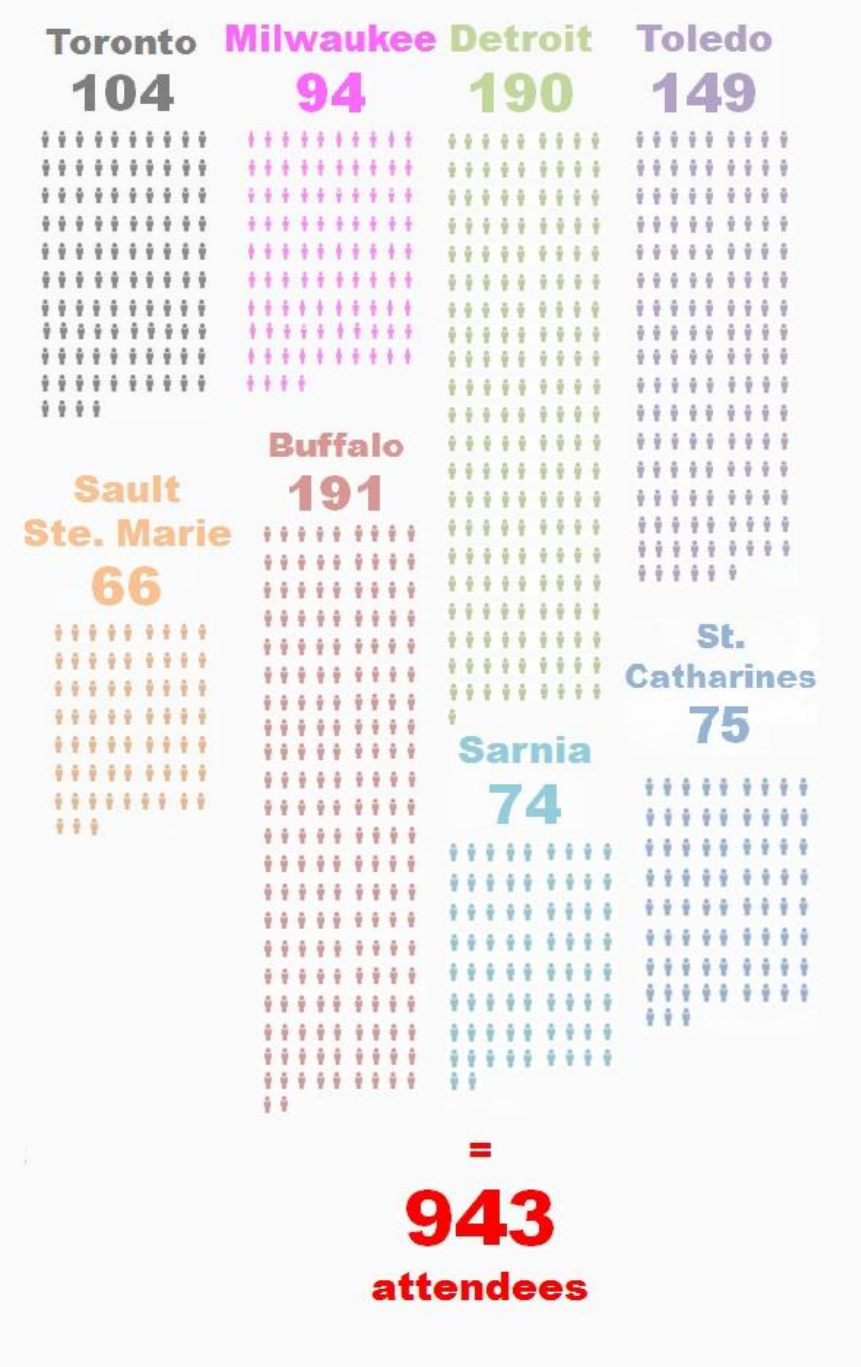
Every comment received during the IJC's assessment process is included in this appendix, to reflect the immense value and appreciation the IJC places on each person's shared thoughts, time and experiences. This appendix is organized more or less chronologically, according to when and how we received input. **Section one**, this introduction, provides an overview of the consultation process, including who participated and how they responded to the various public meeting formats. **Section two** includes a table of all issues raised by the public according to how often they were mentioned, followed by comments provided at the IJC's first consultation session at the Great Lakes Public Forum in October 2016 in Toronto. A summary of conclusions and recommendations developed at the 12 subsequent public meetings around the region is next, as well as detailed summary reports from each public meeting. Comments provided at the public meetings are included in each summary report. **Section three** provides additional comments provided via email or letter or on Participate IJC, an online democracy website that includes information and input from all of the IJC's public consultations throughout the Canada-US boundary region. Links to Participate IJC are provided throughout the report to view the letters and watch videos of commenters at each public meeting.

Engagement Efforts

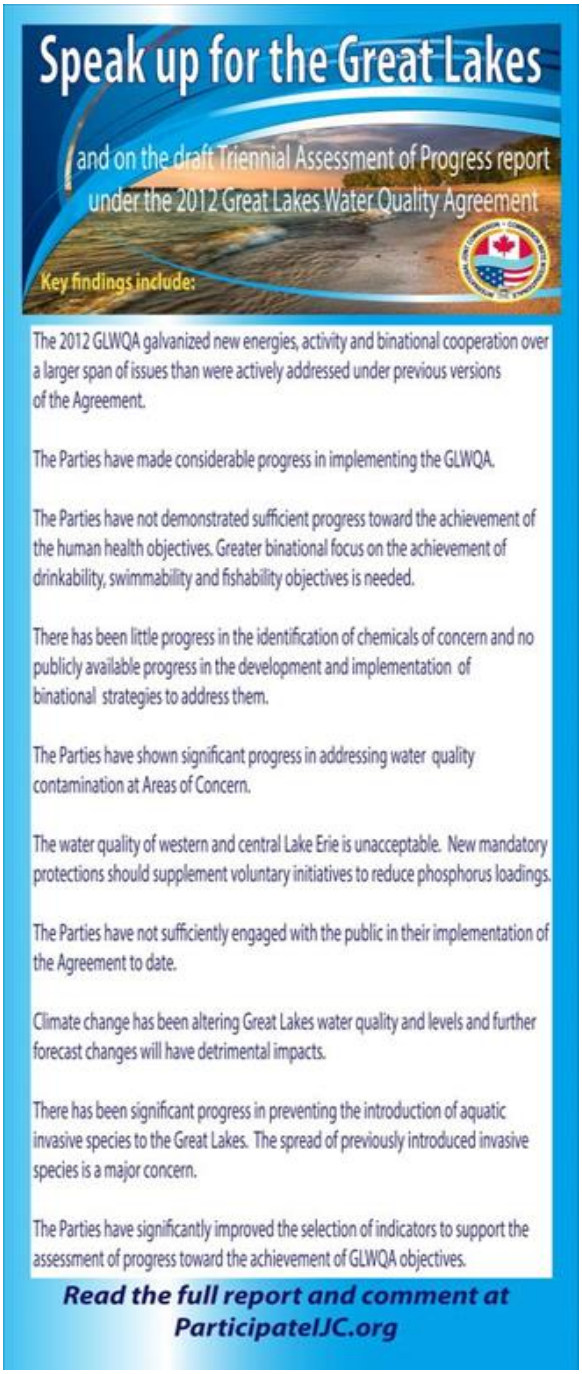
After the two governments, or Parties, released the PROP, they held a three-day Great Lakes Public Forum in early October 2016 in Toronto, Ontario to present their findings. The IJC encouraged comments on these findings at four meetings held in fall 2016 – the public comment session at the Forum, two public meetings in Toronto and Milwaukee, and a scientific roundtable in Milwaukee – as well as through its newsletters, online democracy website and social media outlets. Almost 200 people attended the four fall 2016 meetings.

After the Commission released its draft TAP report in January 2017, it asked for public input through the same online and media channels and held nine public meetings in March 2017 in six communities around the basin. An additional 743 people participated in these meetings.

The report included draft findings and specific consultation questions for citizens to consider as they prepared their remarks. All comments on the wide range of issues impacting Great Lakes water quality also were welcomed. The IJC took these comments into account as it revised the draft TAP, and provides in this appendix a complete account of each meeting presentation and public comment, either in person or via email or letter, for use by the Parties, all levels of governments, interested citizens, nongovernment organizations, scientists and others.



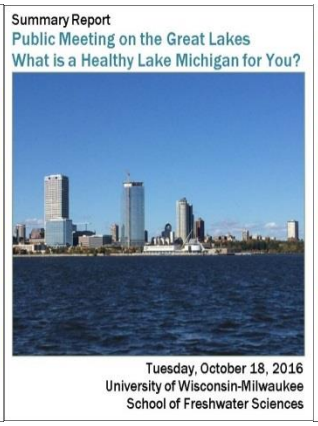
Attendance at IJC Public Meetings. Credit: A. Voglesong and M. Mezzacapo

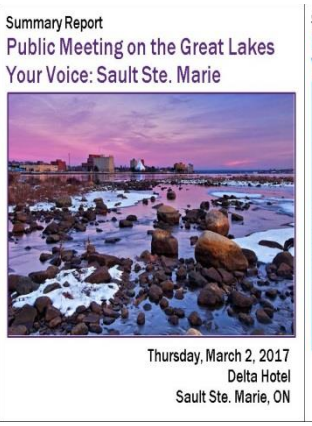


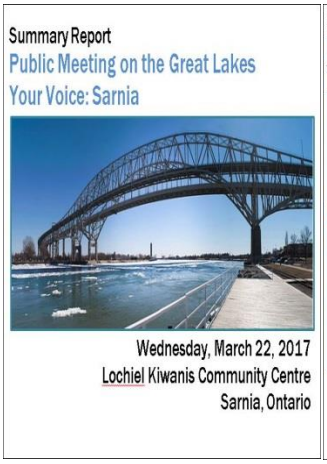
Findings in draft TAP report. Credit: M. Myre

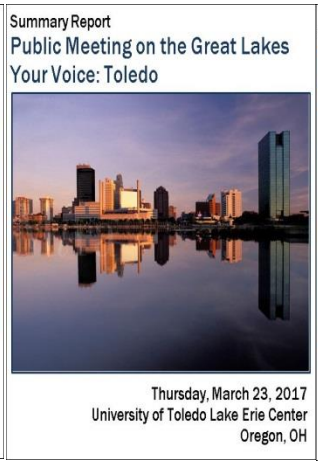
Each public meeting for this Agreement consultation process was unique in its design to provide a variety of opportunities for participants to learn about and discuss local and regional innovative programs to address Great Lakes issues relevant to their community, followed by open time for citizens to provide their thoughts about the status of Great Lakes water quality. Their comments often reflect the specific perspectives of each community, which reinforces the adage that we may think globally, but we act locally about the issues that most affect our individual lives. At the same time, many comments reflect a broader perspective and desire for an ecosystem approach to Great Lakes management and civic engagement. Summary reports for each

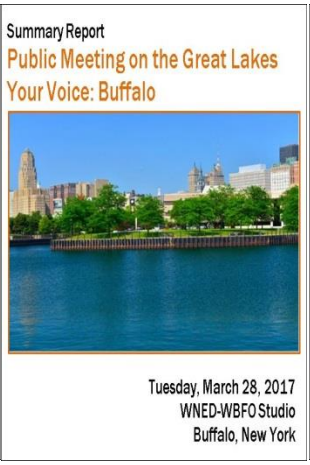
meeting in section two of this appendix provide a thorough synthesis of the unique character of each community's interests, as well as all comments provided at each session.

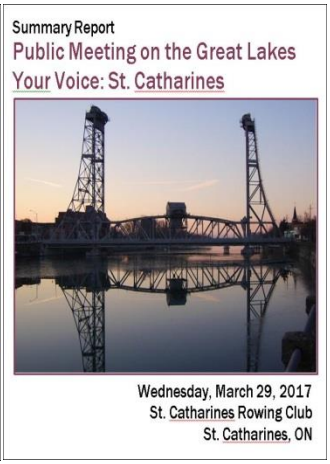










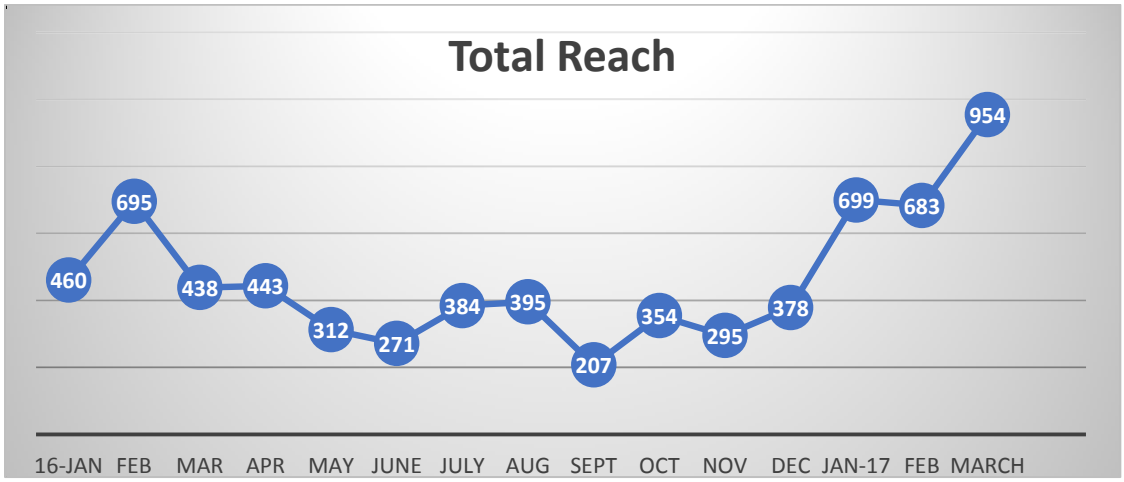


Outreach and Publicity for Consultations

To encourage broad awareness and attendance at the meetings, the IJC completed a wide range of publicity efforts. Initial information was sent through the IJC's monthly newsletter, *Great Lakes Connection*, and through social media on Twitter, Facebook and Instagram as well as the IJC online democracy platform, Participate IJC, and its website. This was followed by a series of personal invitations, news releases, pre-meeting radio and online interviews, and publicity in local radio, newspaper and partner organization outlets.

Facebook advertising and posts garnered the most registrations for and attendance at IJC public meetings, followed by advertisements in traditional radio stations and newspapers, direct invitations, articles in the IJC's monthly newsletter *Great Lakes Connection*, and posts to the Great Lakes Information Network.

IJC Facebook Reach for January 2016 – March 2017



Total reach or number of people who saw IJC Facebook posts, including those in October 2016 for the Great Lakes Protection Forum and March 2017 during the IJC's Great Lakes public meetings. Credit: Jeff Kart

IJC Twitter Impressions for January 2016 – March 2017

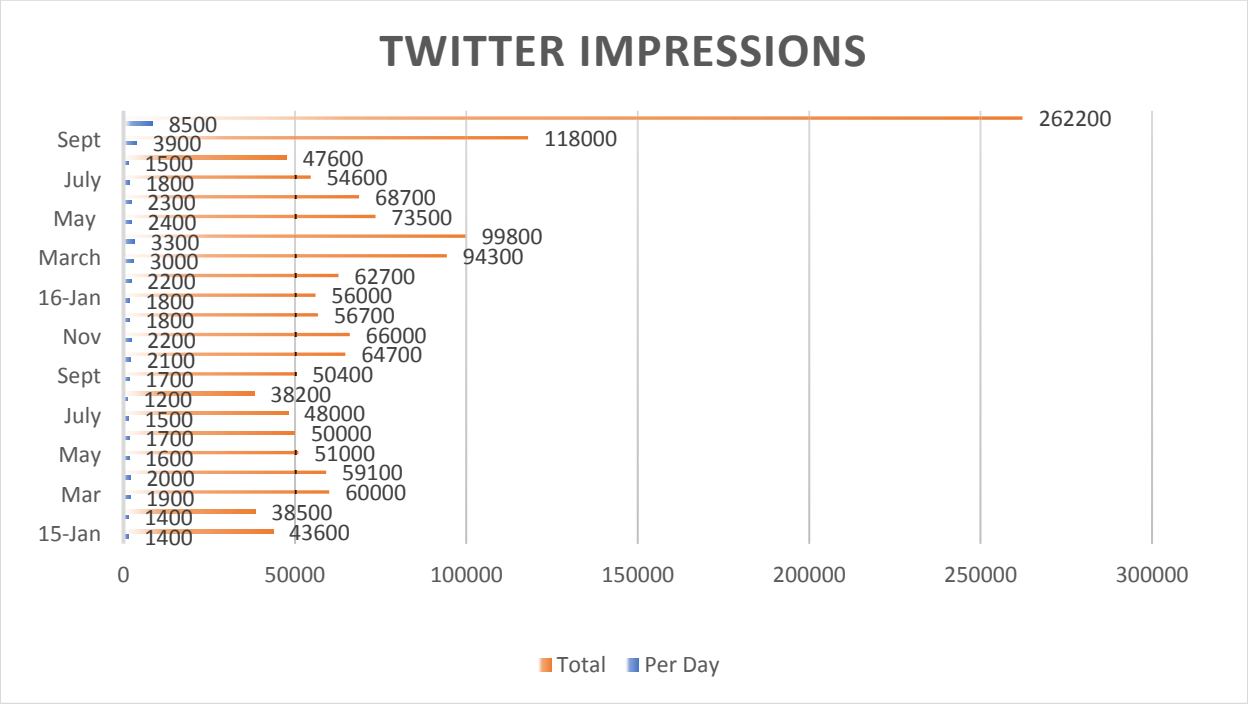
Twitter figures in the two charts below point to strong audience engagement, readership and sharing on Great Lakes issues and events during the Great Lakes Public Forum and IJC public meeting periods, particularly as compared to those months without public meetings. Social media engagement and sharing as a result of initial linkages during the meeting time periods have continued on all IJC social media accounts since March 2017, thus expanding public awareness of Great Lakes restoration and protection efforts.

IJC Twitter Engagement for September 2016 – March 2017

Highlighted sections represent months in which IJC public meetings were held. Credit: Jeff Kart

Month	Engagement Rate %	Link Clicks, av. earned per day	Retweets, av. per day	Favorites (Likes), av. per day	Replies
March 2017	1.5	531, 17	431, 14	657, 21	28
February	1.4	411, 15	265, 9	279, 10	0
January 2017	1.3	459, 15	274, 9	319, 10	8
December 2016	1.4	495, 16	316, 10	339, 11	11
November	1.6	424, 14	246, 8	247, 8	5
October	1.1	770, 25	683, 22	591, 19	15

September 2016	1.2	531, 18	278, 9	245, 8	7



Credit: Jeff Kart

Those who could not attend the Parties' Great Lakes Public Forum could livestream or view the sessions afterwards via the Participate IJC website. More than 6,200 people from 14 countries watched various Forum sessions in this format, while another 2,400 viewed the videos via Facebook links from the IJC or Detroit Public Television, which filmed the Forum. The videos have been watched thus far more than 14,350 times and another 1,443 times via Twitter, with at least 393,600 clicks on those tweets.

The local presentations at each IJC public meeting were also uploaded to the Participate IJC website for viewing, and subsequently the public's comments as well. More than 320 people watched videos or downloaded documents from the Great Lakes Public Forum meetings in October 2016, and another 1,300 people visited to view or download materials during the IJC's public meetings in March 2017. Links to all videos are provided in each meeting's summary report in this appendix. All written comments received via the Participate IJC or IJC websites, via email and mail, have been posted on Participate IJC and links are also included in this appendix.

March Public Meeting Survey Results

During seven of the IJC's public consultation sessions, participants were asked to fill out a survey to reflect their awareness of the Agreement, the Parties' progress report and Great Lakes Public Forum, the IJC's draft Triennial Assessment of Progress (TAP) report, and the effectiveness of the meeting they attended. While response was optional and thus return rate was low, surveys that were turned in reflect areas where interest is high and where additional efforts are needed by governments and the IJC to ensure that the public is aware of events and reports related to the Agreement and Great Lakes water quality.

More than 55 percent of respondents heard about the opportunity to comment on the PROP and TAP reports at the IJC meetings themselves. Another 45 respondents heard about the meetings through an IJC invitation, while 41 people received invitations via another organization's promotion of the event. Forty attended as a result of reading a newspaper article, and 31 heard about the meetings from a radio advertisement.

At least 155 people who attended the meetings identified themselves as interested citizens, which reflect the strong grassroots support for Great Lakes water quality restoration. Other survey respondents identified themselves as members of a Great Lakes nonprofit organization (19), a member of a municipal or regional organization (17), an employee at an academic institution (15), or other (35).

Specific questions asked in the survey included:
Before receiving an invite or attending these meetings were you aware of:

An updated Great Lakes Water Quality Agreement that was signed in 2012

	Yes	No	No response
Total	**90**	**78**	**10**
Detroit	26	30	0
Sarnia	18	10	2
Toledo	16	9	4
Buffalo	19	21	3
St. Catharines	11	8	1

The Great Lakes Public Forum in Toronto held in October 2016

	Yes	No	No response
Total	**40**	**124**	**14**
Detroit	7	49	0
Sarnia	16	10	4
Toledo	6	18	5
Buffalo	8	32	3
St. Catharines	3	15	2

The Governments' Progress Report of the Parties on Great Lakes Water Quality

	Yes	No	No response
Total	**61**	**104**	**13**
Detroit	20	36	0
Sarnia	15	12	3
Toledo	9	15	5
Buffalo	11	29	3
St. Catharines	6	12	2

The IJC's Triennial Assessment of Progress under the Great Lakes Water Quality

	Yes	No	No response
Total	**55**	**110**	**13**
Detroit	17	39	0
Sarnia	12	15	3
Toledo	10	14	5
Buffalo	10	30	3
St. Catharines	6	12	2

2. Please provide the following evaluation of the IJC public meeting you attended:

Did you like the format of the meeting?

	Yes	No	No response
Total	**152**	**9**	**21**
Detroit	48	2	6
Sarnia	27	1	2
Toledo	25	4	4
Buffalo	36	1	6
St. Catharines	16	1	3

Did you find the meeting useful/interesting?

	Yes	No	No response
Total	**148**	**3**	**18**
Detroit	52	0	4
Sarnia	17	1	3
Toledo	27	0	2
Buffalo	36	1	6
St. Catharines	16	1	3

Was the meeting more or less what you expected it to be?

	Yes	No	No response
Total	**138**	**13**	**29**
Detroit	41	7	8
Sarnia	25	1	4
Toledo	25	0	4
Buffalo	32	4	9
St. Catharines	15	1	4

Key lessons can be learned from the survey results, given the overwhelmingly positive responses to the March public meetings, from personal input as well as in the survey results as listed below. Public consultations should be designed to include presentations and/or information relevant to local/regional Great Lakes issues. Ample time should be provided for individual comments, questions and interaction, and meeting invitations and announcements must be distributed widely through a variety of traditional and social media options. Perhaps most importantly, the majority of citizens expressed appreciation that the IJC took the time and effort to come to their communities – rather than the public bearing the time and expense to travel to meetings – to learn about local initiatives and issues that matter most to them about Great Lakes water quality.

II. Great Lakes Public Meetings

Issues Raised at IJC Public Consultations

Seventy issues were raised at the public meetings or in written correspondence. Some may pertain to and directly affect particular Great Lakes communities, but often the comments reflect a broader perspective and desire for an ecosystem approach to Great Lakes management and civic engagement. Issues listed in the following table are provided sequentially according to how often they were raised. To read a summary of these comments, please go to Chapter three of the Triennial Assessment of Progress Report.

1. Safe Drinking Water
2. Recreation/Tourism (swimmable, fishable)
3. Nuclear Plants/Nuclear Waste
4. Proposed Lake Huron Nuclear Repository
5. Toxic Contamination/Pollutants
6. Proposed US Funding Cuts to Great Lakes programs
7. Radionuclides as a Chemical of Mutual Concern
8. Nutrients/Agricultural Runoff/Best Management Practices
9. First Nation/Tribe/Métis Involvement
10. Infrastructure/Wastewater Treatment Plants
11. Draft TAP Report content and findings
12. Areas of Concern
13. Citizen Activism/Public Participation
14. Enbridge Line 5 Pipeline
15. Climate Change
16. Mandatory Regulations for CAFOs
17. Aquatic Invasive Species
18. Harmful Algal Blooms
19. Asian Carp
20. Safe Beaches/Closures
21. Combined Sewer Overflows
22. Environmental Justice
23. Ballast Water Controls
24. Lack of Government Action/Mismanagement
25. Nestle/Bottled Water Withdrawals
26. Hydrofracking/Waste
27. Fish Populations/Habitat
28. Groundwater
29. Lakewide Management Plans/Citizen Forums
30. Regional Water Plans
31. Green Infrastructure
32. Industry Involvement
33. Microplastics/Microbeads/Microfibers
34. *Phragmites*
35. Wetlands
36. Zebra/Quagga Mussels
37. Data Sharing and Management
38. Data to Public
39. Environmental Education

40. Stormwater Management
41. Air Pollution
42. Citizen Water Monitoring
43. Cyanobacteria
44. Dredging
45. Parties Report on Progress (PROP)
46. Social Science Indicators
47. Water Diversion
48. Crude Oil Vessel Transport
49. Deforestation
50. Fish Advisories
51. Land Use/Sustainable Development
52. Ramsar Designation for Niagara River
53. Ships Dumping Bilge Water and Waste
54. Use of Lakers to Transport Goods vs. Ocean Ships
55. Aquafarming
56. Bans on Styrofoam and Plastic Bags
57. Clean Energy
58. Detroit River as UNESCO Site
59. Flame Retardants
60. GIS Mapping
61. Global Threat Reduction Initiative for Irradiated Weapons-grade Uranium
62. Glysophate as CMC
63. IJC Board membership
64. Lake Erie National Marine Park
65. Lake Levels
66. Minimal Threshold to Protect Natural Heritage
67. Niagara Ice Boom
68. Pharmaceuticals
69. Underground Toxic Waste Storage
70. Welland River Remapping

Great Lakes Public Forum: IJC Public Comment Session
Wednesday, October 5, 2016
Toronto, Ontario

Introduction
At the end of the Great Lakes Public Forum, which was hosted and organized by the Governments of Canada and the United States as part of their responsibilities under the Great Lakes Water Quality Agreement, the IJC held a public comment session to obtain input on the Parties Report on Progress. Conference participants were primarily from federal, state and provincial governments, Great Lakes nongovernment organizations, First Nations and Métis, and students. The comments from each participant in the IJC session follow and can also be viewed by clicking on the person's name, or at Participate IJC.

Katherine Mason
In its oversight position, the IJC is tasked to take the short view on the Water Quality Agreement, which we could argue is the report that we have looked at just now; the midterm view and also the long view. The IJC in its international watershed initiatives has committed as one of the five commitments to help develop in watersheds a shared vision. I think that it is being undertaken in three of the boundary water watersheds at this time. However, we do not have an active widely shared vision for the Great Lakes. There is certainly one in the Water Quality Agreement that has to do with the two parties. Many organizations working on behalf of the Great Lakes have their own vision statement, but we do not have for the Great Lakes and the St. Lawrence River, a shared vision. That is not the case in many other large transboundary watersheds around the world, and I would urge the Commission to consider initiating a process by which citizens participate in a widely shared vision.

Grand Chief Abram Benedict, Chiefs of Ontario
I am Grand Chief Abram Benedict from the community of Akwesasne. I am representing today the Chiefs of Ontario secretariat and the environment portfolio holder. Honorable Commissioners, IJC delegates, elders, respected Treaty people of Turtle Island; we bring greetings from the political confederacy of the chiefs of Ontario Secretariat on this occasion at the gathering of party delegates for the 2012 Great Lakes Water Quality Agreement. As custom amongst our respective First Nations, this day began with prayer, thanksgiving of the natural world, worlds that come before all else. We welcome you to the dish with one spoon, homeland of the Anishinaabe and Haudenosaunee who have shared their Great Lakes basin territory and beaver hunting grounds with many nations and people.

First Nation people have lived in peace and harmony with the Great Lakes basin since time immemorial. It's our inherent respect for the natural world, sustained uses of natural resources, traditional knowledge of the areas we live in and our commitment to the future health of the Great Lakes for all people that brings us to this discussion. Our message is simple today. It is time for the IJC to recognize the jurisdiction and inherent treaty rights of First Nations in all governance matters affecting the homeland of many First Nations across the Great Lakes. Due consideration for options consistent with defining the Truth and Reconciliation Report calls for a new respectful relationship between Canada, are options that respect First Nations' jurisdiction. It is also consistent with the United Declarations on The Rights of Indigenous People and affirms the principal of equality while affirming all people can contribute to a diverse enrichment in protecting the Great Lakes environment for all of our future. In making this request, we acknowledge the steps that IJC has already taken, in particular the appointment of Dr. Henry

Lickers, who I must mention is from my community, to the Science Advisory Board and Mr. Dean Jacobs to the Water Quality Board. We acknowledge these steps. These steps are in the right direction. We have many others who have made unwavering commitments to the health of the Great Lakes basin. We express our deepest expression of gratitude to the grandmother Josephine Mandamin who we will hear from tomorrow. Our women water commissioners and all those who support the efforts of the Great Lakes St. Lawrence Water Walkers. We acknowledge our First Nation Ambassadors, youth, women, elders, our faith keepers and their political leaders.

Our technicians tell us that First Nation opportunities are meaningful, particularly in development of reports with Annexes to the Great Lakes Water Quality Agreement. Those participations are few and far in between. Engagement with First Nation people in the development of reports on the health of the Great Lakes environment should be paramount to the work that is being done. Consultation by the crown is an important, fiduciary responsibility and the need to work together to achieve that. We understand that Environment and Climate Change Canada has invited the Chiefs of Ontario to appoint one technician to the Annex subcommittee. We applaud this decision, but encourage more subcommittee participation by our people. In order for meaningful engagement to occur with First Nations, resources need to be provided to participate and be fair and equitable.

We call upon Environment Canada to support First Nations' capacity and collaboration in implementing the ten Annexes of the Agreement. From the sleeping giants of Manitoulin Island to the Bays of Quinte, the Gulf of the St. Lawrence and all points in between, our creation stories, our songs, our ceremonies, our traditions and the voices of our ancestors echo ripples across the waters. Our oral histories are etched in and across the shorelines and landscapes. We will continue to assert the need for respect, equity and empowerment through the voices of our ancestors. In conclusion, our elders, the conviction of our women as waterkeepers, the hopes and dreams of young ambassadors and young men and women for the future that faces us ahead. We thank the IJC for the opportunity to share these words and welcome the opportunity to move forward.

Dave Ullrich, Great Lakes-St. Lawrence Cities Initiative

My name is David Ulrich and as suggested in the video, I am a voice of the Great Lakes community and as suggested by you, Commissioners, we are all in this together. I don't intend this to be a finger pointing exercise. Number one, if we never knew it before, we know it today that we are not doing the job we need to do in terms of engagement of Indigenous Peoples. The Water Quality Board, among others, is going to be dedicating an entire meeting to better understand how we can improve relations. We will come back to the Commission with recommendations from that and hope to provide some good suggestions that can be passed along to the Parties and the rest of the community. I would be remiss if I did not point out that at the Great Lakes Restoration Conference in Sandusky, minority low income communities around the Great Lakes do not feel that they are being engaged effectively. We as a community need to do a better job on this.

Number two, climate change. Mike Ripley mentioned a couple of things already. This is huge. It is going to make all of the challenges we have even greater. Federal governments, Canada right now, the US more recently are stepping forward on the mitigation side as well as adaptation. There is push back, but under the Water Quality Agreement and otherwise, we need to deal with this. Cities, who I work with, are stepping forward under the Global Covenant of Mayors for Climate and Energy to seek better mitigation and adaptation, and we will continue to do that. Nutrients, also a reference earlier to the work of the Great Lakes Water Quality Board, making suggestions to the Parties and to the states and

provinces as to specific things that could be done. As a follow-up to my question, I think for the domestic action plans, we need to be much more specific in terms of where the reductions have to be achieved, how much the reductions have to be and time frames for achieving them. I don't know if it can necessarily go down to farm by farm or source by source, but it's got to be more specific than it has been in the past. I take my hats off to the Parties for making a major step forward on utilization of indicators in this progress report. Tremendous progress has been made in presenting this information. I think that there is more work that needs to be done in terms of being able to understand what is happening. That bottom line is the Great Lakes are good and unchanging and we do have a bottom line, but I think there are ways we can flush that out a little bit more. Specifically on chemicals of concerns, PBDE's and radionuclides, Parties take the ball and run.

Mark Mattson, Lake Ontario Waterkeeper

Thank you very much and I will be very quick. I just want to start by saying that I am a Waterkeeper for Lake Ontario, but I have also been a member of the Great Lakes Water Quality Board now for two terms. I am honored to be on the Great Lakes Water Quality Board and work on public engagement and consultation. I think it has been interesting and successful. I think the board and everyone involved has been moving and recognizing the need to be more consultative and more engaging. Just two things moving forward. One, it's funny, I think we are all changing, particularly here in Canada recently, but even watching the video, I think we do need to address the issue of just two nations on the Great Lakes. That's no longer true. I think we do need to acknowledge our First Nations and their role over the sovereignty and making the Great Lakes swimmable, drinkable, and fishable. I think that's something that we should move up to the forefront to address and whether we have to look at the constitutional obligations of the Canadian government to consult which is in the relationship with the US, I think it is time for the IJC to recognize that, and be the first, to truly put it forward. Secondly, I think in terms of consultation, I love the video "You're the Voice" and we are getting people's voices. However, I feel they are not seeing their faces in some of the material that comes back from the IJC. We still talk and aggregate, we put things together and come up with trend lines.

Things are getting better or worse or they are unchanging. People want to see their issues dealt with; their voice and their concerns if they can't swim in the water or touch it, or eat what's in it, or drink it. They are here to tell you that they want that to be addressed somehow. I know that there isn't a clear answer to that. It is difficult and we are trying, by doing polling and more consultation. The IJC has to recognize that it's the most important thing to the people of the Great Lakes when they come to you express their concerns when they can't drink the water or they can't eat the fish or go swimming. We have to do a better job of reflecting that and letting them know that they are heard and as the Great Lakes Water Quality Agreement says, engaging and empowering them to go ahead and act individually. I would like to put that out there and thank you very much for being here today.

John Jackson

I'm speaking in terms of someone, who for 35 years, has been participating in Great Lakes Water Quality Agreement processes. To make some observations in terms of the public engagement aspect of it and I am talking particularly to the governments, but I know that the IJC too is part of this. I'm excited about the number of people here today, this is great. However, we have a lot further to go in terms of public involvement than these meetings. This is overwhelmingly government people; it's overwhelming the people at universities and scientists and so on. The real on the ground citizen activists, we need to have them much more engaged in our Water Quality Agreement processes. There's a lot more excitement and dynamism that we can bring to our meetings.

I have learned an incredible amount, but I do remember meetings where in Duluth for example, 1,900 people came out to the IJC biennial meeting at that time. The meeting before that in Windsor, 2,000 people came out. So yes, 700 is great, but let's not be satisfied with that. Let's push for more in terms of the dynamism and excitement of that. I am not sure this is something I should tell you, but I remember Hamilton meetings where we had presentations from the public which went on until midnight and the Commission, I did feel sorry for them sitting through all of that. But, it showed the excitement and engagement from the citizens, on the ground people coming out to be engaged in these processes. I really feel that unless we get not just all the Great Lakes community groups out there on the ground doing the work that is so essential, it is wonderful. You are going to hear a lot of that tomorrow, but we need them also engaged in our processes to be bringing first of all the energy and dynamism, I am saying why we have to do better. I mean the evaluation, that's actually pretty pitiful, that we heard yesterday morning was great and I appreciate it's directness and clarity, but boy we should be upset and angry about that and if we are not having the people at our meetings experiencing that to bring that energy and dynamism to the governments and say this just isn't good enough, keep going at it, we appreciate what you are doing, but bring us more.

The other thing is that a big step forward in public engagement in the Water Quality Agreement and that was really stressed, hasn't been happening far enough. I think that Annex 2, for example, is making valiant efforts but it is taking forever. People can't sit around for three years waiting to figure out what the process is for them to be engaged. We also need to immediately communicate with the people, who said that they want to be engaged, to keep them up to date on what is happening. There`s more to be done, a lot more to be done, and getting that excitement and dynamism back into our work it is absolutely critical.

Barry Johnson, Greening of Detroit

This forum is on the assessment of the state of Great Lakes, actions being taken, which we will discuss. I am a volunteer with the Greening of Detroit, a nonprofit 501C3. Since 1989, we have planted 88,000 trees with funding from the EPA, GLRI (Great Lakes Restoration Initiative) and Friends from the Detroit River water and sewage department. We have planted trees in the Rouge River watershed, a tributary that enters the Detroit River. We have received funds from the EPA for a remediation project that will produce best practice documents for removing pollutants from soils. In 2000, the emerald ash borer, an invasive insect species, was discovered in Wayne County, Michigan. Emerald ash borer has devastated forests in Michigan, Illinois, Ohio and Ontario. It is now in 27 states and two provinces in sixteen years. Forest degradation is real; air quality suffers; run off and erosion increase. The IJC must consider forest losses in their planning. The EPA and Canada's equivalent must continue to fund green infrastructure. Forests are the earth`s lungs.

Jacqueline Wilson, Canadian Environmental Law Association

I am a lawyer with the Canadian Environmental Law Association. We are also a member of the extended subcommittee on Chemicals of Mutual Concern so I am going to focus my comments on Annex 3 today. The first issue that we want to raise is that the current tracking of pollution levels in the Great Lakes is insufficient. In looking at the data before coming today, in 2012 in Ontario alone there was over 1.5 million kilograms of carcinogens released to the air and that's only in Ontario. It gives you a sense of the scope of some of the issues, but it also highlights that as a member of an NGO, the data that is available through NPRI and the CEC is out of date, it is 2012 or 2013. Our recommendation is that annual reporting of pollution releases and transfers to the Great Lakes basin should be created so

that it provides us with an accurate base of data that we can all work with. In looking at that data though, the trend is going in the wrong direction. For on and offsite releases of pollutants for the Great Lakes watershed it increased by 35.15 percent, which is quite a lot between 2009 and 2013. For persistent bioaccumulative substances, the increase was 12.37 percent from 2009 to 2013. The current pace of work under Annex 3 is not reflective of the urgency of the issue. It's taken three years for the Parties to confirm the first short set of Chemicals of Mutual Concern and there's no action plan in place yet and there is no clear timeline in the 2014 Canada-Ontario Agreement to address chemicals of concern into the future.

The second issue we want to raise is public engagement under Annex 3. We are at a critical juncture right now in implementation of the Annex and work on the binational strategies is underway. CELA along with 110 other environmental health advocacy groups urged the Parties in March 2016 to jointly designate radionuclides, which we obviously encouraged the governments to do, as a Chemical of Mutual Concern under Annex 3. What we need now is clarity on the next steps of that nomination process and public engagement in that process. And of course, we want to stress the need for focus on public engagement to reflect the commitments made by the Parties in the Great Lakes Water Quality Agreement. Last point, CELA's 2015 report looked at the challenge of nonpoint source and product-based substances within the Annex 3 context. We drew on the European Union Reach framework. We would like to see the action plans that are created focus on prevention, the adoption of new approaches like informed substitution, and safer alternatives.

Gerald Parker, Institute of Canadian Justice

Hi my name is Gerald Parker and I am from the Institute of Canadian Justice. If you like this t-shirt, they are on sale out in the lobby with the Lake Ontario Waterkeeper. Thank you for being here for the last few days. It has been some dark days here in Canada for science, social justice and evidence-based decision making in Canada. It's refreshing to see the resilience of you wonderful folks and your success stories. Your work is telling, it's a telling testament of binational cooperation and I want to thank you all for that. Today it is 2016 and Canada's federal leadership has signaled and announced a different tone. The dark days are past, our Prime Minister himself paddles our rivers and our lakes and he has been out there as daddy and taken his kids. We are seeing infrastructure dollars; we are seeing sewer plants; coastal reconstruction projects; and 150th legacy projects like the 2017 waterfront festival in Whitby, Ontario. It's a watershed moment for all of us. These are brighter days, but there are some dark clouds on the horizon and they are storming somewhere else. The progress report, first of all, and I am going to your four questions. It tells us much, it's a lot of evidence and it's based upon sound science; we need more of it, we really do, but we also need to share it. Please, and now I am going to go to three recommendations. We need to talk about and emphasize about the importance of the challenge that groundwater degradation does provide for us. We need to provide sub-indicators and correlations. This will enable a talk about groundwater quality and quantity. To not speak about the depleted groundwater tables impacting much of our pollutants, our wetlands, our watersheds, and sustainability and lake levels is missing the plot. Most and more attention to this full cycle has to be provided. Avoiding corporate interest perhaps, plundering like pirates of our groundwater savings account. Someone said yesterday has to be addressed and resolved. This is not an insulated or isolated circumstance or situation. This is a continental issue. Let's not be divided and conquered ensure that the Great Lakes are not a port of call for predatory pirates.

Second recommendation is civic action and engagement. We need much more of it. Everyone has spoken about it; engagement between T ribes, First Nations and indigenous peoples, our youth, our

schools, our communities. We need to have these sectors, the people, the power and the professionals, all these jurisdictions working together so that we can hear and support each other. I know that municipalities and associations across Ontario would like to be here today, but they can't afford it. We need to bridge that gap and provide the funding. This will only happen if we enable them to be here to speak about those priorities and yes, folks like us can and do say things that folks like you can't. We can speak about pirates and Nestle in the same sentence. You folks can't, we can. So, let us do our work.

Groundwater degradation, civic engagement and pharmaceutical products in our water supply. We have an opioid pandemic on this continent. We need to address this issue very, very clearly. We have product out there that can kill elephants being put into our water system. Canada, it's a different day, it's a different dollar, and it's a different tone. Let`s engage that. Let`s embrace that. Let`s work together. Let`s do two things. I ask everyone here to please go to the Nestle link and add to the 285,000 signatures. Please go and look at the Lake Ontario Waterkeepers' 2016 gala video. It`s amazing. Let`s stand together and do what we can. Please include folks like us on your subcommittees. We got heart, we don't bite, we do nibble a little, but we have heart.

Jill Taylor, SOS Great Lakes

I`m Jill Taylor, president of SOS Great Lakes, a binational organization dedicated to keeping the burial of radioactive nuclear waste out of the Great Lakes basin. We are not anti-nuclear, but are deeply opposed to the reckless plan of Ontario Power Generation (OPG) to construct a deep geological repository (DGR) for low and intermediate level waste on the shore of Lake Huron. The burial of this radioactive waste could result in the continuous risk of radiotoxic poisoning of Lake Huron, the whole of the Great Lakes and the St. Lawrence River system. It should be of concern to this forum for at least five reasons. Reason one, radioactive nuclides are persistently destructive. Two, multiple violations of the Canadian Environmental Assessment Act. Three, deeply-flawed science. Four, flaunting of obligations to consult adequately with the United States, and five, every DGR in the world has failed.

You (the Parties) said in your progress report that you are interested in chemicals that are persistent. No substance is more persistent than radionuclides in combination with our lake water. Over 100,000 years extends the definition of persistent and cannot be ignored. International experts have consistently derided the science and lack of common sense of a DGR on the Great Lakes, saying that it will not be able to contain radioactive nuclear waste or prevent the contamination of the ecosystem including the lakes and the people around it. Yet the Ontario and Canadian governments continue to allow consideration of the plan and you have remained silent on it. In a direct affront to the CEAA, OPG refused to consider alternate sites in addition to the sedimentary geology to the nearshore environment of the Bruce nuclear site. OPG has stated that not only will the DGR leak, but their stormwater management system to protect the groundwater of Lake Huron is totally insufficient to handle extreme weather events. They also failed to consider climate change in relation to Great Lakes weather and the effect on future emergency management and control. Thousands of pages of testimony were read into the record by Canadian and American citizens and politicians as well as nuclear scientists, indigenous peoples and doctors that refuted the logic and safety of the proposal for the dump on the shore of Lake Huron at the 2013-2014 environmental hearings. Every day, new evidence emerges exposing more faults in the OPG DGR science and its wholly inadequate plan.

In conclusion, we ask that the Canadian and US governments work together to stop the DGR plan, a

plan that was and is ill conceived and does not follow the obligations of environmental protection which we so proudly speak of in this forum. By doing so, you will join more than 154 municipalities that have signed a petition against the plan; the Great Lakes and St. Lawrence mayors who have thrice passed resolutions against the plan; and 98 percent of all Canadians and Americans who responded to a letter writing campaign initiated by the Canadian government in September 2015. We urge the executive of the Great Lakes forum to list radioactive nuclides as a Chemical of Mutual Concern and immediately act to oppose the OPG plan for a nuclear waste dump in Kincardine, Ontario. Thank you very much.

Ellen Dailey, SOS Great Lakes

My name is Dr. Ellen Dailey; I am from Erie, Pennsylvania. I`m a board certified obstetrician-gynecologist and director of SOS Great Lakes. As we have heard, a number of challenges continue to threaten the sustainability of the Great Lakes. Among these are toxic chemicals including legacy contaminants and substances of emerging concern. Some of these toxics were included in the first list of Chemicals of Mutual Concern, but there was at least one important omission; radionuclides.

According to the EPA and Environment Canada, Chemicals of Mutual Concern are those that originate from anthropogenic sources and are agreed to by both countries as being potentially harmful to human health through the environment. Yesterday I brought to your attention two reports from the 1990s that were prepared for the IJC about radionuclides in the Great Lakes. Today, I would like to elaborate on this topic and present why radionuclides should be included in Annex 3. The inventory of radionuclides in the Great Lakes report concluded that radionuclides were present in the Great Lakes and that the majority of the radionuclides were from anthropogenic sources. The report also concluded that radionuclides are persistent, bioavailable, toxic and have the potential to bioaccumulate and bioconcentrate. Regarding their toxicity; a recent review of the CNSC, World Health Organization and American Cancer Society websites point out that exposure to ionizing radiation carries health risks and that some populations such as women, children and the fetus are more sensitive to the effects of radiation exposure than other groups. These health risks include cancer, hereditary effects, cataracts, cardiovascular disease and strokes, immune effects, premature aging, radiation sickness and death. Leukemia, a type of cancer that arises in the bone marrow, and thyroid cancer are among the most common radiation induced cancers. The thyroid gland normally takes up iodine and bone takes up strontium. Each of these elements has a radioactive isotope produced by nuclear fission and is found in the Great Lakes. Perhaps less well known are the potential hereditary effects of ionizing radiation. These include congenital malformation, cognitive impairment, and microcephaly, growth restriction of the fetus, prematurity, infertility and pregnancy loss. Exposure to radionuclides may also increase the risk for cancers and other health problems in future generations due to the subtle ongoing biological impacts that may become pronounced and irreversible over time through genetic mutations. Human activities both historic and current have altered and will continue to impact the Great Lakes ecosystem.

Radionuclides are present in the Great Lakes and are persistent and toxic. They clearly meet the criteria for inclusion in the list of Chemicals of Mutual Concern. We ask the Canadian and US governments to work together and do the right thing and to protect and restore the Great Lakes. Add radionuclides to the list of Chemicals of Mutual Concern. Thank you.

Marti McFadzean, Inverhuron Committee

Good Afternoon ladies and gentlemen of the International Joint Commission and also welcome to all of the participants who are at this very important forum. My name is Marti McFadzean and I represent a

group of citizens who live five kilometers from the Bruce nuclear site, which is the proposed location for the nuclear waste repository. Before speaking directly to our concerns about this project, I would like to tell you a little bit about who we are and how we became to be opposed to the project by Ontario Power Generation (OPG) to build a nuclear repository on the shores of Lake Huron to permanently bury low level and intermediate level nuclear waste from all of Ontario's power plants. We are citizens of the previously named hamlet of Inverhuron which has now been incorporated into the municipality of Kincardine. We are made up of both seasonal and permanent residents who live right along the shoreline of Inverhuron Bay. Our residents trace their heritage back four, five and six generations. In early days, they drew their water directly from the lake via sand points in front of their homes. More recently, they have relied on deep wells cut into the aquafers that run inland from the lake. Therefore, water quality has been an integral part of our life along the shoreline. For that reason, our community incorporated the Inverhuron Committee because we have a large stake in ensuring that no radioactive materials can leak into the lake as a result of the project.

However, it wasn't long before our research widened beyond the shoreline because this potential repository would affect in fact more than forty million people along the shores of the Great Lakes should a human error, malfunction, severe weather or act of terrorism occur. This would be the contamination of drinking water of a disastrous magnitude. Our concern about leakage was reinforced during the joint review panels of 2013 and 2014 when the OPG indicated that when leakage occurred, radionuclides would be sufficiently dissolved in the waters of the Great Lakes. There is no dilution sufficiency when we look at the importance of our fresh water. As the caretakers of this precious resource, we cannot take a chance. We soon learned in our research that this would be the first repository to be built in limestone, which is a karst susceptible geology and that the only two other repositories of this type have indeed leaked into the groundwater in Europe and have been closed down. In 2014 another repository leaked in Carlsbad, New Mexico and it has been closed and unable to be entered. Our journey soon led us to realize why this area had been chosen the municipality had agreed to host the repository and were given compensation of $35 million. There was a survey done in the community and not a referendum, the telephone questionnaire that was asked was of a very general nature. The seasonal residents were obviously not included. Our group believes that a small community of 12,000 people should not have the power to decide where and how Canada disposes of its toxic waste. Please take a more global view of this situation and fill in guidelines and policies that will help us bury this or put this nuclear waste in a safe place. Thank you.

Molly Flanagan, Alliance for the Great Lakes

Thanks for this opportunity to speak. I am going to focus my comments on Lake Erie and ballast water; Annexes 4 and 5. First on Lake Erie: we are pleased that governments have adopted nutrient reduction targets for Lake Erie. We are concerned that the domestic action plans will rely on voluntary adoption of agricultural best management practices, which has been largely unsuccessful in reducing pollution from farms enough to curb toxic algae. The domestic action plans must include programs, policies and protections that will successfully meet nutrient reduction targets. Without these, the domestic action plans will fail to achieve that 40 percent reduction goal, just as voluntary attempts to control pollution elsewhere have failed elsewhere across the country. In addition to developing the domestic action plans, the Alliance calls on US EPA to development an enforceable TMDLs (total maximum daily load) for US Lake Erie waters and an equivalent plan by Environment Canada for Canadian waters. We have asked Ohio and Michigan to declare the open waters of western Lake Erie as impaired under the Clean Water Act. It's glaringly obvious that these waters are impaired under federal law. While a TMDL is not a panacea, it is the most effective tool that we have under US law that can help solve Lake Erie's

problems.

And now briefly, on ballast water: stopping invasive species before they enter the Great Lakes is critical to the health of the Great Lakes. Ballast water is the primary way in which they have gotten into the Great Lakes. We are pleased that the US EPA is regulating ballast water under the Clean Water Act. The US EPA's new rules should require using the best technology available, including numeric standards, and consider onshore treatments while covering all classes of vessels. We are concerned by efforts in the US Congress to undermine the Clean Water Act protections through legislation like the Vessel Incidental Discharge Act. We have and will continue to stridently oppose efforts to weaken ballast water protections.

Finally, I know that there is a lot of focus on celebrating successes this week and I am as fond of a celebration as the next person. We should celebrate the progress we have made cleaning up our legacy of contamination and be encouraged by the localized improvements made in coastal cities. However, these successes are not the entire Great Lakes story. People across the region are at risk of contaminated drinking water and the benefits of the Great Lakes are not shared equitably. I fear that there is a general lack of urgency in addressing some of these critical threats to the Great Lakes and the people that call them home. This week, we are spending a lot of time on process; the real measure of progress are the actions we take to ensure that the Great Lakes are reliable sources of drinking water, recreational opportunities and support a strong economy. Thank you.

Eugene Bourgeois

Good Afternoon, my name is Eugene Bourgeois and I am a retired sheep farmer living in Inverhuron, Ontario, home to both a nuclear power plant and the proposed geological repository for intermediate and low level radioactive waste beside and below Lake Huron. It's surprising to me that radionuclides are not already Chemicals of Mutual Concern in the Great Lakes Water Quality Agreement under Annex 3, as recommended by your own nuclear task force twenty years ago. We learned in the late 1880s that when we use our rivers as sewers, innocent people die. We were reminded of this recently when Walkerton's water was contaminated by farm sewage and a number of people died. In each case, the solution to pollution was believed to be dilution. The National Academy of Science has established that there are no known safe concentrations of exposure to radionuclides and has adopted a linear no threshold standard. The recent kick study in Europe demonstrated the strong statistical correlation between exposure to chronic low doses of ionizing radiation and childhood leukemia. Impacts increase the closer one lives to a nuclear power plant, even when these are operating as ratings permitted. Even without this, we still manage to be exposed to the harmful effects of chronic low doses of radiation from both cosmic and solar sources, each of which can cause sickness and death.

During the hearings for the DGR, we learned that OPG's long-term plan for this radioactivity is for it to be discharged into the groundwater and from there to Lake Huron. It claims that this won't happen for a million years similar to WIPPs (Waste Isolation Pilot Plant) claims. WIPP failed catastrophically after only fifteen years. In the 1950s, expectant mothers were x-rayed to determine the relative health of their babies. It was only after Alice Stewart organized the Oxford survey in England and analyzed the data statistically that she showed x-raying fetuses itself lead to early childhood death. Buster Brown shoes offered to x-ray your feet when I was a child and many of those adolescent boys who did so then are sterile today.

The Great Lakes are a source of drinking water for more than 40 million Americans and Canadians.

Water is something that each of us needs every day of our lives. Mothers need it to mix baby food for their children. It was a mere 75 years ago that we first split the atom setting the stage for nuclear power production. In every case our initial concerns about the impacts of exposure to ionizing radiation have been far too liberal to safeguard people. Radionuclides must be included as a Chemical of Mutual Concern under Annex 3. Without having a clearly identified understanding of them and their inventories, we will not be able to research their potential adverse health effects on populations who live near and rely on the Great Lakes for water. Thank you.

Nancy Goucher, Freshwater Future

Hello, I am Nancy Goucher with Freshwater Future. Thanks for taking the time to listen. First of all, I want to recognize how lucky we are to have the Great Lakes Water Quality Agreement. Some of my friends in the Lake Winnipeg jurisdiction are very jealous of our Great Lakes Water Quality Agreement. I know that lots of people are jealous over various things. My US colleagues are jealous over the Canada-Ontario agreement. We Canadians are jealous over the Great Lakes Restoration Initiative. I think that there is a lot of progress that we can make. The Great Lakes Water Quality Agreement has been really important in a number of ways. It has helped us establish pathways to addressing threats. It has helped us collaborate across regions to work together to create solutions. It has been a way to justify investment in the resources to protect this water. I think it is really important that when we face serious threats, our challenge is to be really thorough with science and public consultation while being quick enough to respond to threats happening right now. I think that given the level of threats that we have with algae blooms in Lake Erie, we really need to stress the urgency of reacting much more quickly. As you know, the largest algal bloom ever recorded was in 2011 and that record was again broken in 2015. In 2014, we had hundreds of thousands of people without clean drinking water because of the algal blooms. If this is not a call to action, I don't know what is. Here we stand in 2016 and all we really have is targets to address the phosphorus. I get it, it takes time to develop the science, it takes time to develop the plans and I am waiting for these plans to be released. I am eager to see what is going to be in these plans. Because I am willing to wait, we need to have these plans have real solutions in them. These solutions need to add up to the 40 percent targets that have been put in there.

I am going to list four things that I think these plans need. First, the solutions need to add up to 40percent reduction in phosphorus. Secondly, there needs to be some new innovative ideas, approaches and solutions. The same old solutions that we are using today aren't going to be enough to get us to the degree of change that we need. The third is that the solutions need to be proportional to the sources of the pollution. That means that a lot of these solutions need to directly address nonpoint source agricultural pollution. The fourth and final point is that there needs to be some triggers in there for noticing that we are not quite meeting the 40percent reduction targets. We need to ratchet up our solutions and do more than we were doing previously. Thank you.

Sandy Greer, writer, filmmaker, educator at Awakening to Possibility

I see myself mainly as an educator and also as one of John's on the ground citizen activists, as many of my previous friends and neighbours have presented themselves. My name is Dr. Sandy Greer and I am one more citizen who wants to advocate strongly for the inclusion of radionuclides as Chemicals of Mutual Concern. It is overdue and yet it is absolutely imperative at this time. I have been one of the intervenors at two public hearings to fight against the proposal of a deep geological repository near the shoreline of Lake Huron, which is totally outrageous because the science is not there. I would like to point out that I am very happy to see that all of your Annexes and several of your priorities for science

and action fit beautifully with the need right now to include radionuclides. For example, in your science and action document of 2016, the IJC advocates to provide an early warning for chemicals that could become Chemicals of Mutual Concern. This is why studies are needed to be done immediately, because they have not been done properly. I must say and I am sad to say that the nuclear industry cannot be trusted.

I am shocked with what was said and what was not stated during many weeks of two public hearings in 2013 and 2014 when I was reading science documents and I continue to do so to be up to date on international science. Even the International Commission for Radiological Protection (ICRP) in its 2014 document pointed out that globally the nuclear industry is in the early years of beginning to figure out how to measure radionuclides in the natural environment. What the ICRP has been doing is creating a reference study similar to what was done for human beings. The ICRP is being criticized constructively by fellow organizations such as the International Union of Radioecology who points out that the representation of animals and plants as symbolic organisms is totally insufficient and that what is needed is an ecosystem approach. I commend the IJC because this is where you are at. The nuclear industry is not there yet to recognize, most specifically in Canada, that we need to undertake an ecosystem approach. But we are seriously challenged. What I have learned as a citizen is that you cannot rely on only computer models because even different computer models done at different scales from a single organism to a landscape scale will come up with different and contradictory results about the impacts of radionuclides. Computer models must not be solely relied upon. It is imperative to include field and laboratory testing. This needs to be done now and many of these studies done and find independent scientists to do these studies so we get closer to the truth of the actual potential danger impact on the environment. Meanwhile, your work will influence the federal government and I hope to stop any licensing for the deep geological repository until a lot more factual science is available.

Andrew McCammon, Headwaters Institute

Thank you very much for being here and listening to our comments. I am Andrew McCammon and I am the Executive Director of Headwaters Institute. We are Ontario's leading NGO working on protecting headwaters and advocating for integrated watershed management. I have four succinct messages for you today. First of all, I thought that the 2016 report was excellent. There is some progress, but I am more hopeful over the fact that it seems that there is a lot more progress on the immediate horizon; something that we have been working toward for 25 years, so congratulations. Two, please stop calling the lakes variants of the largest freshwater ecosystem in the world. This is simply not true. The first two versions of the Great Lakes Protection Act contained that phrase. The third version, which was finally passed, deleted that phrase as a result of our bringing to attention to the ministry that this was not the case. Since then, we have had correspondence from the Ministry of Natural Resources and Forestry and the Federal Minister of the Environment to stop using the phrase. The term is obtuse and inaccurate and it devalues your overall science credibility.

Three, we urge you to find a better balance between your efforts on the lakes and their watersheds. We thoroughly understand and support the hugely important science efforts focused on the lakes and the need to deal with excessive municipal runoff and lakeside point source contributions to the lakes. However, and in spite of the restrictive mandate of the recent climate change study, which is informative because it says that they are only allowed to talk about the receiving waters, the lakes and connecting channels and not talk at all about the watersheds. The fact is that too many dead trees, dried out wetlands, too many nutrients, and increased temperatures from thousands of tributaries that contribute 48percentof the annual inflow to the lakes will cause challenges that cannot be ignored.

Four; we ask you to consider recommending to the Parties to commit to protecting the basin by adopting minimal thresholds to protect natural heritage. One set of such targets can be found in the Environment Canada's publication called "How much habitat is enough?" which was the basis for the Ontario Health's (OHI's) submission of the first set of targets under the Ontario Great Lakes Protection Act. We will send them to you and thank you so much.

Christine Elwell, Sierra Club Canada

My name is Christine Elwell, I am with Sierra Club Canada's Green Energy Campaign. I would like to read into the record our letters signed by over 27 NGOs, including Sierra Club US and a growing number of groups on both sides of the border about the proposed shipment of 150 truckloads of highly radioactive liquid nuclear waste from Chalk River near Ottawa down to South Carolina, which is now bracing for Hurricane Matthew, across bridges and roads including the Peace Bridge in Buffalo, NY. I provided copies; I anticipated your need for materials. I provided you with copies of a letter to the Canadian Prime Minister and US President as well as honorable Commissioners and other agencies including the Great Lakes Executive Committee with excerpts from the 2012 Great Lakes Water Quality Agreement and the mandate of the executive committee. We're posting this on your website and the Sierra Club Canada website as well. We had a press conference Monday at Queen's Park, which was very well attended.

This issue is getting a lot of pick up in the southern US media in particular. We request that the Parties in the Great Lakes Executive Committee cancel or delay this radioactive shipment until notice has been given under Article 6 of the 2012 Great Lakes Water Quality Agreement and full and meaningful consultation with state, federal and provincial governments, First Nations, municipalities and the public is made; that includes a consideration of environmental impact assessment in both countries and examines impacts and cumulative effects. Alternatives are available. The science is there. We can solidify this liquid nuclear waste on site. There is no need to transport it all the way through the Great Lakes. The theme of IJC's meeting is about how well we are doing. Our assessment of the progress so far is disappointing given this example of the transportation of this highly radioactive waste. The themes of the 2012 amendments to the Agreement were to anticipate, prevent and respond to threats to the waters. You will see this in Article 2 of the 2012 Agreement. Further, the goal to anticipate, prevent and respond to threats, the Parties set up notice in response to obligations in Article 6. Article 6 says, "The Parties acknowledge the importance of anticipating, preventing and responding to threats and they commit to the following notification response" Sub A) and B) are about pollution incidents. Paragraph C) however is to anticipate activities that could lead to significant impact on the waters and then there is a list of activities. Guess which one is number one? Number one is nuclear storage and transport of radioactive materials. We call upon the Executive Committee and Parties to cancel or delay the shipment until there is meaningful consultation and environmental impact assessment, including alternatives and we give the government 30 days to respond.

Garth Whyte, Fertilizer Canada

Hello, my name is Garth Whyte, President and CEO of Fertilizer Canada. Thank you very much for the opportunity to give our statement. We have an on the ground solution that will help reduce phosphorus runoff to the Great Lakes. Fertilizer Canada was encouraged with the 2016 progress report with the Parties, which on page 47 cited our nutrient stewardship as an internationally recognized approach based on core scientific principles to improve nutrient use efficiency, to reduce any potential nutrient loss into the environment. As well, the report highlighted the activities that have been successfully implemented over the past year under the memorandum of cooperation between Fertilizer

Canada, the Government of Ontario and the Ontario Agri-Business Association. We are also encouraged that the IJC issued a report on phosphorus in Lake Erie which endorses our nutrient stewardship as an important opportunity to improve fertilizer use in watersheds and increase water quality. The Canadian fertilizer industry is committed to delivering science-based programs that produce results that are environmentally, socially and economically responsible. One of the core principles of our program is sustainability. Our industry is committed to working with those who live, work and farm in the Great Lakes region. Fertilizer Canada supports the need to protect the ecological health of the Great Lakes including Lake Erie by continuing the industry's extensive research, programming and awareness building initiatives. The Ontario Memorandum of Cooperation commits a combined contribution of $350,000 to protect water quality and support the sustainable intensification of the agricultural region. Our nutrient stewardship is a science--based approach that ensures that nutrients are applied using the right source, at the right rate, time and place through the adoption of best management practices to achieve economic, social and environmental sustainability. We want fertilizer to go to the plants, not to water. Our nutrient stewardship (4R) optimizes the efficiency of fertilizer use. Properly managed fertilizer supports cropping systems that provide economic, social and environmental benefits. On the other hand, poorly managed nutrient applications can decrease profitability, increase nutrient losses and potentially degrading water and air. The fertilizer industry recognizes that there is a need to find solutions that address environmental concerns and our nutrient stewardship is the industry's solution. As I was listening over the last couple of days, especially with Susan and Tinka's excellent presentation on phosphorus in Lake Erie, I was thinking there is a disconnect often between science and action; there's a disconnect between our ten years of science and implementation of the 4R Nutrient Program. What we recommend is that in the future, the Progress Report of the Parties should address this issue and identify that a coordinated approach between governments and stakeholders is needed to increase awareness and to identify approaches which will encourage and support growers to practice the 4R Nutrient Stewardship. We are enormously proud of the results that have come out of our research of the last ten years with partners, NGOs, governments, academia and conservation groups across North America. We look forward to furthering our relationship with the IJC and the governments in addressing this very important issue. Thank you.

Mike Ripley, Chippewa Ottawa Resource Authority

My name is Mike Ripley. I am the environmental coordinator for the Chippewa Ottawa Resource Authority (CORA) in Sault Ste. Marie, which is comprised of the five Native American Tribes that have treaty rights in the 1836 Treaty in Michigan. Those tribes are the Bay Mills Indian Community, the Grand Traverse Band of Ottawa and Chippewa Indians, the Little River Band of Ottawa Indians, the Little Traverse Bay Bands of Ottawa Indians and the Sault Ste. Marie Tribe of Chippewa Indians. I am a member of the Sault Ste. Marie Tribe of Chippewa Indians. I'm very honored to be on the Water Quality Board, but I am here today to talk about a specific threat to the Great Lakes and that threat is an oil pipeline beneath the Mackinaw Straits, the Enbridge 5 oil pipeline. That pipeline was built in 1953 and millions of gallons of crude oil flow through it every day. That's 63 years old and it extends a distance of 4.6 miles through some of the most treacherous waters in the Great Lakes. I say treacherous because the Straits of Mackinaw have very strong and unpredictable currents. Modeling of an oil spill there shows that the oil travels not only into Lake Huron, but into Lake Michigan and to all the nearby islands and bays. Also treacherous because in a normal winter the Straits of Mackinaw are covered in ice for three months and even the US Coast Guard says that it would be almost impossible to clean up an oil spill if it occurred in the winter. CORA is especially concerned if this pipeline ruptures. Over 50percent of our commercial fisheries occur in those waters. That is the heart of the treaty area and the heart of the Great Lakes arguably. Hundreds of families and tribal members would be impacted if Line

5 ruptured. And as we saw in Prince William Sound in Alaska after the Exxon Valdez spill, toxins from an oil spill will remain in the water and in the sediments for decades affecting the reproduction of fish in that area. As we have seen from reports that we have heard over the last few days, our fisheries have already been impacted negatively by invasive species such as sea lamprey and zebra mussels. An oil spill in the Straits of Mackinaw would be a tragedy for us all. It's not a matter of if, but when. I am asking the IJC and the Governments of Canada and the United States to take decisive action and shut down Enbridge line 5 for good.

Bob Duncanson, Georgian Bay Association

I'm Bob Duncanson, I am the Executive Director of the Georgian Bay Association, which is an umbrella group for 19 cottage associations on the eastern shore and northern shore of Georgian Bay. We represent 3,100 families on the bay. We read the progress report and want to answer the question, are you on target? It's very difficult to be on target when there are so many moving parts. We heard clearly over the past two days the amount of science that is evolving constantly on this file, but there are also new and emerging threats. When I get into some of the obvious things that were missing in the progress report, we have already heard quite a bit about the Chemicals of Mutual Concern, radionuclides and plastics, the anti-bacterial ingredients in personal care products and pharmaceuticals. They are all real and what people are talking about on the bay and need to be addressed sooner than later. *Phragmites* was not in the Habitat Annex in the progress report, but clearly we heard a lot about it in the past two days. I want to point out a disconnect on the Canadian side. The Canadian government has invested some seed money to help local groups, like some of our associations, organizations or NGOs do an eradication program for *Phragmites*, but at the same time they haven't got their Parks Canada people in the game. In Honey Harbour, we are eradicating on private land. In Bosley National Park they are not engaged and they have large *Phragmites* sites.

Another disconnect in the government has to do with addressing nutrients. We heard a lot about what's happening with nutrients, phosphorus specifically in Lake Erie. We have nutrient loading problems in Georgian Bay too. It boggles our mind; we have been very frustrated around fish farming. Fish farming in Georgian Bay and Lake Huron contributes five tons of phosphorus directly into public waters every year. That's a point source that could be dealt with if there was the political will to move them into closed containment. The last point that I want to touch on is something that was brought up earlier about community engagement. The government does not have enough resources, man or money, to get enough science going on the ground, nearshore measurements and what not. We could enlist an army of volunteers, cottagers are very invested in protecting their area and with a little bit of direction and framework from the government, maybe a little seed money, maybe not; you could get a lot of volunteers in the field almost immediately without having to wait for Annexes, LAMPS and whatnot. Get us to work! Put the challenge to us! Thank you very much.

Erin Mahoney, York Region Environmental Services

Good afternoon, my name is Erin Mahoney and I am the Commissioner of Environment Services York region, which is located due north of the City of Toronto, ON. I wanted to share a few comments with you this afternoon which I hope will inform your advice to the governments of our two nations on the Great Lakes. York Region supplies safe water and wastewater services to our current population of approximately 1.2 million people growing to 2041 to 1.8 million, with 50,000 businesses across the region right now. We have a strong and vested interest in projecting the health of the Great Lakes and I think that is underpinned by our investment the last decade of CDN $3.7 billion in water and wastewater infrastructure.

The region is unique; our communities are serviced by both Lake Ontario water as well water from Lake Simcoe, which is part of the Lake Huron watershed. Our uniqueness is in the sense that we are the only regional municipality in the greater Toronto area which does not have direct access to Lake Ontario for our water supply. We do maintain long-term service agreements with our partners; Peel, Durham, and the City of Toronto for various aspects of our service needs. We see across the Great Lakes basin, water services continue to face greater regulatory complexity. This is especially true for our region that is subject to both the provincial wide regulatory regime and additional requirements that reflect our unique geography at the headwater of rivers and streams draining to both Lake Simcoe and Lake Ontario. The regulatory landscape and these requirements are really important considerations as we think about our future and servicing growth within the region.

Recently, we have adopted recognition that water in all its forms is valuable and needs to be considered under a one water approach to make sure our services are sustainable through a better consideration of integrated thinking and innovative solutions. I think the municipal water system has traditionally been thought of as various isolated components, but if we can unlock more value by integrated thinking about water management, that will help us in the years to come in ensuring our systems are more sustainable. In looking at the Progress Report of the Parties, I think that it is clear that a significant binational effort has been made to increase the understanding of the algae problem in Lake Erie. I'd share with you that understanding and quantifying all the sources of phosphorus and nutrients and evaluating source and nonpoint source management options. Whether it's from municipal sources, industrial sources, agricultural sources or stormwater runoff is clear to success in managing phosphorus. In 2011, a paper in the Journal of Great Lakes Research said that all the Lake Ontario waste treatment plants in Canada and the US contributed only a very minor percentage to the phosphorus to the loading in Lake Ontario. The major sources of this nutrient originate from unregulated sources including rivers, streams, storm outfalls and airborne sources. Developing the management strategies that are effective for all these sources is going to require collaborative efforts from all the parties involved and a real openness to innovative solutions.

Taylor Hollis, Saginaw Chippewa Indian Tribe of Michigan

Hello, my name is Taylor Hollis and I am here representing the Saginaw Chippewa Indian Tribe of Michigan as their outreach coordinator. During this conference we have heard a lot about collaboration and partnerships over the last couple of days. I wanted to take this opportunity to highlight a few of the partnerships and collaborative efforts that have allowed us to improve the water quality in Lake Huron from a headwaters down approach. The Saginaw-Chippewa Indian Tribe is located in central Lower Michigan. We have our reservation in Isabella County and we also some properties and territories along the Saginaw Bay and throughout the Lake Huron watershed. We have been really active in the community to get projects done and to be the lead on partnerships to finish those projects. We have funding through the USEPA and like I said, a lot of our projects take a headwaters down approach. A few of the rivers that run through the reservation eventually end up in Saginaw Bay. Some of the objectives that we focus on are *E.coli* in the rivers and we have done some studies on E-DNA to address sources of *E.coli* if they are bovine or human and we have actually found a lot of the *E.coli* in the river comes from leaking or failing septic systems. We are working with local municipalities to address those issues and try to decrease the amount of *E.coli* in the rivers. We also work with farmers to address nutrient problems and we really want to collaborate with other agencies so that we can get these projects done as efficiently as possible.

Through GLRI and the US Forest Service, we are working with the local country and city agencies to address the ash trees that have been basically been run out by the emerald ash borer. We are replacing those so that we can reduce runoff, erosion and sediment and nutrient input to the local streams and rivers. We are also doing native vegetation plantings along areas of the raw stream banks. In terms of invasive species, through the GLRI, we are also working to hire expertise to address invasive species within the tribal boundary and around tribal properties. Our wildlife biologist works closely with the cooperative invasive species management area (CISMA) to identify and treat invasive species with federal, tribal and state support as well. We work closely with agricultural producers in the area to address those nutrient problems and through pilot projects on impaired sections of the streams through our Clean Water Action section 319 program and BIA forestry to do stream bank restoration using tree abatement and flood plain restoration approach to allow infiltration and water retention to help slow the flow of water to impaired streams.

Mike Wilton – Statement as read by Commissioner Lana Pollack

After having diligently searched the internet, I have been unable to locate any reference to legislation regarding the treatment of grey water or bilge water in Canadian waters. From a practical point of view, I realize that strong legislation, either grey or bilge water, for an onboard facility is probably impractical particularly in the later instance if you have a leaky boat. However, it seems to me that it should or must be legislated that all grey water and bilge water be filtered for noxious substances such as petroleum products prior to exhausting outside of the hull, or be stored onboard until suitable pump-out facilities can be accessed. Filter systems are available for smaller pleasure craft that are well within the disposable income of the average pleasure boater, but must be made compulsory if success is to be achieved. Do you plan to seek such legislation? If so, when?

Keith Brooks, Environmental Defense Canada

Hi, I'm Keith Brooks with Environmental Defense Canada. We are a Canadian environmental charity. We work a fair bit on the Great Lakes. I am going to keep this short because of the lateness of the hour, but I just want to say to the IJC if more attention could be paid to the issue of plastics this would be a very good thing. This is a big issue in the oceans and obviously it is becoming a bigger issue in the lakes. They found six million pieces of plastic per square kilometer here in Lake Ontario outside of Toronto. I don't know what the stats are like in the US cities. I think it is a real issue for the Great Lakes and one that we cannot ignore. We ask that the IJC pay more attention to that issue. The other point that I want to make through you is to speak to governments. We are looking for these domestic action plans and with all the things that governments are doing, I think it is a good time. Governments are taking all kinds of actions, but they need to put real dollars behind those actions. The Canadian government just announced that they are going to do something around the Lake Erie algae and they put CAD$3 million in their budget. That's just not enough money. The whole Great Lakes budget for Ontario is CAD$15 million. These are really, really small sums of money, not adequate for what is needed to bring about the actions that the governments are now committing to. These action plans need to have support, not just around algae, but around all the other issues. If government is going to take action, they need to put dollars behind those actions.

Kevin Rich, Ducks Unlimited

My name is Kevin Rich; I work with Ducks Unlimited here in Ontario. For those of you who don't know us, our business is wetlands conservation for the benefit of water fowl, wildlife and people. We have been doing that for 78 years across Canada and the United States. Our main message for you today is the Great Lakes need more wetlands. We know so much about wetland values and ecosystem

services whether it's flood mitigation, water quality improvement, specifically related to phosphorus, as well as carbon sequestration. Despite all of that knowledge, despite our collective efforts, we still lose wetlands. I can speak more from personal knowledge from my experience here in Ontario where I live and work. We continue to lose wetlands, the rate of that loss seems to have declined, but the trend is still downward and that is a concern. That is a downward trend, not only in wetland areas, but in wetland function and therefore benefits. So what is the solution? I think that there are two overarching pieces that we need to work on collectively; stronger policies to protect wetlands and policies that require compensation or offsetting where wetland impacts are unavoidable. Secondly, we need higher investments by governments and others in wetland management. I just want to elaborate a little bit more on where we think those investments are particularly needed.

We strongly recommend that wetlands and other natural systems be considered as critical infrastructure and therefore be allocated infrastructure funding. There are ecological goods and services that wetlands and other habitat provide which make them excellent candidates for funding as essential critical infrastructure. Related to that, municipalities need more tools and better approaches to better use nature as an infrastructure asset and to provide critical services like flood control and carbon sequestration. Secondly, we need a complete up-to-date wetland inventory. We can't really track our progress on wetland management and conservation if we don't know where they all are and we don't accurately know where their boundaries are. Thirdly, we need more investment in measuring ecological goods and services. The old adage: you can't manage what you can't measure is true for ecological goods and services. We have a good body of science, but we need to expand upon that. Fourthly, and certainly not least, we need investments on wetland restoration on the ground. Canada continues to lag behind the US on a per capita basis in terms of annual investment in the Great Lakes. The Green Budget Coalition, which our organization is part of, recommends that the Canadian government increase its funding commitment to the Great Lakes program to achieve greater progress under the 2012 protocol in support of implementation action to address nutrients and pollutants achieving lake ecosystem targets as well as other activities. We strongly feel if we make those investments and we strengthen those policies concerning wetlands, we will get more wetlands and healthier wetlands which as a result will create healthier Great Lakes.

Don McCabe

Thank you very much for the opportunity. My name is Don McCabe. I am a farmer down in Inwood, Ontario which is part of Lambton County which is eventually part of the Lake Erie watershed directly, but the reality is that it is part of the entire Great Lakes watershed. I also have the opportunity to serve as president of the Ontario Federation of Agriculture which represents 36,000 farmers from Manitoba to Quebec and into Pelee Island. The issue of Great Lakes water quality is a grave concern to farmers in general. It's also a grave concern to have announcements, pronouncements, ideas and concepts float around without a full understanding of what it takes to be in agriculture today and what the realities are for the future. Therefore, my comments are aimed at helping us to structure how we look into the future. Comments have been made in these sessions around the area of climate change and that to me is one of the most overarching priorities moving ahead. We are seeing one hundred year storms now occur almost on a yearly basis. That's not a good thing.

The reality of being a farmer is, and I can stand here and tell you that I am a cash crop farmer, is that it doesn't mean a lot to most people in this room. Because, bottom line for the grandfathers who are in agriculture today, is that when they leave the farm there is only 1.4 percent of Canadians still farming. Why did I say grandfathers? It's because when the grandfathers of today saw their grandfathers leave

the farm, we were using horsepower. When we were using that horsepower, 50 percent of Canadians were still farming. That's the amount of change that we have had in two generations. The reality now is that we are in a very much of a systems analysis in agriculture and when it comes to things like phosphorus, we do not go out and spill that stuff all over the place and we're not going to go to the beach to visit it. It's supposed to be growing a crop. But with the issues of climate change and the volatility that we are now dealing with, we have tremendous issues ahead of us to properly monitor and ensure that we're keeping our stuff where it needs to be and that is why we endorse the use of the 4R program directly on farms; it's why we are looking at cover crops; it's why we are looking at removing residues from our material. Our corn yields are now high enough to ensure that we are not only feeding people; we are also going to ensure that we are able to bring you fuels and other things because the food vs. fuel debate is strictly an academic exercise. In closing, I wish to offer that we have many things to bring to the table, but that there is only one rule in agriculture. Mother Nature wins. Do not regulate me into oblivion. Thank you.

Mary Muter, Great Lakes Foundation

I'm chair of the Georgian Bay Great Lakes Foundation. I want to make a statement and then I have a question for you. My statement is that we are opposed to wetlands offsetting. Basically on principle, you cannot create a wetland that equates the ecological values that a natural wetland provides and shoreline development should never be allowed to encroach and interfere with wetlands. That lesson has been taught many times with millions of dollars having been spent in trying to reestablish wetlands along Lake Ontario shorelines. You can never ever return it to the original condition.

The second thing I have, you probably heard me mention earlier today our concern about the viable reproducing population of Grass carp in the Sandusky River that drains into Lake Erie. My question for you is based on two things: 77percent of Canadians think that Asian carp are already in the Great Lakes and no wonder, there is a huge educational component that needs to happen here. I am wondering about the urgency of dealing with that reproducing population. You should know that the Department of Fisheries and Oceans and the Department of Natural Resources staff have spoken to me and told me that they will put boats into the water down in the Sandusky River and send staff down to help eradicate that population. Is there any way that IJC could send an urgent directive or advice to both governments asking that this problem be dealt with on an urgent basis? We were told on Monday at the Asian carp forum that they have a plan to deal with them in two years. That's way too far off into the future given the threat that these fish pose to the Great Lakes. Is there any way that the IJC can ask for this to be dealt with in a much more expeditious manner? Thank you for being here and thank you for taking the time.

Stephanie Woodworth

Hi, my name is Stephanie Woodworth. I'm a student at the University of Toronto in the Exercise Science Department. It's a two part comment; addressing two gaps that I thought weren't addressed in this forum over the last two days. That is a call to action about the privatization of public water resources. This has not been a conversation. It needs to be a conversation! This is really important and it affects the quality and quantity of our water resources. Second part; we talk about public engagement and how important it is and I totally agree 100 percent, but what about the people who aren't thinking that this is an issue? There are a lot of people in Canada who do not think of water as a current issue. We are in a water rich country. We are fine here. It's not the truth and so my comment is we need to engage the people who don't see this as a problem. I don't know what the IJC can do in terms of that, but I just think that is something that is missing within this conversation.

Summary Reports for IJC Public Consultation Meetings to Assess Progress under the Great Lakes Water Quality Agreement

Each public meeting held throughout the Great Lakes region brought together a wide range of people, including scientists and other professionals, government officials, interested citizens and students working to restore and protect their portion of the lakes. Their interest in, knowledge of, commitment to and appreciation for the Great Lakes was obvious throughout the public consultation process. To accurately reflect the unique and universal perspectives and priorities expressed at each meeting, the presentations and discussions are outlined in a summary report for meetings held in all eight Great Lakes communities. These reports also provide all comments provided by individuals at the meetings, which are linked to the video at Participate IJC of their input at each respective meeting. The IJC is grateful to every person who helped to organize, promote and put on these meetings as well as everyone who took the time to provide their thoughts, experiences and opinions about progress to restore and protect the Great Lakes.

Summary of Conclusions and Recommendations at the Public Meetings

Toronto public meeting

a. *Waterfront Restoration*

- Access to the waterfront should be enshrined in plans.
- Connect the waterfront trail to a larger common vision of healthy ecology, transportation, community, psychology and economy of the waterfront region.
- Recognize the Great Lakes Waterfront Trail as backbone to a watershed network of trails.
- Identify local advocates in multiple sectors for local trails and their connection to water quality.

b. *Toronto AOC and RAP*

- The Parties should invest the resources necessary to complete the identified remedial actions, science activities and community/stakeholder engagement.
- Consider AOCs in their broader geographical context, so that stressors can be identified and remediated at an appropriate geographic scale, using ensemble modeling approaches.
- All levels of government and affected stakeholders and community members must coordinate and collaborate to the maximum extent possible to address AOC impairments.

c. *Wastewater Treatment*

- Through the use of education programs and trained volunteers, the public needs to be better educated on what pollution from sewage discharges looks like and the method by which they can report it to the proper authorities. The reporting method needs to be well advertised to the public (e.g. billboards, signs).
- Create a coalition of interested groups to advance progress toward eliminating and preventing sewage bypasses and overflows.
- Continue to promote the implementation of green infrastructure as part of new urban development planning and during retrofit/upgrade of grey infrastructure. This will help to capture stormwater, reducing the amount of water entering drains, helping to alleviate the stress on the capacity of storm and sanitary sewer systems and treatment facilities. There needs to be a more sustainable model for infrastructure development and improvements, with resource needs shared between federal, provincial and municipal agencies. While the ultimate goal is to eliminate sewage bypasses and overflows, the timeline to achieve this can be quite long. Until that goal is met, the public needs to be

notified as soon as possible when bypasses occur, so that they can avoid contact with the contaminated water to minimize the risk to their health.

d. *Toxic Substances*

- List radionuclides as a Chemical of Mutual Concern (CMC) and take the same actions on radionuclides that governments are taking on other CMCs.
- Take action to reduce the risk of a hydrocarbon underwater pipeline spill, especially from the existing pipeline at the Straits of Mackinac and other pipelines currently undergoing review.
- Increase funding and support for education and citizen science to expand awareness of the lakes' value.
- If one country has standards for a toxic chemical, it should automatically become a CMC for both countries.
- Increase funding and support to reduce contaminants in wastewater.
- Increase funding and support to identify emerging contaminants and address their risks.

e. *Fish Habitat*

- Regulate the private use of road salt in parking lots.
- Since large combined sewer overflow projects in Toronto will take 25 years to be completed, a short-term immediate solution – within three years – is to extend the "pipe" outlets further into the lake to protect nearshore spawning. The Ashbridge Bay pipe that outlets at Thompson Park should be a first priority.

f. *Other Issues*

- To engage urban populations, indigenous peoples, youth and others not traditionally engaged in Great Lakes issues and the Forum in particular, reach out to and visit these communities, establish trust and credibility, and have members of the communities assist in promoting the relevance of the issues to their lives.
- To engage these groups, remove barriers of cost and location.
- To understand how to engage these groups, consult social science resources such as the Journal of Environmental Education and establish a database containing case studies of holistic engagement based on economic, environmental and social justice considerations.
- To engage youth, focus on curriculum development and get young people to the water.
- Equip sectoral groups, such as recreational boaters, with tools to conduct citizen science.
- Consider how report cards (for example, on drinking water) affect groups differently.

Milwaukee public meeting

a. *Green Infrastructure and Milwaukee Metropolitan Sewerage District's 2035 Vision*

- Promote innovative financing solutions to implement green infrastructure on a broader scale, including public-private partnerships.
- Advocate for removing barriers to green infrastructure that exist in health and safety regulations
  (i.e., plumbing standards, building codes, landscaping requirements, etc.).
- Support the integration of place-based water education and green infrastructure approaches into educational curricula.
- Support the development of green infrastructure service centers where organizations that promote green infrastructure can share ideas and collaborate in other ways.

b. *Water Centric Cities Initiative*

- Federal governments can help to establish incentives to improve conditions in the cities so they can become water centric cities, like it did with the LEED program and Mayors

for Monarchs.

- As cities develop their strategy, they need to blend economic development with sustainability, involve numerous water organizations to help to ensure its success, and research new technologies for better monitoring and conservation.

c. *Citizen-based Monitoring and its Importance for Water Quality*

- Improve coordination, connection and integration of disparate water quality monitoring data across local, state, federal and binational agencies and organizations.
- Improve public access to water quality monitoring data through technology interfaces, visualizations or dashboards, and improve the accessibility of language and communication methods in water quality reports, such as providing a less technical version of the State of the Great Lakes report for the public.
- Encourage innovative funding solutions to support existing and new monitoring infrastructure and the coordination of monitoring data across agencies at all levels.
- Additionally, the breakout group urges the International Joint Commission to work with governments to focus on early detection programs, and expand the water quality monitoring scope to integrate early detection for aquatic invasive species, beach health, and pollution spill and discharge efforts. Current processes to monitor emerging threats in water quality are insufficient for adequate response and thus updates to policies are needed, such as in Annex 3 (Chemicals of Mutual Concern), that reduce delays between detection and action on emerging threats.

d. *Nutrients and Aquatic Invasive Species*

- Careful attention is needed to spatial heterogeneity when discussing and prescribing responses to aquatic invasive species and nutrient load reductions for each lake, and different basins within each lake.
- Technical transfer of best practices and successful projects between Areas of Concern, and between those areas and other geographic locations, is essential.
- The economic benefits of cleanup need to be promoted as a means to improve behavior, leading to a future where users are motivated to exceed total maximum daily load limits based on economic benefits, both to individual businesses and the community at large.
- There is a pressing urgency to reduce nutrient loads to mitigate harmful and nuisance algal blooms.
- By connecting people with the resource they will value it. Physical access to the lakes, or stories about iconic species like lake sturgeon, can strengthen those connections.

e. *Great Lakes Implications from Shifting Currents, the 2016 Waters of Wisconsin Report*

- The Great Lakes need to become larger part of the economic, social and cultural pie.
- To encourage Great Lakes and environmental literacy, scientists must go to citizens and students to inform them of the value and issues of the lakes. We can't depend on governments to do this anymore, with limited staff and budgets.
- To further encourage and develop environmental literacy, develop a grand, year-long celebration of the Great Lakes as the park system is doing to celebrate its centennial anniversary. Involve all sectors of society and include fun events such as a Great Lakes selfie contest and cost-free opportunities to enjoy the lakes.
- Obtain funding to provide nonpartisan tours on the lakes for legislators, so they recognize their value for all elements of society.
- Recognizing the impact climate change is and will have on the Great Lakes, develop a basinwide resilience strategy and include environmental literacy elements to lessen its impact on the lakes and their watershed.

Sault Ste. Marie public meeting

- All participants expressed concern for the damage to all of the Great Lakes from a potential oil spill from the Enbridge Line 5 pipeline that runs under the Straits of Mackinac. A large spill would severely impact all areas of tribal commercial fishing according to the 1836 fishing rights treaty, and they believe small leaks are already occurring based on Enbridge staff reports and oil floating on the water's surface above the pipeline.
- The St. Marys River and adjacent waters of Lake Superior and Lake Huron have improved considerably as a result of the remedial action plan (RAP) and its implementation. However, the waters are still sick from legacy contaminants as well as mining discharges and herbicides from forestry operations into Lake Superior and its tributaries, which continue to contaminate drinking water, fish and humans who live in the region.
- Climate change is impacting all parts of the ecosystem.
- Asian carp must not be allowed to enter the Great Lakes, and all efforts must be made to keep zebra and quagga mussels out of Lake Superior.
- The Lake Superior Lakewide Management Plan (LAMP) had excellent participation from all sectors of society until the citizen forums were eliminated. Without them, it is difficult to get involvement.
- First Nations and Tribes have lived around Lake Superior, Lake Michigan, the St. Marys River and Lake Huron for generations, eat the fish and wildlife, and believe that the lake is a part of each person.
- Lake Superior is the only pristine lake left of the five Great Lakes, and yet the governments are not taking actions to protect it as they should. Lake Huron is threatened by the proposed nuclear waste repository, which like the Enbridge Line 5 pipeline would damage all of the lakes if a leak occurred. Tourism provides more to the region's economy than mining, shipping and agriculture combined, and thus the health of the lakes is essential.

Detroit public meetings

Afternoon roundtable:

- IJC boards and the governments' annex committees should continue to add and expand members with social science, environmental justice, public health, and economic backgrounds.
- Enhance binational coordination of exchange for existing data and support for filling gaps where new data, monitoring, and knowledge sharing is needed.
- Improve reporting on the human dimensions of water quality to include social and public health indicators. Include geographic breakdowns in reports to illustrate where and to what extent goals, objectives, and annexes are progressing across the basin, rather than using data to generalize progress basinwide or lakewide.
- Recommend the Parties provide increased support at the local level in affected areas for monitoring, infrastructure improvements and enforcement, and technology. This will have positive water quality benefits beyond the immediate local area and should be considered an investment for the basin. Local people should be given priority for hiring when opportunities are presented.

Evening session:

- The region's residents who attended the meeting would like to be engaged more often by both governments and by the IJC, and recognize the importance of public involvement to Agreement progress and processes, particularly in the Areas of Concern.
- Local Detroit issues raised focused on two main concerns: access to drinking water, and the failure of local stormwater management solutions. Land use and management should be a focus when making decisions impacting stormwater and nonpoint pollution, and reforestation.
- Many citizens recommended listing radionuclides as a Chemical of Mutual Concern, urging swift action and comprehensive research upon listing about and monitoring of human health impacts of radionuclides. Participants reiterated other priorities concerning binational threats posed by the transport and storage of nuclear waste and radioactive products. This included: disallowing the Bruce Deep Geologic Repository near Lake Huron; disallowing a Fermi 3 nuclear reactor on Lake Erie and closure of Fermi 2; regulation of wastes stored at reactor sites close to water; and disallowing the shipment of nuclear waste.
- The Detroit River Area of Concern, while making progress, no longer has a binational public advisory council (BPAC). While each side does have its own public advisory council, commenters urged that binational coordination through a BPAC become a short-term priority.

Sarnia roundtable public meeting

- Accessible, consistent public education
- Lack of funding for Areas of Concern progress
- Nuclear waste dump/Deep Geological Repository near Lake Huron
- Microplastics and microbeads
- Protect Great Lakes water against bottled water companies
- *Phragmites* as a terrestrial invasive species and funding needs to stop and prevent invasive species
- Chemicals of Mutual Concern
    - Need permanent task force to identify Chemicals of Mutual Concern
    - More Chemicals of Mutual Concern need to be identified
    - Radionuclides need to be identified as Chemical of Mutual Concern
    - Issue of pharmaceuticals in water
- Nutrients
    - Education needed on best management practices
    - Need to reduce phosphorus loading levels in the Great Lakes
    - Bureaucracy getting in the way of getting money into the hands of farmers
    - Ample regulatory nutrient management in place; farmers want voluntary programs
- Improve sewage treatment infrastructure
- Adopt best practices for dredging
- Issue of aging oil pipelines infrastructure – lines 5 and 9
- Air pollution affecting human health

Toledo public meeting

- Many attendees raised the need for mandatory regulations on the amount and type of animal waste from concentrated animal feeding operations (CAFOs) in the watershed, which is used as fertilizer on farm land. Lake Erie recovered in the 1970s because of mandated changes to detergents, wastewater treatment plants and limits to fertilizer use, and it will take the same laws today to restore Lake Erie to health and prevent harmful algal blooms from returning each summer. These regulations should be based on sound science and enacted around the lake basin, and provide parity with grain farmers who already have to meet restrictions on their use of phosphorus fertilizers. Fines need to be commensurate with the detrimental impact caused when these regulations aren't followed, and the western Lake Erie basin should be declared impaired to force those who are creating the problems to change their actions.
- Additional education is needed for the farming community to understand and enact these restrictions.
- Governments have generally provided safe drinking water, but the need for infrastructure improvements is dire. Consistent rules and advisories for beach closings are needed.
- Wetlands restoration can play a key role in slowing the runoff of nutrients into Lake Erie.
- Much has been accomplished over the past 30 years for the Maumee River Area of Concern, from upgrading wastewater treatment plants and closing leaching landfills to improvements on industrial sites. Restoring habitat and wetlands and dredging contaminated sediment work is projected to be completed by 2025.
- If students learn about the valuable role they can play as citizens to improve their environment, an entire generation will be created who are committed to keeping their communities safe and clean. Education is key.
- The Coalition for a Nuclear Free Great Lakes, representing more than 100 groups, urges the IJC to recommend to the governments that radionuclides be listed as a Chemical of Mutual Concern. They reported that nearby Davis Besse nuclear power plant has had at least six recorded close calls with significant leaks, more than any other plant in the US. The lakes are too valuable to risk nuclear contamination from this and any of the other plants, from a proposed Fermi 3 in southern Michigan, to the proposed nuclear repository next to Lake Huron, the proposed trucking of nuclear waste from Canada through the Great Lakes region to Kentucky or proposed barging of nuclear waste on Lake Michigan.
- While the draft TAP report provides a good overview of Agreement progress, it doesn't provide the status of each lake or measurements of progress for each Annex. The report mentions climate change, but needs to point to this as what is driving so much change in the lakes themselves with resulting environmental justice issues for the region's residents. This will only increase over time. Asian carp, other aquatic invasive species and the Enbridge Line 5 pipeline should be recognized for the huge threats that they pose to the lakes and to our collective ecosystem.

Buffalo public meeting

- Governments should reclaim more shoreline for public recreational use and ensure that measures to enhance opportunities for safe, water-based recreation are a central focus of the region's social, economic and environmental restoration strategy.
- Governments should place greater emphasis on stakeholder engagement, including adoption

of a collective impact approach to address nutrient loadings, and fully implement the outreach/education subcommittees for the LAMPs.
- Governments should strengthen efforts to restore and enhance wetlands, soften shorelines and improve water quality in order to provide spawning and nursery habitat for native fish species.
- Governments should require risk-benefit analysis of pipelines that cross wetlands.
- The IJC should pay more attention to the impacts of radionuclides in the Great Lakes basin.
- Governments should conduct an environmental assessment of the transboundary shipment of nuclear waste and implement measures to safeguard human health and water quality.
- The IJC should urge governments to develop consistent, regional sewage discharge regulations.
- Governments should study the potential impacts of emerging, large-scale commercial activities, such as injection of hydrocarbon hydraulic fracturing waste and agricultural application of biosolids, and develop regulations needed to protect public health and the environment.

St. Catharines public meeting

- Lack of beach/waterway access; beach closures
- Collaboration with and between regulators and farmers
- Integration of ecological traditional knowledge and environmental knowledge into the Great Lakes management process.
- Lack of control for agriculture industry, with resulting nutrients and toxics going into the water
    - Identify common causes of nonpoint sources
    - Reduce agricultural runoff, urban sources, and identify methods for stormwater management methods
    - A plan with targets for each jurisdiction
    - Additional monitoring to assess situation to move forward
- Decrease of AOC funding that could impeded progress
- Consequences of decreasing water levels and impacts to water quality
- Nuclear waste transport
- Microplastics and plastic garbage showing up on beaches
- Sustainable agriculture practices
- More education and science-based approaches for farmers to understand different technologies for better land use
- Combined sewer overflows
- Niagara Area of Concern shouldn't have been delisted as one of the key objectives was to Increase forest cover to 40 percent, which was not met.

Individual recommendations

Eugene Bourgeois: It's surprising to me that radionuclides are not already Chemicals of Mutual Concern in the Great Lakes Water Quality Agreement under Annex 3 as recommended by your own nuclear task force twenty years ago. I concur with this recommendation.

Sandy Greer: I recommend, therefore, that one of the IJC's selected `nearshore' study areas on Lake Huron be chosen in the bioregion surrounding the location of Bruce Power, which includes the

designated area for the proposed Deep Ground Repository, regarding low and intermediate level radioactive waste.

Susan Michetti: I recommend that the IJC make the rational recommendation that the production of new nuclear waste needs to be stopped and discontinued immediately. All currently operating nuclear plants need to be shut down in order to stop making new nuclear waste.

Elizabeth Oldfield: I would like to add my voice to those recommending that nuclear waste and hydraulic fracking be studied with regard to how they affect or contaminate water sources.

Raymond Vaughan: I strongly recommend that some form of the Binational Toxics Strategy be reinstituted by U.S. EPA and Environment Canada under the 2012 GLWQA, both for the transparency it can provide on toxics policy, measurement, modeling, reduction, etc., and for the opportunities it may offer for voluntary toxics reductions. As noted, this is a complex issue for the West Valley site and would likely be complex for other sites as well. I recommend that such issues at least be put on the IJC's radar screen, even if they can't be fully assessed.

Organization recommendations

Todd Brennan, Alliance for the Great Lakes: The IJC should recommend that each Great Lakes community have a hazard mitigation plan in place. The IJC should partner with municipal water utilities to host quarterly public meetings to update on progress outlined on this objective.

We feel that the assessment should recommend that the federal governments maintain or strengthen current ballast water regulations on both ocean going vessels and vessels that solely operate in the Great Lakes, known as "lakers." This recommendation is especially important in the United States because of proposed legislation, known as the Commercial Vessel Incidental Discharge Act, which would undermine the role of the Environmental Protection Agency and the Clean Water Act in ballast water regulation and put the lakes at great risk. We have and will continue to oppose these Congressional efforts. We urge the EPA to complete this work [to strengthen current ballast water regulations] expeditiously and allow additional opportunities for public comment and input on these important provisions while they are being developed. We urge faster construction at Brandon Road Lock and Dam – the key choke point between the Asian carp population and the electric barriers near Lake Michigan – to design a permanent solution.

We urge the IJC to recommend very careful study the risks of crude oil vessel transport on the Great Lakes, including a cost-benefit analysis of a crude oil vessel shipment ban. The resulting recommendations from this workshop encourage the Parties to support research on the source and fate of microplastics and to explore ways to reduce their input into the lakes. We feel that these recommendations should be referenced in this assessment to highlight the impact microplastics could have on general objectives focused on fish consumption and public health.

Siegfried (Ziggy) Kleinau, Bruce Peninsula Environment Group: We implore you, Chairs and Members of the IJC, to urge the Parties in the strongest sense to rapidly establish a full-fledged lakewide management plant (LAMP) for Lake Huron, and to include radionuclides as Chemicals of Mutual Concerns (CMCs) in the List under Article V, Section 2(c). We therefore recommend prioritizing annual reporting of pollutant releases and transfers to the Great Lakes basin. All parties, particularly the public, should be working from an accurate base of data.

Michael J. Keegan Chair, Coalition for a Nuclear Free Great Lakes: The Coalition for a Nuclear Free Great Lakes requests that the 2017 International Joint Commission reconvene the Nuclear Task Force to update the 1997 Inventory of Radionuclides for the Great Lakes. Please provide independent scientifically-based recommendations on the disposition of high-level nuclear waste. The nuclear power producers and regulators do not constitute an independent analysis in the public interest.

Kathryn Buckner and Dale Phenicie, Council of Great Lakes Industries (CGLI): In response to the Commission's request for reaction to comments in the draft TAP report about the Progress Report of the Parties (PROP), CGLI agrees with the need for more collaboration between the governments and stakeholders. CGLI also agrees with many of the general PROP shortcomings that are cited in the draft TAP report. However, as acknowledged to some degree in the draft TAP, limitations on resources available to the Parties are responsible for many of the shortcomings. It would be helpful if the PROP more completely acknowledged and explained this reality. Perhaps the Commission could recommend to the Parties that a transparent prioritization process is needed that explains why some actions can be taken immediately and others must be deferred. The draft TAP report includes two examples of excellent efforts for organizing, vetting, and carrying out work aimed at accomplishing GLWQA objectives: the work undertaken by the committees focused on Annex 6 (Invasive Species) and Annex 7 (Habitat and Species). The Commission should commend these committees on their work and recommend that the collaborative processes and work practices used by these groups serve as models by other GLWQA objective and/or Annex working groups.

Kevin Rich, Ducks Unlimited: We strongly recommend that wetlands and other natural systems be considered as critical infrastructure and therefore be allocated infrastructure funding. Related to that, municipalities need more tools and better approaches to better use nature as an infrastructure asset and to provide critical services like flood control and carbon sequestration. Secondly, we need a complete up-to-date wetland inventory. We can't really track our progress on wetland management and conservation if we don't know where they all are and we don't accurately know where their boundaries are. Thirdly, we need more investment in measuring ecological goods and services. Fourthly and certainly not least, we need investments on wetland restoration on the ground. Canada continues to lag behind the US on a per capita basis in terms of annual investment in the Great Lakes. The Green Budget Coalition, which our organization is part of, recommends that the Canadian government increase its funding commitment to the Great Lakes program to achieve greater progress under the 2012 protocol in support of implementation action to address nutrients and pollutants achieving Lake Ecosystem targets as well as other activities.

Nancy Goucher, Freshwater Future: I am going to list four things that I think these [Lake Erie] plans need. First, the solutions need to add up to 40 percent reduction in phosphorus. Secondly, there needs to be some new innovative ideas, approaches and solutions. The same old solutions that we are using today aren't going to be enough to get us to the degree of change that we need. The third is that the solutions need to be proportional to the sources of the pollution. That means that a lot of these solutions need to directly address nonpoint source agricultural pollution. The fourth and final point is that there needs to be some triggers in there for noticing that we are not quite meeting the 40 percent reduction targets.

Tim Eder, Great Lakes Commission: We urge the IJC to expand the draft report and include

recommendations to the Parties to support programs – including funding – designed to maintain and upgrade critical water infrastructure.

Oday Salim, Great Lakes Environmental Law Center and Silvia Orduño, Michigan Welfare Rights Organization: Environmental justice (EJ) should be at the heart of the General Objectives within the Assessment. To make progress on its commitment to addressing EJ issues and better engaging with EJ communities, the IJC should incorporate certain indicators into its assessment. Instead of communicating data in the form of averages, present a broader array of data points so as to communicate where improvement is needed and where it is not. Create an interactive map that will allow interested readers to explore in more detail specific areas that are either struggling or succeeding with each General Objective. Improve your process of engagement with EJ communities based on the 2012 Agreement's express commitment to addressing the link between environment and human health. Give examples of specific legal actions that effectively solved problems and achieved progress toward General Objectives.

Mary Muter, Great Lakes Foundation: My statement is that we are opposed to wetlands offsetting. Basically on principle, you cannot create a wetland that equates the ecological values that a natural wetland provides and shoreline development should never be allowed to encroach and interfere with wetlands. The second thing I have, you probably heard me mention earlier today our concern about the viable reproducing population of grass carp in the Sandusky River that drains into Lake Erie. My question for you is based on two things: 77 percent of Canadians think that Asian carp are already in the Great Lakes and no wonder, there is a huge educational component that needs to happen here. I am wondering with the urgency of dealing with that reproducing population – and you should know that the Department of Fisheries and Oceans and the Department of Natural Resources staff have spoken to me and told me that they will put boats into the water down in the Sandusky River and send staff down to help eradicate that population. Is there any way that IJC could send an urgent directive or advice to both governments asking that this problem be dealt with on an urgent basis?

Andrew McCammon, Headwaters Institute: I have four succinct messages for you today. First of all, I thought that the 2016 report was excellent. There is some progress, but I am more hopeful over the fact that it seems that there is a lot more progress on the immediate horizon. Two, please stop calling the lakes variants of the largest freshwater ecosystem in the world. This is simply not true. Three, we urge you to find a better balance between your efforts on the lakes and their watersheds. We thoroughly understand and support the hugely important science efforts focused on the lakes and the need to deal with excessive municipal runoff and lakeside point source contributions to the lakes. However, and in spite of the restrictive mandate of the recent climate change study, which is informative because it says that they are only allowed to talk about the receiving waters, the lakes and connecting channels, it does not talk at all about the watersheds. Four; we ask you to consider recommending to the Parties to commit to protecting the basin by adopting minimal thresholds to protect natural heritage.

Gerald Parker, Institute of Canadian Justice: I am going to go to three recommendations. We need to talk about and emphasize the importance and challenges that groundwater degradation does provide for us. We need to provide sub-indicators and correlations. This will enable a talk about quality and quantity. To not speak about the depleted groundwater tables impacted by pollutants, harming our wetlands, our watersheds, and sustainability and lake levels is missing the plot. Second

recommendation is civic action and engagement. We need much more of it. Folks like us can and do say things that folks like you can't. We can speak about pirates and Nestle in the same sentence. You folks can't, we can. So, let us do our work. Focus on groundwater degradation, civic engagement and pharmaceutical products in our water supply. We have an opioid pandemic on this continent. We need to address this issue very, very clearly. We have product out there that can kill elephants being put into our water system.

Charlotte Jameson, Michigan League of Conservation Voters; Bill Wood, West Michigan Environmental Action Council; and Terry Miller, Lone Tree Council:
We urge the Commission to continue to monitor the two countries' commitment to the Agreement and to speak forcefully when it appears to be breached. We urge the Commission explicitly to recommend state and provincial regulation of phosphorus application and runoff from agricultural lands. Such measures should include a strict ban in all Great Lakes provincial and state jurisdictions of the application of fertilizers and animal waste on frozen, snow-covered or saturated lands, and in the Lake Erie watershed a moratorium on the siting of additional concentrated animal feeding operations (CAFOs).

In the final version of the assessment, we strongly suggest the following issues be addressed:
- The fate of radioactive waste stored on the shores of the Great Lakes and the upcoming decommissioning of nuclear generating plants. No level of government is considering this challenge as a whole. A steering committee or task force, with full engagement of the public, is needed to develop a plan to protect the lakes from these threats.
- The urgent need to decommission the Enbridge Line 5 pipeline crossing of the Straits of Mackinac and to assess the risks to the waters of the Great Lakes from all potentially hazardous material pipeline crossings. Line 5 in particular presents a significant risk of a catastrophic spill causing immense damage to the Great Lakes ecosystem.

Niagara Peninsula Conservation Authority (NPCA): With respect to the quality of water within the Great Lakes, the NPCA strongly agrees that greater focus is needed to improve the ability to swim, fish, and drink the waters of the Great Lakes. At the June 2016 NPCA board meeting the Board considered the 2016 Annual Water Quality Report (Report 67-16), which noted that there is no direct funding currently available at the NPCA to meaningfully address the significant water quality problems. As such, the NPCA recommends that additional funding and partnerships be undertaken to expand existing water quality monitoring networks within the Great Lakes basin. This would include:
- Obtaining additional water samples to better understand the scope and nature of nutrients discharging into the Great Lakes via their tributaries,
- Implementing additional sampling sites to identify and track down the origin of large phosphorus and nutrient discharges, and
- Undertaking the monitoring of the Great Lake's nearshore region to better understand the scope, nature, and origin of algal blooms.

The NPCA further recommends that the Government of Canada (through the Province of Ontario) directly leverage the data and information available in the existing Conservation Authority Water Quality Monitoring Networks to help deliver this initiative.

The NPCA strongly supports the creation of a list of Chemicals of Mutual Concern. The NPCA would

urge the IJC to recommend that both governments adopt aggressive control strategies to deal effectively with these specific contaminants.

In order to meet the phosphorus targets anticipated to be proposed in the 2018 Lake Erie Lakewide Management Plan (LAMP), the NPCA recommends that the Government of Canada (through the Province of Ontario) directly leverage the existing Conservation Authority Stewardship Programs to deliver direct localized actions to reduce nonpoint phosphorus sources entering the Great Lakes.

Additional funding should be made available to update local sub-watershed plans to identify specific opportunities and actions which would focus on reducing the discharge of phosphorus and nutrients into the Great Lakes. These plans would allow for a more complete understanding of the economic and recreational impacts (of Lake Erie algae blooms, for example) and could help to better quantify the local benefits of addressing these issues.

Jan Boudart, Nuclear Energy Information Service of Chicago: I strongly recommend that radioactive isotopes be included in the list of Chemicals of Mutual Concern when monitoring pollutants that affect the lakes, particularly dangerous isotopes of plutonium, cesium, strontium, and iodine. But, all the transuranic isotopes should be on the list. The research is not complete on the effect of radioisotopes and their extent in the water we drink. Thus, the International Joint Commission can perform an essential service by documenting and researching ways to control dangerous radioisotopes in the Great Lakes.

Nick Mandros, Ohio Environmental Council: The Council agrees with the TAP report's conclusions that voluntary measures alone won't achieve water quality results. Here are some recommendations to add to the report:
Objective 1: Governments have generally provided safe drinking water, but the need for infrastructure improvements is dire and the report should reflect that.
Objective 2: The basin needs consistent rules and advisories for how and why they close beaches.
Objective 6: Without mandatory regulations, we won't accomplish the objective of reducing nutrients into lakes from human activity. We recommend specific proposals by the IJC to ensure that compliance is accomplished for reductions in nutrient pollution.

Ann Porter Bonilla, Provincial Council of Women of Ontario: The Provincial Council of Women of Ontario recommends that radionuclides be declared a Chemical of Mutual Concern. And we also ask that the research, based on the gaps of scientific knowledge and identified by the 1997 IJC nuclear task force report, begin as soon as possible. There should be an initiative to make up for lost time as part of a binational plan to address the grave and growing public concern with the strong action to protect the Great Lakes from various nuclear threats. More improvements also need to be made on identifying other Chemicals of Mutual Concern.

Christine Elwell, Sierra Club Canada: I would like to read into the record our letters signed by over 27 nongovernment organizations (NGOs), including Sierra Club US and a growing number of groups on both sides of the border, about the proposed shipment of 150 truckloads of highly radioactive liquid nuclear waste from Chalk River near Ottawa down to South Carolina, across bridges and roads including the Peace Bridge in Buffalo, NY. We request that the Parties in the Great Lakes Executive Committee cancel or delay this radioactive shipment until notice has been given under Article 6 of the 2012 Great Lakes Water Quality Agreement and full and meaningful

consultation with state, federal and provincial governments, First Nations, municipalities and the public is done. Including consideration of environmental impact assessments in both countries that examines impacts and cumulative effects. Alternatives are available. The science is there. We can solidify this liquid nuclear waste on site. There is no need to transport it all the way through the Great Lakes.

John Bacher, Sierra Club and Preservation of Agricultural Lands: I recommend that the IJC look into how the urbanization of watersheds affects the water quality and the ecosystem of the Great Lakes. Beaverdams Creek and Shriners Creek in the Niagara Region are both urbanized watersheds, and as a result have astronomical levels of *E.coli* in their water. The IJC should study urban demand. I believe that there is no need for more urban zoning in the Niagara Region.

Municipalities and Other Governments

Erin Mahoney, Commissioner of Environmental Services, York Region:

Summary of York Region Recommendations Outlined in this response

For the province to achieve its desired reductions, proposed regulatory targets must be proportionate to the existing source load, recognizing reductions made by wastewater treatment plants. If the stated intent is to reduce phosphorus, real action must be required on nonpoint sources.

The province should allow municipalities flexibility to determine how best to manage sources of phosphorus through existing and innovative treatment processes and offset programs as an integral way of maximizing infrastructure investments and reducing barriers to innovation for adoption of clean water technologies.

Increased phosphorous removal is a priority to meet provincial targets as identified in this proposal; however, implementing methods for further phosphorus reduction at wastewater treatment plants (WWTPs) increases greenhouse gas production, which has the opposite desired outcome for provincial targets under the *Climate Change Action Plan* and the *Paris Agreement* pertaining to climate change. It is recommended the ministry take a holistic and balanced approach to achieving provincial goals and targets.

To effectively meet the province's phosphorous reduction targets, the province should propose regulatory measures for the agricultural sector which represent a significant source of loading through the Great Lakes. It is recommended that the 4Rs initiative be a legally binding initiative included in a regulation to compel compliance or make all sector funding elements contingent on compliance with this program.

In alignment with Ministry of the Environment and Climate Change's mandate letter, another potential low-cost solution is to encourage the use of compost to improve the organic content of the soil.

To ensure the most effective use of limited available resources, it is strongly recommended that quantification of costs be used to determine optimum actions to reduce phosphorous loading for the Great Lakes. In addition to provincial support for phosphorous, offsetting initiatives currently underway, it is recommended that the province give consideration to phosphorous

trading as a future initiative.

Rather than upgrading WWTPs, it is recommended that urban runoff be addressed in a more holistic manner. Specific actions are needed in the proposal that addresses phosphorous transportation off land and into waterways during intense storms and snow melts.

All levels of government on both sides of the national border need to take coordinated action on invasive species control measures to help mitigate ancillary factors for phosphorous.

Characterizing phosphorous inputs for each of the Great Lakes is an important step and should extend beyond simply determining sources. As such, it is recommended that an evidence-based approach be taken for each Great Lake so that local variables can be taken into account when prioritizing phosphorous reduction actions.

Provincial and federal governments should invest in phosphorus technology solutions that are market-ready or are being developed by innovative companies.

The province, federal and binational governments involved in identifying actions must take a leadership role in establishing standardized monitoring methods and testing procedures that take into account existing data sets so that "apples to apples" comparisons can be made going forward. It is strongly recommended that the ministry develop implementation strategies, including funding policies, to support the action plan and ensure that key stakeholders are engaged in its development.

Summary Report

Public Meeting on the Great Lakes
What is a Healthy Lake Ontario for You?

Wednesday, October 5, 2016
Toronto City Hall

Introduction

As part of the International Joint Commission's efforts to obtain public input on Agreement progress and the Parties Report on Progress at the Great Lakes Public Forum, a public roundtable was held to connect with local citizens who are committed to restoring and protecting their part of the Great Lakes. The evening roundtable at Toronto's City Hall focused on local and regional success stories to transform the conversation from Lake Ontario's damage to its promise, and developing a shared vision for a healthy Lake Ontario.

Five presentations summarized issues and initiatives in the areas of waterfront regeneration, the Toronto Remedial Action Plan, wastewater treatment, toxic substances, and fish habitat. Participants divided into small group discussions for each topic, as well as a sixth group to discuss topics not covered by other presentations. Summaries of these discussions follow.

The IJC will take these findings into account as part of their assessment report on Agreement progress, and hopes that these conclusions and recommendations provide direction to Toronto residents for cooperative strategies to deal with unique issues facing their part of the watershed.

Waterfront Restoration

Presenter: the Honorable David Crombie, Waterfront Regeneration Trust
Facilitator: Marlaine Koehler, Executive Director, Waterfront Regeneration Trust
Rapporteur: Cindy Warwick, Policy Advisor, IJC Canadian Section

Key Messages

Public access to the waterfront needs to be enshrined as a long-term goal in planning documents, including cost-benefit models and incentives for trail development and expansion around the Great Lakes. The group expressed strong support for the Great Lakes Waterfront Trail that is broader than a physical pathway. The recreational opportunities it provides are a gateway to teaching/learning about and experiencing ecological functions, and an avenue through which people can experience a psychological relationship with water and the watershed. The Great Lakes Waterfront Trail has a significant role to play in engaging the public in ecological and community restoration at the waterfront. People use the trail to see firsthand the impact of decisions, policies and actions respecting the Great Lakes. Both imperatives and progress become visible.

Recommendations

- Access to the waterfront should be enshrined in plans.
- Connect the waterfront trail to a larger common vision of healthy ecology, transportation, community, psychology and economy of waterfront region.
- Recognize the Great Lakes Waterfront Trail as backbone to a watershed network of trails.
- Identify local advocates in multiple sectors for local trails and their connection to water quality.

Toronto Area of Concern (AOC) and Remedial Action Plan (RAP)

Presenter and small group facilitator: Nancy Gaffney, Head of Watershed Programs, Toronto and Region Conservation Authority
Rapporteur: Matthew Child, Physical Scientist, IJC Great Lakes Regional Office

Key Messages

The Toronto RAP has seen significant investments to prepare plans and design drawings to address wet weather flow (stormwater and combined sewer overflows), which is the primary source of contaminants to Toronto Harbour. Billions of dollars will be incurred over the 25-year implementation phase. Thus, significant progress is contingent on large infrastructure projects. Resources are also required to invest in the science capacity to characterize and understand impairments, and to monitor recovery following remedial actions. Funding to increase public and stakeholder awareness of RAP issues is also required, since many remedial actions, such as urban habitat projects, require broad participation.

The science associated with AOCs and the Great Lakes in general have progressed considerably since AOCs were created in 1987. Monitoring and surveillance activities in AOCs have resulted in improved understanding of local conditions, and various ecosystem models have been developed for many AOCs to understand the transport and fate of contaminants. Tracking down microbial sources of pollution and improved management of nearshore processes are continued priorities. The impairments and remedial actions associated with many AOCs are complex, and include a diversity of monitoring and surveillance activities. These require the participation of many organizations and individuals.

Recommendations

- The Parties should invest the resources necessary to complete the identified remedial actions, science activities and community/stakeholder engagement.
- Consider AOCs in their broader geographical context, so that stressors can be identified and remediated at an appropriate geographic scale, using ensemble modeling approaches.
- All levels of government and affected stakeholders and community members must coordinate and collaborate to the maximum extent possible to address AOC impairments.

Wastewater Treatment

Presenter and small group facilitator: Krystyn Tully, Founder and Vice President, Lake Ontario

Waterkeeper
Rapporteur: Antonette Arvai, Physical Scientist, IJC Great Lakes Regional Office

Key Messages

Raw and partially treated sewage, via bypasses and sewer overflows, is frequently discharged from Toronto into Lake Ontario, impacting the swimmability, drinkability and fishability of the waters. These discharges must be stopped. There is a gap in the public's understanding of the connection between clean source water for these uses and the challenges in infrastructure to accomplish this.

Recommendations

- Through the use of education programs and trained volunteers, the public needs to be better educated on what pollution from sewage discharges looks like and the method by which they can report it to the proper authorities. The reporting method needs to be well advertised to the public (e.g. billboards, signs).
- Create a coalition of interested groups to advance progress toward eliminating and preventing sewage bypasses and overflows.
- Continue to promote the implementation of green infrastructure as part of new urban development planning and during retrofit/upgrade of gray infrastructure. This will help to capture stormwater, reducing the amount of water entering drains, helping to alleviate the stress on the capacity of storm and sanitary sewer systems and treatment facilities. There needs to be a more sustainable model for infrastructure development and improvements, with resource needs shared between federal, provincial and municipal agencies. While the ultimate goal is to eliminate sewage bypasses and overflows, the timeline to achieve this can be quite long. Until that goal is met, the public needs to be notified when bypasses occur, so that they can avoid contact with the contaminated water to minimize the risk to their health.
- The public should be notified as soon as possible of sewage bypass and overflow events.

Toxic Substances

Presenter and small group facilitator: Jacqueline Wilson, Staff Attorney, Canadian Environmental Law Association
Rapporteur: Victor Serveiss, Environmental Advisor, IJC U.S. Section

Key Messages

There are significant challenges ahead. Data is not adequately reported on toxic substances in the Great Lakes. The slow pace of work to address toxic contamination in Lake Ontario does not reflect the urgency of the issue. For nonpoint source contaminants, the focus must be on prevention and the promotion of safer alternatives. Public engagement needs to be improved during this crucial time in implementation of Annex 3. The Parties need to increase their commitment and funding to implement Annex 3. The role of the IJC should be enhanced to support the public engagement function.

Recommendations

- List radionuclides as a chemical of mutual concern (CMC) and take same actions

on radionuclides that governments are taking on other CMCs.

- Take action to reduce the risk of an underwater petroleum pipeline spill, especially from the existing pipeline at the Straits of Mackinac and other pipelines currently undergoing review.
- Increase funding and support for education and citizen science to increase awareness about the value of the Great Lakes.
- If one country has standards for a toxic chemical, it should automatically become a CMC for both countries.
- Increase funding and support to reduce contaminants in wastewater.
- Increase funding and support to identify emerging contaminants and address their risks.

Fish Habitat

Presenter and small group facilitator: David Clark, Executive Director and Founder, Toronto Urban Fishing Ambassadors
Rapporteur: Nick Heisler, Senior Advisor, IJC Canadian Section

Key Messages

The group discussed two issues that affect fish habitat in the Toronto area. First, 60 percent of road salt use (and its derivatives) in parking lots is unregulated, by private operators who overuse to avoid the risk of lawsuits and sometimes misuse chemicals to melt snow that should be plowed instead. This results in significant runoff of salt into waterways, affecting fish habitat. Frenchman's Bay in Pickering, for example, had ten times the natural level of chloride and the solution was to dig a deeper channel to flush it into the lake rather than eliminate the source of the problem.

The second issue discussed was combined sewer overflows (CSOs). Although Toronto has ambitious plans to eliminate all CSOs, this will take 25 years. In the meantime, too much sewage is dumped too close to the shoreline. For the relatively short time frame before this can be accomplished, CSO pipes should be lengthened to deposit the waste away from nearshore spawning grounds. This would also benefit swimmers and other nearshore recreation activities.

Recommendations

- Regulate the private use of road salt in parking lots.
- Since large CSO projects in Toronto will take 25 years to be completed, a short-term immediate solution – within three years – is to extent the "pipe" outlets further into the lake to protect nearshore spawning. The Ashbridge Bay pipe that outlets at Thompson Park should be a first priority.

Other Issues

Facilitator: Frank Bevacqua, Public Information Officer, IJC US Section
Rapporteur: Dave Dempsey, Policy Advisor, IJC US Section

Key Messages

The Great Lakes Public Forum did not engage individuals from a number of sectors or communities in the basin. The IJC should provide a holistic model and location for meeting, or demonstrate to those individuals or communities why they should care about Great Lakes water issues. Processes like the Canada-Ontario Agreement address the same issues as those of 20 years ago rather than existing community concerns such as food and drinking water security, water as a resource held in common, and economic equity. Education needs to expand beyond traditional water cycle lessons that do not connect to students' lives. Other issues mentioned by participants but not explored in great depth included long-term planning for climate change, water security, biosolids application, water levels[MM1] control and water privatization.

Recommendations

- To engage urban populations, indigenous peoples, youth and others not traditionally engaged in Great Lakes issues and the Forum in particular, reach out to and visit these communities, establish trust and credibility, and have members of the communities assist in promoting the relevance of the issues to their lives.
- To engage these groups, remove barriers of cost and location.
- To understand how to engage these groups, consult social science resources such as the Journal of Environmental Education and establish a database containing case studies of holistic engagement based on economic, environmental and social justice considerations.
- To engage youth, focus on curriculum development and get young people to the water.
- Equip sectoral groups, such as recreational boaters, with tools to conduct citizen science.
- Consider how report cards (for example, on drinking water) affect groups differently.

Summary Report

Public Meeting on the Great Lakes
What is a Healthy Lake Michigan for You?

Tuesday, October 18, 2016
University of Wisconsin-Milwaukee
School of Freshwater Sciences

Introduction

As part of the International Joint Commission's efforts to obtain public input on Agreement progress and the Parties Report on Progress, two public meetings were held to connect with several scientists and citizens in Wisconsin who are committed to restoring and protecting their part of the Great Lakes. The afternoon roundtable at the University of Wisconsin-Milwaukee's School of Freshwater Sciences (SFS) gave the opportunity for Commissioners and citizens to hear about the latest research findings from scientists from the SFS as well as other campuses of the university.

During an evening public meeting, six presenters outlined key successes and challenges in the Milwaukee watershed and Lake Michigan in the areas of green infrastructure, the Milwaukee Metropolitan Sewerage District's 2035 vision and goals, watercentric cities initiative, citizen-based water monitoring, nutrient reduction and aquatic invasive species in Lake Michigan, and Great Lakes implications from the latest Waters of Wisconsin report. Participants divided into small group discussions for each topic and developed findings and recommendations for each topic. Summaries of these discussions follow.

The IJC will take these findings into account as part of their assessment report on Agreement progress, and hopes that these conclusions and recommendations provide direction to Milwaukee residents for cooperative strategies to deal with unique issues facing their part of the watershed.

Green Infrastructure and Milwaukee Metropolitan Sewerage District's 2035 Vision

Presenters: Linda Reid, Executive Director, Southeastern Wisconsin Watershed Trust; Ezra Meyer, Water Resources Specialist, Clean Wisconsin; Karen Sands, Director of Planning, Research and Sustainability, Milwaukee Metropolitan Sewerage District
Rapporteurs: Frank Bevacqua, Public Information Advisor, IJC US Section and Michael Toope, Public Affairs Adviser, IJC Canadian Section

Key Messages

Two groups with similar topics joined forces mid-way through the small group conversations. Participants explored a variety of ideas:

- Green infrastructure is often more cost-effective than gray infrastructure, particularly for small, rural communities. Slowing down stormwater runoff has flood control benefits in addition to reducing water quality impacts. There are sophisticated tools, including those developed by the Great Lakes Commission, to help communities evaluate green infrastructure options.
- There is a growing body of technical standards, certification programs and training courses to ensure that green infrastructure projects are effective, but more is needed. While green infrastructure projects should be implemented on a larger scale, maintaining them after they are implemented is a growing challenge. A support system to help communities and local organizations maintain them is needed. State and regional agencies can provide guidance and support, but there must be flexibility to tailor solutions that fit particular local conditions.

- Lack of funding and requirements are main barriers to green infrastructure. Requiring the use of green infrastructure will help it to expand. A stormwater utility can be created that collects fees to manage stormwater; property owners could receive a credit for implementing projects that reduce runoff. Existing health and safety mandates often prevent the use of green infrastructure. Creative funding through public-private partnerships should be considered.
- Sharing knowledge is another way to encourage greater use of green infrastructure. Governments should partner with schools, nongovernment organizations (NGOs), master gardeners and others to raise awareness of water quality issues and green infrastructure approaches. More sophisticated education about water and green infrastructure needs to be integrated into school curricula, especially approaches that link these concepts to everyday life. Establishing service centers to locate NGOs and other organizations that share similar goals under the same roof is a powerful way to promote collaboration and realize synergies.

Recommendations

The green infrastructure small group makes the following four recommendations to the IJC:

1. Promote innovative financing solutions to implement green infrastructure on a broader scale, including public-private partnerships.
2. Advocate for removing barriers to green infrastructure that exist in health and safety regulations (i.e., plumbing standards, building codes, landscaping requirements, etc.).
3. Support the integration of place-based water education and green infrastructure approaches into educational curricula.
4. Support the development of green infrastructure service centers where organizations that promote green infrastructure can share ideas and collaborate in other ways.

Water Centric Cities Initiative

Presenter: Elizabeth Hittman, Environmental Sustainability Project Coordinator, City of Milwaukee Office of Environmental Collaboration
Rapporteur: Trish Morris, Director, IJC Great Lakes Regional Office

Key Messages

Using a modified analysis of strengths, weaknesses, opportunities and threats (SWOT) to developing a watercentric city program, the following considerations are important for development in the Great Lakes basin:

- Strengths include the large size and scale of the watershed; the huge quantity of water; standardized elements and use of best practices across the basin; capability to develop metrics to measure progress, including economic and environmental benefits; ability to find better optimization of water.
- Weaknesses or obstacles include government's lack of or type of billing for water that encourages unlimited use, not conservation, and that doesn't capture the real value of the water.
- Threats include political polarization, leaking and aging infrastructure that causes a greater than 20percent loss of water, and bacteria from leaking pipes.

The group then discussed the elements of a watercentric city:

- Decentralized infrastructure

- Good stewardship of its water resources, even those cities with water shortages
- Practices conservation regardless of quantity of water it enjoys
- Good citizen engagement of non-typical stakeholders, using social justice/environmental justice considerations
- Concern beyond "swimmable/fishable/drinkable" issues to flooding
- Good funding support from state/municipal levels, with federal government assistance with aging infrastructure
- Across the board crisis response that involve regional conditions and circumstances
- Strategic programs with a central action plan addressing multiple issues and outcomes
- Reporting transparency, good communications, and ability to "tell the story"
- Provides meaningful "blue jobs" employment
- Balances costs/benefits, works to manage harmful algal blooms and aquatic invasive species like quagga mussels, understanding it is cheaper to protect than to restore
- Successful regional engagement
- Measures recreation and citizen connections, and obtains citizen and business investment.

Recommendations

1. Federal governments can help to establish incentives to improve conditions in the cities so they can become water centric cities, like it did with the LEED program and Mayors for Monarchs.
2. As cities develop their strategy, they need to blend economic development with sustainability, involve numerous water organizations to help to ensure its success, and research new technologies for better monitoring and conservation.

Citizen-Based Monitoring and Its Importance for Water Quality

Presenter: Cheryl Nenn, Milwaukee Riverkeeper
Rapporteur: Allison Voglesong, IJC Michigan Sea Grant Fellow

Key Messages

Water quality monitoring on the Great Lakes is faced with the DRIP barrier: data rich, information poor. There is strong interest to integrate water monitoring data, but major gaps exist between micro-scale (at the local and state level) and macro-scale (regional, federal and binational) monitoring. Quantity of water monitoring data is relatively high, but because parameters of datasets don't always comport, the quality of information is characterized as low. Water quality monitoring data is cumbersome for end users to access and understand and unavailable in a timeframe that impacts water user decisions due to lags between monitoring and communication of risk to the public. The context of funding and resources means non-profit groups are increasingly relied upon for water monitoring, despite same or reduced funding budgets from state or federal agencies.

Recommendations

Based on the identified problems, the public engagement breakout group encourages the International Joint Commission to explore the following solutions as recommendations to the governments for improving water quality monitoring relevant to citizens:

1. Improve coordination, connection and integration of disparate water quality monitoring data across local, state, federal and binational agencies and organizations.

2. Improve public access to water quality monitoring data through technology interfaces, visualizations or dashboards, and improve the accessibility of language and communication methods in water quality reports, such as providing a less technical version of the State of the Great Lakes report for the public.
3. Encourage innovative funding solutions to support existing and new monitoring infrastructure and the coordination of monitoring data across agencies at all levels.
4. Additionally, the breakout group urges the International Joint Commission to work with governments to focus on early detection programs, and expand the water quality monitoring scope to integrate early detection for water quality into early detection for aquatic invasive species, beach health, and pollution spill and discharge efforts. Current processes to monitor emerging threats in water quality are insufficient for adequate response and thus updates to policies are needed, such as in Annex 3 (Chemicals of Mutual Concern), that reduce delays between detection and action on emerging threats.

Nutrients and Aquatic Invasive Species

Presenter: Todd Brennan, Watershed Project Manager, Alliance for the Great Lakes
Rapporteur: Matthew Child

Key Messages

Each of the five lakes exhibit variable physical, chemical and biological characteristics. Careful attention is needed to spatial heterogeneity when discussing and prescribing responses to aquatic invasive species and nutrient load reductions for each lake, and different basins within each lake. Nutrient loads to Green Bay were discussed in the context of the Area of Concern's eutrophication beneficial use impairment (BUI). Technical transfer of best practices and successful projects between AOCs, and between AOCs and other geographic locations, is essential. The economic benefits of cleanup need to be promoted as a means to improve behavior, leading to a future where users are motivated to exceed total maximum daily load limits based on economic benefits, both to individual businesses and the community at large.

Cage aquaculture is a source of nutrients. The Great Lakes community should ready itself for the likelihood of large-scale net pen aquaculture in the lakes to meet the dietary preferences of consumers, as wild-caught fish won't be able to satisfy future demand.

There is a pressing urgency to reduce nutrient loads to mitigate harmful and nuisance algal blooms. Milwaukee harbor assimilates phosphorus better than some other coastal locations, as a result of deliberate harbor and shoreline design. Are there opportunities through shoreline design to promote nutrient mitigation e.g., shoreline impoundments?

Collective action and stewardship are essential, which include change agents and using techniques and approaches that effectively engage intended audiences. The approaches should reflect the cultural differences between jurisdictions e.g., Michiganders have a strong cultural relationship with the lakes compared with other Great Lakes states and provinces. By connecting people with the resource they will value it. Physical access to the lakes, or stories about iconic species like lake sturgeon, can strengthen those connections.

Great Lakes Implications from *Shifting Currents*, the 2016 Waters of Wisconsin Report

Presenter and small group facilitator: Jane Elder, Executive Director, Wisconsin Academy of Sciences, Arts and Letters
Rapporteur: Sally Cole-Misch, Public Affairs Officer, IJC Great Lakes Regional Office

Key Messages

Wisconsin is at a critical tipping point for its water: while there is a phenomenal increase in research and capacity, there is less ability to take decisions and actions due to cuts in the Department of Natural Resources and legislative budgets and a lack of long-sighted vision, which is essential for the Great Lakes. Great Lakes Restoration Initiative money goes directly to local governments versus the state to implement restoration and protection actions, for which both sides have little history or experience. Citizens aren't aware of everything that goes into providing clean water to them, and stresses on the middle class as a result of economic upheavals in recent years may prevent them from visiting and enjoying the Great Lakes. This is essential so citizens are touched by and connected to the lakes, because what we value we will protect. As climate change and other stressors on the environment force changes, each generation gets used to a lower reality of environmental quality.

Recommendations

1. The Great Lakes need to become larger part of the economic, social and cultural pie.
2. To encourage Great Lakes and environmental literacy, scientists must go to citizens and students to inform them of the value and issues of the lakes. We can't depend on governments to do this anymore, with limited staff and budgets.
3. To further encourage and develop environmental literacy, develop a grand, year-long celebration of the Great Lakes as the US National Park system is doing to celebrate its centennial anniversary. Involve all sectors of society and include fun events such as a Great Lakes selfie contest and cost-free opportunities to get to and enjoy the lakes.
4. Obtain funding to provide nonpartisan tours on the lakes for legislators, so they recognize their value for all elements of society.
5. Recognizing the impact climate change is and will have on the Great Lakes, develop a basinwide resilience strategy and include environmental literacy elements to lessen its impact on the lakes and their watershed.

Summary Report

Public Meeting on the Great Lakes Your Voice: Sault Ste. Marie

Thursday, March 2, 2017
Delta Hotel
Sault Ste. Marie, ON

Introduction

The International Joint Commission visited Sault Ste. Marie, Ontario as part of public meetings in six communities in the spring of 2017 to gather public comment on the Canadian and US governments' Progress Report of the Parties (PROP) and the IJC's draft Triennial Assessment of Progress (TAP) report. An afternoon listening session brought together chiefs and other members of First Nations and Tribes in the region to share their thoughts and concerns about Great Lakes water quality with Commissioners.

During the evening public meeting, three presenters summarized progress to improve wastewater infrastructure in the Sault Ste. Marie, Ontario region, a fisheries habitat project for the St. Marys River as part of that Area of Concern's RAP, and the Lake Superior waterfront trail. More than 85 area residents from both sides of the border attended the meeting and 15 participants provided Commissioners with their comments about Great Lakes water quality concerns. These comments are summarized below.

The IJC's final TAP report will take these comments into account. Both the Sault Ste. Marie-specific and broader regional conclusions and recommendations may also provide direction to the Sault Ste. Marie region's residents for collaborating on solutions for unique priorities in their particular watershed.

Afternoon Listening Session with First Nations and Tribes

Participants:
Kimberle Gravelle, Tribal Councilwoman, Sault Ste. Marie Tribe of Chippewa Indians
Jennifer McLeod, Tribal Councilwoman, Sault Ste. Marie Tribe of Chippewa Indians
Caroline Moellering, Great Lakes Policy Specialist, Little Traverse Bay Bands of Odawa Indians
Mike Ripley, Environmental Coordinator, Chippewa Ottawa Resource Authority
Aubrey Maccoux-LeDuc and Brian Wesolek, Environmental Specialists, Bay Mills Tribe
Anita Stephens, Chief, Joshua and Manon Memegos, Lands and Resources Managers, Chapleau Ojibwe First Nation
Tammy Trembleau, Environmental Officer, Sagamok Anishnawbek First Nation

IJC representation at meeting:
Lana Pollack, US Chair
Richard Morgan, Canadian Commissioner
Rich Moy, US Commissioner
Trish Morris, Director, IJC Great Lakes Regional Office (GLRO)
Matthew Child, Physical Scientist, IJC GLRO
Sally Cole-Misch, Public Affairs Officer, IJC GLRO
Sarah Lobrichon, Acting Public Affairs Advisor, IJC Canadian Section Allison Voglesong, IJC Michigan Sea Grant Fellow
Cindy Warwick, Policy Advisor, IJC Canadian Section

Key Messages

Participants provided comments on several topics and responded to questions from Commissioners and IJC staff. Key messages from the afternoon conversation included:

- All participants expressed concern for the damage to all of the Great Lakes from a potential oil spill from the Enbridge Line 5 pipeline that runs under the Straits of Mackinac. Tribes continue to meet with Enbridge, and state and federal officials to express their concerns, with no resulting action. A large spill would severely impact all areas of tribal commercial fishing according to the 1836 fishing rights treaty, and they believe small leaks are already occurring based on Enbridge staff reports and oil floating on the water's surface above the pipeline.
- The St. Marys River and adjacent waters of Lake Superior and Lake Huron have improved considerably as a result of the RAP and its implementation. Improvements in the local steel mill, closing pulp and paper mills, and other actions have lessened toxic contamination entering the waters. However, the waters are still sick from legacy contaminants as well as mining discharges and herbicides from forestry operations into Lake Superior and its tributaries, which continue to contaminate drinking water, fish and humans who live in the region. Inputs of pharmaceuticals and microplastics also are of concern, as well as the recent approval by Michigan for open pit sulfite mining by the Menominee River in the Upper Peninsula, where millions of dollars has already been spent as part of the RAP program to clean up previous mining contamination.
- Climate change is impacting all parts of the ecosystem. Birch trees are disappearing, other plants are weaker, invasives such as the emerald ash borer and *Phragmites* are killing native plants. Animals such as moose are more stressed in the warmer winters and thus less healthy. Fish are considerably smaller, due to warmer winters as well as long-standing toxic contamination.
- Asian carp must not be allowed to enter the Great Lakes, and all efforts must be made to keep zebra and quagga mussels out of Lake Superior. The latter have decimated the whitefish population over the past 25 years because of the changes in the lake's food chain. Ballast water controls are essential to protect the lakes.
- The Lake Superior LAMP had excellent participation from all sectors of society until the citizen forums were eliminated. Without them, it is difficult to get involvement.
- First Nations and Tribes regard water as sacred, a living entity rather than a resource to be used as an asset. Subsistence and commercial fishing are essential for their people, and thus the effects of toxic pollution, invasive species and climate change have impacted their lives, health and livelihood. They are the guardians for the lakes and yet they pay the largest price for others' actions and perspectives.

Key Messages from the Evening Public Session

Enbridge Line 5 Pipeline

Like the afternoon listening session, many attendees at the evening public meeting discussed the Enbridge oil pipeline that lies on the bottom of the Straits of Mackinac. Concerns were raised for the increased potential for leaks as a result of the strong and shifting currents in the straits, as well as the long-term, irrevocable damage that a spill would cause to all of the lakes.

First Nation and Tribal Beliefs and Perspectives

First Nations and Tribes have lived around Lake Superior, Lake Michigan, the St. Marys River or Lake Huron for generations, consume the fish and wildlife, and believe that the lake is a part of each person. Their beliefs teach them that humans have a responsibility to the earth and lakes, and thus we must stop taking from them and destroying their health. When the lakes are sick, we are sick as well. They believe in the power of their Native ceremonies, and that the earth will heal if we stop destroying her and ourselves.

Toxic Contamination, nuclear waste storage, Asian carp and climate change

Long-standing toxic contamination of the waters and land from mining in Michigan's Upper Peninsula, industrial land and air pollution, and agricultural runoff was discussed in relation to most speakers' Native heritage. Mining effluents have forced First Nations along the north shores of Lakes Superior to boil their water for years. Lake Superior is the only pristine lake left of the five Great Lakes, and yet the governments are not taking actions to protect it as they should. Lake Huron is threatened by the proposed nuclear waste repository, which like the Enbridge Line 5 pipeline would damage all of the lakes if a leak occurred. Tourism provides more to the region's economy than mining, shipping and agriculture combined, and thus the health of the lakes is essential. Their health also could be threatened by Asian carp and cuts to US funding for Great Lakes restoration. The question was asked, what if all of our concerns happen and the effects of climate change, leaks from the Enbridge Line 5 pipeline and the nuclear waste repository, and mine tailings and other pollution make the lakes so polluted in another 50 years that they can't sustain life? Water means life, and without it everything dies.

First Nations and Tribes Listening Session Comments

Mike Ripley, Environmental Coordinator, Chippewa Ottawa Resource Authority (CORA): Key issues:

1) Great participation from all sectors of society, including Tribes and First Nations and~~,~~ in the Lake Superior LAMP when it had citizen forums. Without these there's a huge gap because grassroots organizations no longer participate.

2) Enbridge Line 5 pipeline would severely impact all areas of Tribes' commercial fishing range from 1836 treaty, chiefs travel to DC regularly to fight for closure and to stop Nestle permit to withdraw Great Lakes water.

3) Aquafarming is already happening in Lake Huron on Canadian side, no research to identify impacts in local areas and lake as a whole. CORA is against the practice, saying it will lead to increased algae growth and changes in food chain balance.

4) Climate change is impacting all parts of the ecosystem. Birch trees are disappearing; other plants are weaker; emerald ash borer and other invasives are killing native plants. Animals are more stressed with warmer winters, particularly moose. We need to come to reality about climate change, get of our dependence on oil (and thus close Enbridge Line 5 pipeline), stop others from making profit off of the destruction of our water and land.

5) Zebra mussels have devastated the whitefish population over the past 25 years by decimating bottom of Lake Michigan food chain.

6) St. Marys River: Steel and paper mills had largest impact on river, plus destruction of 90 percent of water flow that used to go over rapids now go through hydroelectric plants. Millions of dollars spent to clean up Menominee River, now Michigan is going to allow open pit sulfite mine, unprecedented in Great Lakes region. Will be billion dollar cleanup from such mining, and has to

be stopped.
6) Vessel Incidence Act introduced by Marco Rubio in Congress takes regulation for ballast water from US EPA to Coast Guard, takes rights away from states. This is an attempt by industry to eliminate ballast regulations, even though the International Maritime Organization requires ballast exchange internationally.

Caroline Moellering, Great Lakes Policy Specialist, Little Traverse Bay Bands of Odawa Indians: Band is very concerned about Enbridge Line 5 pipeline, which represents too large of a risk from an oil spill. For invasive species, decisions should be based on science to get them out of ecosystem. We feel it's essential that Asian carp not enter Lake Michigan through Chicago Ship Canal.

Tammy Trembleau, Environmental Officer, Sagamok Anishnawbek First Nation: We live on the north shores of Lake Superior and have never been asked to be part of Lake Superior LAMP. Toxic contamination is still getting into fish from mining and herbicides used in forestry operations. Invasive species, higher lake levels, smelt and pike populations declining are other issues our First Nation is concerned with. We want to keep zebra and quagga mussels out of Lake Superior any way we can.

Aubrey Stanton, Environmental Specialist for Bay Miles Tribe: Pharmaceuticals and microplastics are two big concerns. Tribe just completed report on ice cover over past 50 years, 79 percent reduction overall impacts dredging, recreation, levels, fisheries habitat and egg production. The St. Marys River RAP and Lake Superior LAMP are very beneficial, but latter is hampered with no citizen forums – starting at square one again to get involvement. Small leaks and spills are already occurring from Enbridge Line 5 pipeline, just need to go out there to see oil on the water's surface. We obtained Enbridge staff reports that document this as well, but they are not allowed to be published. All Tribes have met with staff and industry several times, held protests at St. Ignace, but no action.

Jennifer McLeod, Tribal Councilwoman, Sault Ste. Marie Tribe of Chippewa Indians: We regard water as sacred, a living entity rather than a resource to be used as an asset. Fishing isn't like it was a century ago anywhere in the lakes, which reflects sickness in the water. We've restored a lot locally with changes to the steel mill and closing pulp and paper mills, but we have a great fear with US budget cuts and the new administration that sees everything as profit and not according to a Native perspective. For Enbridge Line 5 pipeline, since we have ice over the lake most of the year, how can we tell if there are spills occurring? Easier to clean soil from oil spills than water, need to cap the pipe before it reaches Lake Michigan and transport on land instead. Subsistence fishing is essential for our people, we've changed which parts we feed our children to protect from contaminants, and we're trying to get the message out to more of our community about which fish are safe to eat. The size of fish have declined dramatically, which is a huge economic impact for the Native fishing industry.

Evening Public Comments (Click hyperlink on name to view video comments)

Chief Joe Buckell, Michipicoten First Nation: We live twenty miles downstream from Michigan's Upper Peninsula mines and receive all of their effluent, so have been on boil water restrictions for years. Bouncing balls between federal and provincial governments as to who is responsible for getting mining operations to clean effluent, but nothing has happened for years. We are guardians for the lakes and yet we pay the price for others' actions, including poor management of the lands. Lake Superior is the only pristine lake, we need to keep it that way because affects all other lakes, but governments aren't doing anything.

Patrick Egan, Oil and Water Don't Mix: Our organization is a consortium of citizens and groups concerned about Great Lakes water quality and the effect of Enbridge Line 5 pipeline that lies under the Mackinac Bridge. The pipeline was built in 1953, all technical reviews of safety are done from Calgary. Water currents are ten times greater in Straits of Mackinac than those over Niagara Falls, and can switch 180 degrees in 24 hours. The pipeline is unsupported in several areas eliminating protection from these currents and shifts. We have the potential to be the largest oil transporter on the continent with no reward and the potential to ruin the lakes we depend on for everything. The Enbridge Line 5 pipeline must be moved to land.

Cassie Baxter: My family has lived around Lake Superior and Lake Huron for generations, we eat the fish and wildlife, the lake is part of us so when it's sick, we feel sick. The Enbridge Line 5 pipeline is a threat to all we hold dear, as is the proposed nuclear storage facility close to the shores of Lake Huron. With a change in the US administration, corporations will be given more support to profit off the lakes, such as Nestle, rather than as the sacred resource that it is. We are depending on the IJC to make a difference for the lakes. Click here to view additional video comments.

Abdul Malhardeen, Algoma University: The United Nations emphasizes respect and conservation of water ecosystems above and below the surface, the Great Lakes region needs to do the same.

Bob Dunn, Lake Cheneaux Islands dock builder: Stop the manmade outflow of water from Lakes Michigan-Huron, stop dredging in the St. Clair River and return to natural flows as part of your adaptive management plan. Michigan has ignored the public trust doctrine and ignored the health of lake bottomlands by allowing massive boathouses and docks to be built, as well as the Enbridge Line 5 pipeline. Tribal people will pay the ultimate price. Click here to view additional video comments.

Klaas Oswald, St. Marys BPAC: Remediation has moved forward on many levels, dredging of contaminants will be costly and take many years. Heavy metals, chromium and lithium are still coming into the river from Lake Superior mines, plus agricultural contaminants and microplastics. We need a comprehensive plan to deal with all of these throughout the lakes. I am concerned about the US budget cuts for the Great Lakes and the resulting increase in pollution from municipal and industrial sources.

Wanda Trudeau, teacher: Students are very aware of microbeads, toxic algae and toxic pollution issues in the lakes, and expect our generation to protect them and the lakes. Spirits are in the

water and land, water will heal us if we protect it.

Candace Neveau: As Anishinaabe, we know that we keep taking from the earth, and we need to give back to it and stop others from destroying our land and water – such as Enbridge Line 5 pipeline and the Lake Huron nuclear depository. Why do we have to wait until it's an emergency, why can't we be proactive about protecting earth and ourselves?

David MacLachlan: Tourism is three percent of Ontario's economy, four times of international tourism. It provides more to the economy in the province than mining, shipping and agriculture combined. Having clean lakes and lands is essential to sustain this tourism.

Tanna Elliott, Kensington Conservancy: Best practices are known for agriculture, but there is no accountability and repercussions for farmers not following these practices and rules. Otherwise, the Agreement and laws are just words on paper.

Adrienne Beatle, Michipicoten First Nation: My family's health has and continues to be threatened by pollution in our waters and land. We held a First Nation grandmother protest on the lake, and when we put a ball on the lake, lightning struck – there is power in ceremonies. We believe the Enbridge Line 5 pipeline must be stopped.

Unidentified First Nation member: The cockroach can take all of the pollutants that we give to Mother Earth and still survive. We can't, we will destroy ourselves, but the cockroach and Mother Earth will still be here.

Taylor Wright, Lake Superior State University Invasive Species Centre: Asian carp should be the number one concern. All invasive species have far reaching economic, recreational, cultural and physical impacts. There's been significant progress in stopping new introductions, but we must stop the spread of existing aquatic invasive species and prevent Asian carp from entering and destroying the lakes' food chains.

Betty Lou Parr, lifelong resident on shores of St. Marys River: We need to appreciate the priceless resource we have in this region. More extreme weather is causing faster changes to the lakes, more boating accidents, and more danger from the Enbridge Line 5 pipeline.

Cleis Neveau: As an Anishinaabe, we understand the value of ceremonies and the responsibility to the earth andthe lakes. Imagine if the Enbridge Line 5 pipeline, tailings from mines, other pollution and climate change make the lakes unusable in another 50 years – they're so polluted that they can't sustain life? We must identify problems and solutions and take action now so the lakes aren't ruined forever. Water means life, without it everything dies.

Summary Report

Public Meeting on the Great Lakes Your Voice: Detroit

Tuesday, March 21, 2017
Outdoor Adventure Center
Detroit, MI

Introduction

The International Joint Commission visited Detroit, Michigan as part of public meetings in six communities in the spring of 2017. The purpose was to gather public comment regarding the Canadian and US governments' Progress Report of Parties (PROP) and the IJC's draft Triennial Assessment of Progress (TAP) report. The afternoon roundtable convened more than 20 expert professionals, scientists, community leaders, and activists from the southeast Michigan and Windsor region, who shared local Great Lakes water quality priorities with Commissioners.

During an evening public meeting, three scientists discussed the swimmability, drinkability, and fishability of regional Great Lakes beaches and waterways. More than 130 citizens attended the presentations and more than 30 participants provided Commissioners with their comments about Great Lakes water quality concerns. These comments are summarized below.

The IJC's final TAP report will take these conclusions and comments into account. Both the Detroit-specific and broader regional conclusions and recommendations may also provide direction to Detroit-area residents for collaborating on solutions for the unique priorities of their local watershed.

Afternoon Roundtable on Local Priorities

Participants:
Mary Bohling, Michigan State University Extension
Bob Burns, Friends of the Detroit River
William Copeland, East Michigan Environmental Action Council
Melissa Damaschke, Erb Family Foundation
Jennifer Day, National Oceanic and Atmospheric Administration
Annette DeMaria, Alliance of Rouge Communities
Matt Einheuser, Clinton River Watershed Council
John Hartig, Detroit River International Wildlife Refuge
Dr. Donna Kashian, Wayne State University Department of Biological Sciences
Simone Lightfoot, National Wildlife Federation
Khalil Ligon, Alliance for the Great Lakes
Cecily McClellan, We the People of Detroit
Leila Meikas, Detroiters Working for Environmental Justice
Dr. Carol Miller, Wayne State University Department of Environmental Engineering
Sylvia Orduño, Michigan Welfare Rights Organization
Dr. Joan Rose, Michigan State University Department of Fisheries and Wildlife
Simone Sagovac, Southwest Detroit Community Benefits Coalition
Oday Salim, Great Lakes Environmental Law Center, Wayne State University
Sandra Turner-Handy, Michigan Environmental Council
Donele Wilkins, The Green Door Initiative

IJC:
Lana Pollack, US Chair
Gordon Walker, Canadian Chair
Benoit Bouchard, Canadian Commissioner
Trish Morris, Director, IJC Great Lakes Regional Office (GLRO)
Raj Bejankiwar, Physical Scientist/Deputy Director, IJC GLRO
Jennifer Boehme, Physical Scientist, IJC GLRO
Kevin Bunch, Writer-Communications Specialist, IJC US Section
Mark Burrows, Physical Scientist, IJC GLRO
Sally Cole-Misch, Public Affairs Officer, IJC GLRO
Jeff Kart, Executive Editor, Great Lakes Connection and Water Matters, IJC US Section
Sarah Lobrichon, Acting Public Affairs Advisor, IJC Canadian Section
Allison Voglesong, IJC Michigan Sea Grant Fellow
Others: Dennis Black, Consultant for the IJC and CEO, GxSolutions

Key Messages

Participants each gave opening statements and expanded on a variety of ideas and priorities in the ensuing discussion. Key messages during the opening session included:

- Funding is imperative; organizations and agencies need reliable, sufficient funding for work to continue. Water infrastructure is among the top funding priorities for US side of the border.
- Improvements to binational coordination for data will help on many issues, including AOCs, water treatment, beach closures, and best practices for nonpoint source pollution.
- New and/or improvements to existing monitoring and measuring of toxic substances, active sources, and sediment hotspots is needed.
- Integration between and across Agreement Annexes would help practitioners.
- Shift in priorities should address proactive, rather than reactive solutions.
- The governments and IJC should increase consultation with cities and municipalities.
- Governance, primarily in urban centers, and democratic, public control over water governance institutions are key factors in water quality and management of pollution and stormwater. For example: Detroit's stormwater management program is attempting to address nonpoint source inputs of runoff pollution and fund infrastructure upgrades, but the financing mechanism is unaffordable for most community members.
- Future reports from governments and IJC need the data and text to be more accessible to a broad public audience.

The discussion session focused significantly on the human dimension of the Agreement. Attendees were concerned about environmental justice issues, such as accessibility of clean drinking water and air to residents, and broader issues of water quality and human health. Monitoring air and water quality has been spotty in the region, and local residents have seen ongoing problems stemming from an aging sewer system and industry.

Attendees brought up problems with recreational access to water. While reports indicate that beach closures in the Great Lakes region have been declining, attendees noted that monitoring on Canadian beaches is not frequent, nor does it give the whole story on what communities are most impacted by beach closures. Governments also must do a better job communicating fish consumption advisories to the public.

The IJC and the Parties should include social science indicators when assessing the Agreement's Annexes, attendees noted. This would include access to water, fish consumption advisories, economics, the costs of improvements to existing infrastructure, and communicating issues to the public. This would also include research into how often beach closures occur and where, and who has clean drinking water access.

Key messages from the discussion include:

- Agreement reporting should include human health metrics:
    - Social science and public health indicators should be reported.
    - Reporting on progress should not be generalized for the basin but should be mapped out, perhaps using GIS, to illustrate what communities are succeeding or not succeeding in the various Agreement areas.
    - Disease outbreaks should be better highlighted to illustrate cyanobacteria exposure as it connects to recreation, runoff, drinking water and stormwater.
    - Monitoring is not occurring for human health impacts in some areas where industries are exempt.
- Drinking water specifically needs evaluation parameters that include affordability and accessibility, in addition to increased focus on source water quality as an indicator.
- Holistic, basinwide Great Lakes protection is an objective that is reported. Household- and local-level factors and objectives also should be reported.
- Any vulnerability, particularly those created by a disparity in income or funding, is ultimately a vulnerability for all of the Great Lakes and their water quality.
- Based on blood levels of toxics in local anglers, fish consumption advisories should be maintained as a BUI in local AOC waterways.
- Governments should be mindful of the growing role of tourism and recreation when considering restoration projects.
- Additional monitoring and measurements for active pollutant sources, air quality and drinking quality are necessary to best address ongoing community health issues on the Detroit River.
- Governments monitoring beaches need to improve public notification communications.

Specific Recommendations

1. IJC boards and Annex committees should continue to add and expand members with social science, environmental justice, public health, and economic backgrounds.
2. Enhance binational coordination of exchange for existing data and support for filling gaps where new data, monitoring, and knowledge-sharing is needed.
3. Improve reporting on the human dimensions of water quality to include social and public health indicators. Include geographic breakdowns in reports to illustrate where and to what extent goals, objectives, and Annexes are progressing across the basin, rather than using data to generalize progress basinwide or lakewide.
4. Recommend the Parties provide increased support at the local level in affected areas for monitoring, infrastructure improvements and enforcement, technology. This will have positive water quality benefits beyond the immediate local area and should be considered an investment for the basin. Local people should be given priority for hiring when opportunities are presented.

Key Messages from Evening Public Session

Public Engagement

The region's residents who attended the meeting would like to be engaged more often by both governments and by the IJC, and recognized the importance of public involvement to Agreement progress and processes, particularly in the AOCs. Integral to improving public outreach and engagement is making research, data and reports more accessible and understandable for interested citizens, including youth. Related to communicating with the public, many participants highlighted the need for, and success of, citizen activism and involvement in Great Lakes protection. Several members highlighted upcoming activities in the region.

Access to safe, affordable drinking water and stormwater management

Local Detroit issues raised focused on two main concerns: access to drinking water, and the failure of local stormwater management solutions. Access to drinking water priorities included concerns over household water shut-offs due to debt and the failure of assistance programs, affordability and the high costs of water utilities, the human health implications of the water shut-offs, and reliability of service to paying customers. Stormwater concerns included the affordability and management of newly-imposed stormwater runoff fees assessed by the municipal government, which some called exploitative. Policy, funding and investment, by some other means than the new drainage fee, is needed to support drastic upgrades to stormwater infrastructure, including green and gray options.

Land use and management should be a focus when making decisions impacting stormwater and nonpoint pollution, and reforestation. Related concerns about the "water, food, energy" nexus raised issues with land use and energy development as they pose risks to Great Lakes waterways. Comments included support for mandatory phosphorus restrictions for agriculture, and support for voluntary conservation efforts by farmers whose effluent flows to the western Lake Erie basin.

Industrial pollution and energy production and transport

Pollution and energy concerns were varied, focusing on industrial pollution and toxic waste disposal and management sites in near proximity to Great Lakes waters. Local priorities included: concerns with Detroit area toxic waste storage leakage issues; alleged risks posed by treated toxic wastes flowing into the Detroit sewer system; fracking waste disposal, unpermitted petcoke piles on the Detroit riverfront, and thermal pollution from industrial and energy-generation cooling processes. Broader concerns about issues across Michigan and the basin included: potash mine and injection wells in Muskegon River; frack waste injection wells; and the Back 40 Mine project on the Menominee River. Several citizens raised the issue of the potential spill impacts from the underwater Enbridge Line 5 pipeline in the Straits of Mackinac, while others highlighted dangers from underwater oil and gas pipelines in the St. Clair River.

Radionuclides and nuclear power

Many citizens recommended listing radionuclides as a Chemical of Mutual Concern, urging swift action and comprehensive research upon listing about and monitoring of human health impacts of radionuclides. Participants reiterated other priorities concerning binational threats posed by the transport and storage of nuclear waste and radioactive products. This included: disallowing the Bruce Deep Geologic Repository near Lake Huron; disallowing a Fermi 3 nuclear reactor on Lake Erie and closure of Fermi 2; regulation of wastes stored at reactor sites

close to water; and disallowing the shipment of nuclear waste.

Binational efforts for restoration and protection

A binational approach to solutions was also a theme of public comment. The Detroit River Area of Concern, while making progress, no longer has a binational public advisory council (BPAC). While each side does have its own public advisory council, commenters urged that binational coordination through a BPAC become a short-term priority. Others emphasized the Great Lakes as a commons held under the public trust doctrine. One citizen shared their binational effort to establish western Lake Erie as a Canadian National Marine Park, and another solicited support for ongoing efforts to establish the Detroit River as a UNESCO Heritage Site, which has support from several US federal government entities. Citizens from both sides of the border emphasized the need to continue secure, reliable funding for Great Lakes restoration.

Afternoon Roundtable comments:

Khalil Ligon, Southeast Michigan Outreach Coordinator for the Alliance for the Great Lakes: We need to focus our efforts (as organizers) on the legislators to convince them to vote against bills that work against the Great Lakes.

Annette DeMaria, Technical Committee Coordinator for the Alliance of Rouge Communities: The PROP should mention beach closings, even if the data only exists primarily on the US side. Water treatment plants also share data on what they do for regulatory purposes, as it is helpful for tracking down the culprit in spills.

Matt Einheuser, Watershed Ecologist, Clinton River Watershed Council: We've dealt with AOC program regarding the Clinton River watershed, and don't want to see momentum lost on the progress we've made because of proposed US budget cuts. We agree with most of the findings in the draft TAP report.

Claire Sanders, RAP Coordinator, Detroit River Canadian Cleanup (from Windsor, ON): More integration between the Annexes would be helpful for on-the-ground practitioners. More data sharing and data management would help people make links between topics such as algal blooms and eutrophication. Binational AOCs are what our organization sees as the biggest challenge in the next 5-10 years. We're making good progress on the Canadian side with AOCs over the past 15-20 years. We also have urged the Canadian government to remind the US of its obligations and to not cut GLRI funding.

John Hartig, Refuge Manager, Detroit River International Wildlife Refuge: The IJC could help be a communicator for cooperative learning across the basin, helping transfer knowledge and best practices on areas tackling specific problems to others – for example, taking nonpoint pollution reduction lessons from Wisconsin and applying them to the Maumee River, Bay of Quinte or Hamilton Harbour. The Parties and IJC should also make sure measurements and monitoring is occurring on topics like persistent toxic substances, active sources and sediment hotspots to manage these issues.

Leila Meikas, Program Coordinator, Detroiters Working for Environmental Justice: Environmental justice should have its own section in the report, which could help people be prepared for emergencies such as the one in Flint. A working group to advise on social science

indicators and environmental justice is a good idea.

William Copeland, Climate Justice Director, East Michigan Environmental Action Council: Cuts to funding are hits to human rights, which is why we are working on fight for clean affordable water and environmental education. Glad to see drinking water is part of report.

Melissa Damaschke, Program Officer, Fred A. and Barbara M. Erb Family Foundation: Putting together a research team to determine social science indicators that could be linked to the Annexes would be helpful alongside measurements for biological and chemical indicators. This would assist in making sure people have access to clean water, safe beaches and fish advisory education. I would be willing to convene a group to provide public comment on this by April 15. It's important to have not just the science indicators for the reports, but also social science indicators, including access to clean drinking water and beaches. The data in the reports also needs to be translated to make it easier for the public to understand them.

Bob Burns, Detroit Riverkeeper, Friends of the Detroit River: How can we turn recommendations, such as the 40 percent phosphorus loading reduction in Lake Erie's watershed, into enforceable action on the local, state, provincial and federal level? IJC recommendations have been proactive, but end up being reactive in terms of when governments respond.

Oday Salim, Senior Attorney, Great Lakes Environmental Law Center at Wayne State University: The IJC should have more direct communication with major cities, as cities can accomplish a lot with local regulation where it isn't preempted by larger government. The IJC should also incorporate GIS mapping and data into its TAP reports, and on Annexes related to beach access and treated drinking water, it should highlight what specific communities have greater issues on with these topics. Broad statements make things appear rosier than they are in majority minority communities or native communities.

Sandra Turner-Handy, Community Engagement Director, Michigan Environmental Council: The report should better link these items to how they impact human health for the people in the affected areas. Detroit also needs to include water within its public service commission. We need to start looking at environmental justice as a reality, and that decision making bodies need to accept this is a fact in low income communities of color. We have an enormous problem around stormwater management in Detroit as well, causing the river to be continuously polluted.

Mary Bohling, Michigan Sea Grant Educator, Michigan State University Extension: The potential losses by the proposed budget cuts could have a major impact on the human health of people in Detroit, in Canada and around the world.

Dr. Joan Rose, Homer Nowlin Chair in Water Research, Michigan State University Department of Fisheries and Wildlife and member of the IJC's Health Professionals Advisory Board: The number one cause of recreation-based diseases is cyanobacteria, which leads to an interplay between phosphorus, drinking water, recreational waters, stormwater and cyanobacteria. These are considered outbreaks and should be highlighted. Additionally, comments should be made supporting water infrastructure investment on the US side. I'm also interested in redoing IJC's "100 year study" on microbes in the Great Lakes basin, following on from the 1913 typhoid study.

Syliva Orduño, Organizer, Michigan Welfare Rights Organization and Member, EPA's National Environmental Justice Action Council: There's a political separation between water and people, such as corporations being able to extract water cheaper than a person in poverty would be paying. We need to better connect human health and the impact it has on waterways and the environment; protecting the Great Lakes as a whole must also come back down to the household level. We also can't ignore the corporate or other sources that are responsible for pollution, and the TAP should include portions about environmental justice, affordability, public health aspects and how they relate to Great Lakes water quality.

Simone Lightfoot, National Director of Urban Initiatives, National Wildlife Federation, and member of the IJC's Water Quality Board: The receptivity of the IJC is appreciated. Governance is key in urban centers. Water is impacted is through governance structures so we have to wrap our ways around it. Management of stormwater and pollution continues to be important topics to consider.

Simone Sagovac, Executive Director, Southwest Detroit Community Benefits Coalition: The infrastructure vulnerabilities seen in environmental justice arguments also make the Great Lakes vulnerable, such as old sewer systems and funding cutbacks for monitoring. Hiring local people to improve infrastructure and properly funding monitoring of ecosystem impactors would be helpful on both fronts. If we aren't sure of industrial input and discharges because they're getting pardoned for economic reasons, we can't push for better technologies. We are concerned the monitoring here isn't adequate for public health and the environment, and that many industries are grandfathered in to evade Clean Air Act requirements.

Donele Wilkins, Executive Director, The Green Door Initiative: Local people should be given the opportunity to invest and work on infrastructure development and resilience, as they are the most impacted by poor infrastructure and pollution. There are also questions on the link between beach closures, monitoring and locations, such as the Belle Isle beach never closing even though it does get monitored. The information never reaches the public.

Dr. Donna Kashian, Associate Professor, Wayne State University Department of Biological Sciences: I'm concerned about quick moves to delist on fish advisories given high levels of PCBs and mercury in anglers around Detroit and Flint.

Dr. Carol Miller, Professor, Wayne State University Department of Civil and Environmental Engineering, and Co-Director, Urban Watershed Environmental Research Group, and co-chair of the IJC's Science Priority Committee of the Science Advisory Board: The IJC should continue adding experts on social science, environmental justice, and economics to its boards and research committees, as you can't just focus on scientific aspects of getting water as clean as possible. There also must be a greater focus on how to improve access to clean water. Fortunately, there has been greater focus lately within the IJC on urban areas, especially the Huron-Erie corridor, when it comes to runoff and access.

Dennis Black, organizer, consultant: What is the scope of putting something in the TAP about the Detroit River, and what persuasion could the IJC use to keep the EPA funded in regards to the river?

Jennifer Day, NOAA Great Lakes regional coordinator: The IJC seems to be constantly pushing on recreation and tourism and beach water quality, but the governments don't seem to have the same focus despite tourism being a major part of the economy in the eight Great Lakes states. It's not part of the Great Lakes Restoration Initiative other than the Harmful Algal Bloom connection.

Cectiny McCullen, We the People of Detroit: We should make sure that governance of water remains in the public domain and within public control, as that is the best way to ensure clean water remains affordable. Affordable water is our focus over water assistance. Affordable water for people in Detroit and Flint is imperative, and it should not be weaponized against people for foreclosing on homes.

Evening Session Comments (Click hyperlink on name to view video comments)

Ronald Fadoir, Oakland County Water Resources Commissioner Office Staff: Communication has come a long way since I first started my work in water resources. I think it's great that the IJC can reach out to more people with email and meetings. We need to address how we ended up with all the pollution in the Great Lakes watershed. All water pollution is connected to land use and management issues; policy and funding needs to focus on this. It's a process and getting public involvement is important.

Erma Leaphart, Sierra Club Great Lakes Program: I have a huge personal relationship with the Great Lakes waters. The IJC is doing well collaborating and supporting research. We must have more science-based decision making. Please also make research publicly accessible (readability and access); connect these to actions local citizens can take. The Water/Food/Energy nexus means the Great Lakes food supply may become more sought after in the future. Therefore, implementing mandatory phosphorus restrictions on agriculture is essential to preserve our environment. To address climate change and pollution we need more clean energy.

Ethyl Rivera: Problems don't recognize international borders. I believe radionuclides are a huge transboundary threat, as is the transportation of nuclear waste. IJC, please pay attention to the issues. The Bruce DGR should not be allowed.

Diane Weckerle, Coalition to Oppose the Expansion of US Ecology, Michigan Citizens for Water Conservation: I am concerned about increased fracking waste disposal in Michigan. The hazardous waste dump and treatment plant in Detroit dumps treated waste into sewers which ends up flowing into the Detroit River. We are also opposed to radioactive waste being treated in Detroit which could end up in the river. Underground injection wells, which store toxic material, are a threat to the Great Lakes. The privatization of water around the basin is hurting the public; we believe water should be held in a state-level public trust.

Barry Johnson, Greening of Detroit: We have planted 88,000 trees around Detroit in the last 27 years. Please focus on chemical pollution by water infiltration which is accelerated by deforestation. Trees act like a filter, slowing or stopping pollution. The IJC needs to focus on reforestation and phyto- and dendro-remediation of the basin.

Stephen Dewyer: Michigan faces many issues stemming from the privatization of the commons.

We have lots of problems facing our water supply including lead, shut-offs, water advisories from bacterial contamination and corporations bottling water.

Stephen Boyle: I brought samples of water I distilled from my tap. This is a problem. I live in the city where water is not reliable, the prices are too high and we are charged for runoff from our land. Please look into unpermitted petcoke piles on Detroit Riverfront. I believe the situations in Flint and Detroit are human rights violations.

Carol Izant, Alliance to Halt Fermi 3: We are working to stop a third nuclear reactor and the shutdown of Fermi 2. Our long range vision calls for a more responsible energy policy with renewables. We signed on with over 100 organizations to designate radionuclides as a Chemical of Mutual Concern. We need more funding for science to study the effects of nuclear on the environment. Radioactive waste that is stored at reactor sites is another concern. There is no safe level of radiation.

Vic Macks, Alliance to Halt Fermi 3: Please designate radionuclides as a Chemical of Mutual Concern. Continuous, real-time monitoring for human health impacts isn't being done and needs to be. The NRC needs to study the effects of nuclear power on citizens. We sent a letter to the IJC regarding the NRC's statement on thermal pollution from cooling water and the connection to algal blooms in Lake Erie and received no reply. We are concerned that the IJC has no stance on Bruce DRG. We are thoroughly opposed to nuclear waste transport.

Ed McArdle, Sierra Club Southeast Michigan: IJC, please respond to US cutbacks to the EPA and the Great Lakes Restoration Initiative. Canadians please also speak to it, it's all our water. I am concerned over Enbridge Line 5 and Line 6B which crosses St Clair River at Marysville, plus a dozen or more regional pipelines and mega gas pipelines throughout Canada. The IJC should pressure FERC and State Department to stop these pipelines.

Laura Campbell, Michigan Farm Bureau: We represent 45,000 farming families across Michigan. There is grassroots support for voluntary conservation efforts on farms in the western Lake Erie basin. Combined Animal Feeding Operations in Michigan are recycling water; farmers are connecting with each other and sharing best practices. MEAP verifications have helped drive a for 36 percent reduction in phosphorus loading to the River Raisin.

Kathy Krauskopf, All Hands On Deck: Great Lakes Restoration Initiative (GLRI) cuts prompted collective action. Kimberly Simon organized an event on July 3 on all waterfronts to bring awareness to GLRI cuts. Please help us spread the word.

Pam Kruczek: Bruce DGR will leak into Lake Huron and must be stopped. It's insane they want to place a nuclear waste dump less than 1km from the lake.

Dorthea Thomas, Sierra Club Michigan Great Lakes Organizer: Thank you IJC for giving us a voice in Detroit. The Great Lakes are binational treasures. I grew up in Detroit's most polluted zip code (48217), so I know that we need to address industrial pollution. There is a direct connection between water shut-offs and human health problems. Our citizens need clean water. The proposed budget cuts to the Great Lakes Restoration Initiative funding are unacceptable. Please increase the accessibility and affordability of water and support green and gray

infrastructure for sewer and drinking water.

Andrea Shaughnessy (Canadian): I'm asking to have our area established as a National Marine Park (Point Pelee to Pelee Islands to mouth of Detroit River) to be managed by Parks Canada as an extension of Point Pelee Park. ERCA would also have a big say in matters. This can become a binational effort, it's important to protect water quality.

Richard Prusak: The Back-40 mine project will mine for gold and minerals and lies within 100 feet of the Menominee River, in Michigan's Upper Peninsula. This mine threatens fishing, swimming, recreation and well water. These mines cause erosion and leak cyanide pollution. This is operated by a Canadian company. MDEQ may approve the permit, please make it stop. Don't turn the UP into Flint.

Kimberly Simmons, Detroit River Project: I'm calling for the designation of the Detroit River to be declared as a UNESCO World Heritage Site. A number of Canadian Parliamentarians support this idea, and it has had US House and Senate support. This body of water is an American Heritage River and a Canadian Heritage River, and it needs global awareness. I will be speaking to the UN for the second time about this issue. I would love to have the IJC behind this effort too.

Edward Gauss: The solution to water pollution is simple – do what they did on the River Thames in England. Increase fines on corporations to levels that are comparable to their profits.

Lucinda Keils, Indivisible: We need to make water pollution an urgent issue. We need citizen activism. Citizens should participate in the April 22 and April 29 marches for science and climate change. We can help water pollution efforts by changing our behavior at home; stop using chemicals on your lawn.

Richard Micka, Lake Erie Cleanup Committee: The Great Lakes Water Quality Agreement and Clean Water Act helped clean up Lake Erie. The River Raisin has removed many of the Beneficial Use Impairments to date. We are now we are focusing on the Detroit River Area of Concern, a binational Area of Concern. The IJC needs to re-establish the Detroit River Binational Public Advisory Committee to become successful.

Jesse Oliver Gray: We need to hold a special referendum election to remove President Trump. We need to get back our environmental protections. Ask me about it.

Mike Cleaver: We need to get young people involved in this process, the democratic process, as well as the IJC public input process. Get out and vote.

Rick Deering: Shut down Enbridge Line 5.

Peggy Case, Michigan Citizens for Water Conservation, Council of Canadians: We are concerned about plunder, pollution and the privatization of water. Nestle can pay next to nothing for pumping water and yet Flint and Detroit pay high rates for tap water. We are battling DEQ over fracking waste injection wells that pollute groundwater, and pot ash mines near the Muskegon River. Michigan is becoming a toxic waste dump and citizen action can make a

difference.

Jim Stone, Macomb County staff: Advise the US Congress that what can happen to Great Lakes from pollution can happen to any coastal state. The Congress can restore the Federal budget funding for water clean-up. If you can't drink, swim, or eat the fish, then our homeland is not secure. We can't afford another catastrophe like Flint, Toledo, and the Cuyahoga River.

Cristine McLonis: I urge citizens to get involved in local politics. How can citizens help the IJC to get the word out? The IJC needs to improve communication with citizens for both proactive and reactive solutions.

Tim Hansz: I saw this event in local newspaper. Being an artist, I look at these issues from a different perspective. The environment can't speak for itself. I can't just sit by and watch the Great Lakes be destroyed. The time is now for citizen activism. Threats like oil and Asian carp are an imminent threat to the Great Lakes. Let's get organized.

Cindy Darrah, Great Lakes Water Protection Committee: The Detroit Water and Sewerage Department and Great Lakes Water Authority are too political. They can't upgrade the system appropriately. I don't like Chlorination of the water; let's use ozone to treat the water like Canada. The drainage fee in Detroit is exploitive and building green infrastructure for stormwater should be a priority.

Saulius Simoliunas, retired scientist: The IJC should stress to the governments that public involvement is important. Public comments should be respected, particularly for AOCs. In your report, please stress public involvement.

Summary Report

Public Meeting on the Great Lakes
Your Voice: Sarnia

Wednesday, March 22, 2017
Lochiel Kiwanis Community Centre
Sarnia, Ontario

Introduction

The International Joint Commission visited Sarnia, Ontario as part of public meetings in six communities in the spring of 2017 to gather public comment on the Canadian and US governments' Progress Report of the Parties (PROP) and the IJC's draft Triennial Assessment of Progress (TAP) report.

During an afternoon public roundtable meeting, three presentations outlined key successes and challenges in the St. Clair River Region related to the St. Clair River Area of Concern, Chemicals of Mutual Concern and health, and the importance of sustainable agriculture to reduce nutrient runoff and harmful algal blooms. Nearly 80 area residents from both sides of the border attended the meeting and nine participants provided Commissioners with their comments about Great Lakes water quality concerns. Among the attendees in at the Sarnia meeting were Walpole Island First Nations, Aamjiwnaang First Nations, Sierra Club, Sarnia Environmental Advisory Committee, St. Clair Binational Public Advisory Council, St. Clair Region Conservation Authority, Friends of the St. Clair River, Ontario Federation of Agriculture, National Farmers Union, Lambton Federation of Agriculture, Council of Canadians, elected officials (regional director for Michigan Senator Gary Peters, councilor of Point Edward), and concerned citizens.

During the roundtable discussions participants discussed, among other topics, Areas of Concern, Chemicals of Mutual Concern and human health, and agriculture and nutrients. A range of other issues were raised during the public comment sessions. Summaries of these discussions follow.

The IJC will take these findings into account as part of their assessment report on Agreement progress and hopes that these conclusions and recommendations provide direction to residents of the St. Clair River region for cooperative strategies to deal with unique issues facing their watershed.

IJC representation at meeting:
Gordon Walker, Canadian Chair
Lana Pollack, US Chair
Benoit Bouchard, Canadian Commissioner
Trish Morris, Director, IJC Great Lakes Regional Office (GLRO)
Antonette Arvai, Physical Scientist, IJC GLRO
Raj Bejankiwar, Physical Scientist/Deputy Director, IJC GLRO
Kevin Bunch, Writer-Communications Specialist, IJC US Section
Mark Burrows, Physical Scientist, IJC GLRO
Sally Cole-Misch, Public Affairs Officer, IJC GLRO
Jeff Kart, Videographer/Editor, IJC US Section
Sarah Lobrichon, Acting Public Affairs Advisor, IJC Canadian Section
Allison Voglesong, IJC Michigan Sea Grant Fellow
Cindy Warwick, Policy Advisor, IJC Canadian Section

Sarnia Public Roundtable: March 22, 2017
Main Themes of the Roundtable Discussions

- Accessible, consistent public education
- Lack of funding for Areas of Concern progress
- Nuclear waste dump; Deep Geological Repository
- Microplastics and microbeads
- Protecting the Great Lakes water against bottled water companies
- *Phragmites*
- Chemicals of Mutual Concern
    - Need permanent task force to identify Chemicals of Mutual Concern
    - More Chemicals of Mutual Concern need to be identified
    - Radionuclides need to be identified as Chemical of Mutual Concern
    - Issue of pharmaceuticals in water
- Funding needs to stop and prevent invasive species
- Nutrients
    - Education needed on best management practices
    - Need to reduce phosphorus loading levels in the Great Lakes
    - Bureaucracy getting in the way of getting money into the hands of farmers
    - Ample regulatory nutrient management in place; farmers want voluntary programs involved
- Improve sewage treatment infrastructure
- Adopt best practices for dredging
- Issue of aging oil pipelines infrastructure – lines 5 and 9
- Air pollution is affecting human health

Key Messages

Nuclear Waste (Deep Geological Repository)

Participants expressed concern for the binational threats posed by the transport and storage of nuclear waste and radioactive products. Specifically, the potential impacts of the Deep Geological Repository (DGR) in Kincardine, Ontario and of the transportation of nuclear waste crossing over waterways and bridges between Canada and the United States. Participants expressed the need for accessibility to information on the threats posed by nuclear water, its transportation, the DGR and how they can affect the drinking water.

Chemicals of Mutual Concern

Many participants expressed that the governments have taken a long time to identify only eight Chemicals of Mutual Concern (CMCs). There are always new chemicals that are emerging and thus more CMCs should be identified quickly. Some participants recommended identifying radionuclides as a CMC. Appropriate scientific information should be disseminated on the potential impacts of these chemicals, and a permanent task force established to identify future CMCs. Concerns were also raised about pharmaceuticals making their way into the water from wastewater treatment discharges and posing threats to human health, as they are endocrine disruptors.

Nutrients and Dredging

Participants acknowledged the need to reduce phosphorus loading levels into the Great Lakes.

They suggested that more education and training is needed on agricultural best management practices to reduce phosphorus loadings. Enhanced monitoring after rainfall to determine phosphorus and nitrate loading was also recommended. Some participants, who work in the agricultural industry, expressed that ample regulatory nutrient management are already in place and that farmers favor more voluntary programs rather than mandatory restrictions.

Dredging was also discussed in terms of how it affects nutrient content of the Great Lakes. Dredging and the approaches being used to clean up toxic substances and the importance of ensuring that we are using the most appropriate methods so we are not creating or exacerbating the problem at a local area and moving it downstream.

Lack of Funding for Areas of Concern progress

Progress on Areas of Concern (AOCs) has been made because of the funding availability. Funds are vital to progress in cleaning up the listed AOCs and the lack of it would certainly impede progress. There was concern raised over the fact that in Michigan the funding of AOCs has gone to those that are close to being delisted rather than to the problems that have the biggest impact on Great Lakes health. There is also fear of loss of momentum and loss of advocacy after AOCs are delisted. Participants expressed that the St. Clair Region should never be delisted as an AOC. Other participants suggested that lessons learned from that AOC's habitat restoration projects should be captured and be made available to help in the advancement of other projects.

Public Comments (Click hyperlink on name to view video comments)

Murray Long: Nuclear waste is dangerous. There needs to be an organization that can explain to the public how dangerous it is and how it can be dealt with. Asian carp is another problem that needs to be solved.

Wanda Long: Bottled water is one of my biggest concerns. A few years ago we had really low water levels and I think a lot of water is being taken from our lake for bottled water. I'm concerned about water from the Great Lakes being taken by tankers to the south.

Joe Hill, Sarnia Environmental Advisory Committee member: How do you know how safe drinking water is when water is being pumped into the lake from nuclear power plants? Nuclear power pumping systems have leaks and these leaks go into the water supply. The nuclear power we are using and generating in Ontario is total BS. We do not need nuclear power plants, they are far too expensive.

Sandra Sahguj , Thunderbird Water Panther Circle, Walpole Island: There is a plan for the St. Clair River to be dredged at Walpole Island. I don't agree with this plan. No more big ships on the St. Clair. I don't want any nuclear waste to be traveling through that water either. The community members of Walpole Island are still waiting for the IJC to come to the Island.

Shawn Plain, Aamjiwnaang First Nations: When I participate in other forums I always wonder, where are the regulators? Where are the people that pose harm to the waterways, or pose harm to the land? Are they involved in these conversations? I have to go on record, for my First Nation, I can't speak for others; these meetings aren't consultation with First Nations. Meet with us

directly. At 31 I was diagnosed with a rare form of kidney cancer. I asked my doctor if this is environment related or not and it could not be answered. This area has a lot of serious health risks. More studies need to be done on health risks associated from air pollution.

Ken Bell, owner of water quality monitoring program on Rondeau Bay: I have conducted a water quality monitoring program on Rondeau Bay for about ten years. The United States has state-funded water quality monitoring programs that are watershed and citizen-based where they publish all of their data online. Ontario should follow suit and have programs where people take charge of their own communities and monitoring. Have communities conduct their own monitoring and work with the Conservation Authorities, MNR and the Ministry of the Environment to identify the problems and establish a baseline to help scientists.

Henry Smallboy, Council of Canadians: We have tankers taking water to Asia from our Great Lakes. Meanwhile, we have our own water crisis on our First Nation's reserves in Canada. Why is that water going overseas when it's needed in the northern communities?

Corrine Tooshkenig, Thunder Bird Panther Circle, Walpole Island First Nations: Water is life. There is common goal to protect the water, the land, the red man's land, it's the Mother Earth of all the human beings. Water comes from the spirit world and from the ground of the Mother Earth. Its blood, our bloodline, the blood we need in order to survive. We are in crisis and our prophecies tell us that if we don't stop what we are doing, this nuclear power is going to threaten us as human beings. It's sad when I hear from industry that we are in a sacrificed zone of gas and oil lines. A prophecy 200 years ago told us of a black snake that would travel through our land. Another prophecy also told us of the hydrolines that go through our lands. These are man-made threats.

Marina Plain, Aamjiwnaang First Nations: Thank you for all the hard work you have done and for all the people who showed to share your concerns about the water. I just had a question. I know the Commission has an Aboriginal Annex, a First Nations Annex; I'm just wondering if there is ever going to be room for an aboriginal Commissioner on your board?

Summary Report

Public Meeting on the Great Lakes Your Voice: Toledo

Thursday, March 23, 2017
University of Toledo Lake Erie Center
Oregon, OH

Introduction

The International Joint Commission visited Toledo, Ohio as part of public meetings in six communities in the spring of 2017 to gather public comment on the Canadian and US governments' Progress Report of the Parties (PROP) and the IJC's draft Triennial Assessment of Progress (TAP) report.

During the evening public meeting, three presenters summarized the latest research on Lake Erie, Ohio's Lake Erie Protection and Restoration Plan, and the connection between the Agreement and the development of domestic action plans in the US to restore Lake Erie. More than 140 area residents from the western region of Lake Erie attended the meeting and 23 participants provided Commissioners with their comments about Great Lakes water quality concerns. These comments are summarized below.

The IJC's final TAP report will take these comments into account. The Toledo-specific and broader regional conclusions and recommendations may also provide direction to the region's residents for collaborating on solutions for unique priorities in their particular watershed.

IJC representation at meeting:
Lana Pollack, US Chair
Gordon Walker, Canadian Chair
Benoit Bouchard, Canadian Commissioner
Trish Morris, Director, IJC Great Lakes Regional Office (GLRO)
Raj Bejankiwar, Physical Scientist/Deputy Director, IJC GLRO
Jennifer Boehme, Physical Scientist, IJC GLRO
Kevin Bunch, Writer-Communications Specialist, IJC US Section
Sally Cole-Misch, Public Affairs Officer, IJC GLRO
Jeff Kart, Executive Editor, Great Lakes Connection and Water Matters, IJC US Section
Sarah Lobrichon, Acting Public Affairs Advisor, IJC Canadian Section
Allison Voglesong, IJC Michigan Sea Grant Fellow

Key Messages from the Evening Public Session

Use of animal waste as fertilizer and nutrient pollution

Many attendees raised the need for mandatory regulations on the amount and type of animal waste from the more than 150 CAFOs in the watershed, which is used as fertilizer on farm land. Lake Erie recovered in the 1970s because of mandated changes to detergents and limits to fertilizer use, and it will take the same laws today to restore Lake Erie to health and prevent harmful algal blooms from returning each summer. These regulations should be based on sound science and enacted around the lake basin, and provide parity with grain farmers who already have to meet restrictions on their use of phosphorus fertilizers. Fines need to be commensurate with the detrimental impact caused when these regulations aren't followed, and the western Lake Erie basin declared impaired to force those who are creating the problems to change their actions. Additional education is needed for the farming community to understand and enact these restrictions.

Harmful Algal Blooms (HABs), safe drinking water and beach closures

Nutrient pollution from municipalities, agriculture and other nonpoint sources continues to enter

Lake Erie, in spite of significant infrastructure upgrades and the above-mentioned restrictions, contributing to the annual growth of HABs in western Lake Erie. Excessive phosphorus is not the only issue, however; the bacteria in the blooms and high levels of mycrosystin cause beach closures and unsafe drinking water supplies, as occurred in Toledo in 2014. Governments have generally provided safe drinking water, but the need for infrastructure improvements is dire. Ohio provides an excellent model to other states and provinces of how to monitor beaches for mycrosystin, alerting the public quickly of those results and closing beaches as needed. Consistent rules and advisories for beach closings are needed throughout the Great Lakes basin.

RAP Progress, wetlands restoration and green infrastructure

Much has been accomplished over the past 30 years for the Maumee River Area of Concern, from upgrading wastewater treatment plants and closing leaching landfills to improvements on industrial sites. Work is focusing on restoring habitat and wetlands and dredging contaminated sediment, with all work projected to be completed by 2025. Continued funding from GLRI will be essential to continue this progress.

Wetlands restoration can play a key role in slowing the runoff of nutrients into Lake Erie. Wastewater wetlands, backfilling ditches with rocks, cattails and other native plants, restoring wetlands in the upper part of the watershed, and working with agricultural residents to install small-scale wetlands on fields will help to capture and filter water before it enters the Maumee River and Lake Erie. These projects have been started by a local nongovernment organization (Blackswamp Conservancy) and by University of Toledo graduate students, who can measure loadings before and after the wetlands are created. Another project funded by the US EPA is teaching middle school and high school students how green infrastructure helps urban runoff and how to measure this progress. If students learn about the valuable role they can play as citizens to improve their environment, an entire generation will be created who care and are committed to keeping their communities safe and clean. Education is a key component for all environmental issues.

Radionuclides and nuclear waste

The Coalition for a Nuclear Free Great Lakes, a coalition of more than 100 groups, urges the IJC to recommend to the governments that radionuclides be listed as a Chemical of Mutual Concern. The nearby Davis Besse nuclear power plant has had at least six recorded close calls with significant leaks, more than any other plant in the US. There is no containment if any plant leaks into the Great Lakes. The lakes are too valuable to risk nuclear contamination from this and any of the other 60 plants, from a proposed Fermi three in southern Michigan, to the proposed nuclear repository next to Lake Huron, and from the proposed trucking of nuclear waste from Canada through the Great Lakes region to Kentucky or proposed barging of nuclear waste on Lake Michigan.

Draft TAP report and others issues

While the draft TAP report provides a good overview of Agreement progress, it doesn't provide the status of each lake or measurements of progress for each Annex. The report mentions climate change, but needs to point to this as what is driving so much change in the lakes themselves with resulting environmental justice issues for the region's residents. This will only increase over time. Asian carp, other aquatic invasive species and the Enbridge Line 5 pipeline should be recognized for the huge threats that they pose to the lakes and to our collective ecosystem.

Public Comments (Click hyperlink on name to view video comments)

David Spangler, Lake Erie Charter Boat Association: My association agrees with the draft TAP report on the unacceptability of western Lake Erie phosphorus loading. Our organization just sent a letter to Department of Agriculture to look at the state 590 manure standards, asking manure to be recognized as commercial fertilizer. Too many people not doing soil testing and we will push for mandatory soil testing next.

Lynn Sherman: I was part of studies in 1973 at the University of Toledo to research algae. I believe the problem now is not about typical algae, but harmful algae blooms that are bacterial in makeup. Less focus should be on phosphorus input, it isn't the only issue.

Theresa Lane: Lake Erie recovered in the 1970s because of mandated changes – if voluntary; the detergent industry and sewage plants would never have changed. Cows produce 23 times the waste per day as humans. It is spread on farm fields and eventually ends up in Lake Erie. Strong regulations are essential to stop high animal waste loadings, just as we created for fertilizer loadings. This is the only way to bring Lake Erie back again.

David Housholder, multigenerational farmer: With livestock manure used as phosphorus fertilizer, grain producers are getting the short-end-of-the-stick. We have to regulate the use of animal waste around the basin. CAFOs shouldn't be able to immigrate into Ohio; we don't have the appropriate regulations on them.

Nick Mandros, Ohio Environmental Council: The Council agrees with the TAP report's conclusions that voluntary measures alone won't achieve water quality results. Here are some recommendations to add to the report:
Objective 1: Governments have generally provided safe drinking water, but the need for infrastructure improvements is dire and the report should reflect that.
Objective 2: The basin needs consistent rules and advisories for how and why they close beaches.
Objective 6: Without mandatory regulations, we won't accomplish the objective of reducing nutrients into lakes from human activity. We recommend specific proposals by the IJC to ensure that compliance is accomplished for reductions in nutrient pollution.

Marya Czech, Urban Waters Project: Those who drink lake water are stakeholders. My community has a project funded by the US EPA to teach communities how green infrastructure works to reduce urban runoff. I invite you to view it. Middle and high school students can help researchers with water monitoring. If students learn about the real life value to the citizen scientists' role, there will be entire generation of people who recognize the role they can play in keeping our environment safe and clean. Not all the blame for nutrient pollution is on farmers; urban communities are part of the issue as well.

Chris Collier, Blackswamp Conservancy: Our group is working on the restoration of wetlands in the upper watershed to capture water as it leaves major creeks before it enters Maumee River. We are trying a pilot program with agricultural residents in the area to install small-scale wetlands that will hold and slow drainage of water from farm fields into streams, rivers and then Lake Erie.

Sandy Bihn, Lake Erie Waterkeeper and IJC WQB member: TAP report doesn't give the status of each lake, or measurements of progress for each Annex. I'd like to see these items to measure progress. In the section on drinking water, the IJC needs to identify the sources that are causing increased treatment and the associated high costs at water treatment plants. Ohio does a great job of microcystin monitoring, use this as a model to judge how other states and provinces are doing in monitoring microcystin levels. A report need to be created showing where new CAFOs are located that will affect Lake Erie. Michigan gets the jobs, Ohio gets the poop.

Mike Ferner, Advocates for Clean Lake Erie: In the western Lake Erie watershed there are some150 CAFOs that are large enough to be registered with the state. Seven hundred million gallons of feces and urine is going onto fields every year. All of it goes into Lake Erie, which is dealing with the equivalent of the human waste of the cities of Chicago and Los Angeles spread across the western Lake Erie basin. THIS is the problem; no one talks about it, no one does anything about it.

Karen Ash, Ohio Department of Health: There are several actions we can take to slow and filter water getting into Lake Erie. Promote wastewater wetlands; backfill ditches with rocks, cattails, and plants which can naturally filter that water. The University of Toledo graduate students can create these wetlands and measure the before and after. Maybe we can see improvements and lessening of nutrients into the lake, river and streams.

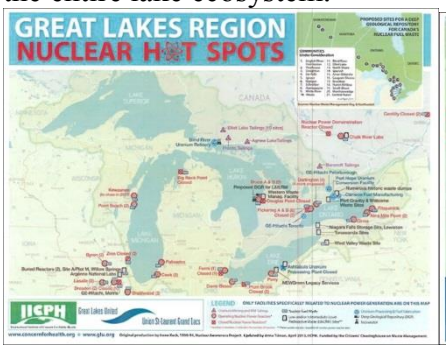
John Kusnier, Maumee AOC Advisory Council chair: For the last 30 years our AOC has accomplished a lot. We have focused on wastewater treatment plants, closed leaching landfills, forced improvements on industrial sites; and we are now focusing on restoring habitat and wetlands to improve water quality. The AOC is projected to complete all work by 2025. Much of our work has been funded by the Great Lakes Restoration Initiative (GLRI). We want the IJC to use whatever influence it has to continue to have the governments fund the GLRI to keep our work going forward. The longer projects take, the more they cost. Federal and state agencies need adequate staffing and budgets to keep these projects moving forward.

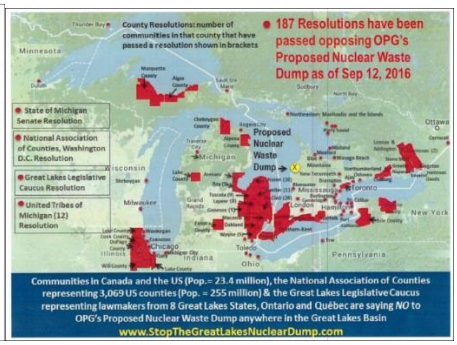
Eric Kraus, lifelong resident: We request that the IJC urge continued funding of the GLRI, which has created significant on-the-ground improvements. Put your money where your mouth is – this is not a political issue, it's important to keep funding for the Great Lakes.

Charles Mitch, Sierra Club: How does the IJC identify and decide on its priorities? We need to know this in the report. Are regulations being created for CAFOs based on science? I don't believe so, or we wouldn't allow so much waste to be put on fields every day. I fully support the 40 percent reduction on nutrients, but sound science is needed to study the capacity of the ground to absorb wastes and deal with them effectively.

Kevin Kamps, Beyond Nuclear: I work as a radioactive waste specialist for Beyond Nuclear. Over a year ago a coalition of more than 100 groups nominated that radionuclides be listed as Chemical of Mutual Concern, led by Canadian Environmental Law Association. I've done a lot of work at the Davis Bessey nuclear plant nearby- it has more close calls with disasters than at any nuclear plant in country. Davis Bessey has an issue with containment, and if an accident happens, there is NO containment. Thanks to Ohio legislators who joined with Michigan and other congressional representatives to try to stop the nuclear repository in Lake Huron, which

my organization has been fighting for 16 years. Highly radioactive waste is being transported in trucks across basin every day, and proposed for barge transport on Lake Michigan. These are unprecedented risks to our water. Only one of these barges would cause catastrophic damage to the entire lake ecosystem.





Response from Chris Winslow, Ohio Sea Grant College Program (one of evening's speakers): Two key ongoing projects will measure the amount of phosphorus coming out of various types of manure, and how can it be reformulated to ensure low levels of phosphorus in what's put on fields. The second project tracks phosphorus in water to identify biological source – types of animals, human, plant fertilizer. Climate change is also being studied as well, in very specific ways.

Edward Gauss, Community Cooperative Association: I worked for 32 years for a car company that spent ten billion dollars over ten years to improve paint procedures so it didn't go down the drain. Regulations are important for industry and agriculture. Our industry built tanks to take sludge from factories to hazardous waste sites. Do the same for animal waste – build a tank, take it to be processed into fertilizer, and put it into the market to sell. We must fine farmers enough to put them out of business if they don't stop putting excess waste on land. It should be criminal to do this, as it's jeopardizing our entire lives.

Michael Keegan, Coalition for a Nuclear Free Great Lakes: I was at the 1987 IJC public meeting and asked about radionuclides in the Great Lakes basin. Some sixty nuclear power plants exist across the Great Lakes. We must learn the lessons from Chernobyl and Japan. The proposed Fermi-Three would emit millions of gallons of high temperature water with possible radionuclides in it. And 10,000 tons of radioactive waste is proposed to be trucked across Canada into Kentucky, through the Great Lakes region, both of these must not happen. Please consider radionuclides as Chemicals of Mutual Concern.

Rick Graham, Izaak Walton GL committee: Enbridge Line 5 pipeline and others in the basin are a huge danger to the lakes. We need to clamp down on ship ballast water discharges, there's a huge potential for further damage from invasive species, especially Asian carp. The western basin of Lake Erie needs to be declared impaired to force people who are creating the problems to change their actions and restore our waters.

Katie McKibben, former employee of Ohio EPA: The draft TAP report recognizes climate change, but not to my satisfaction. All the stakeholders need to acknowledge climate change and the need to adapt to it. Climate change is an environmental justice issue for citizens across the globe which will only increase over time.

Tom Garey: We've seen amazing progress on the Ottawa River cleanup. Thank you to all who have helped. The goal is to swim in it by 2030, but that's not good enough. We need to speed cleanup to enhance the river, which is a tributary to Lake Erie. We need to learn from the different outlook and perspective that Native people bring.

Elizabeth Uhlik: I am a mother who brought her daughter with me tonight. This has been a tremendous education for both of us. My parents were farmers, when I was young we saw frogs and bees everywhere. We don't see either anymore. Our children will remember what we do. Please be active and consider this a personal mission to protect our earth. Thank you for all you are doing.

Bill Myers, Myers Farm: In addressing issues with agriculture, everyone needs to not be as hostile. Universities are telling us how much fertilizer to apply. Fertilizer companies are pushing more on us. If we need to put less on our fields, tell us and train us. What do you do with multimillion dollar investments in fertilizer that may put family farms out of business? We need to come up with an acceptable alternative that will keep farmers in business. Research needs to tell us what we need to do. Agriculture as a whole – our entire lives are about farming, our children play on the fields – we don't want to pollute any more than anyone else. Just get the information out to us, with training and encouragement.

Response from Jeff Reuter, moderator and past director of Ohio Sea Grant College Program: From recent research we know that 78 percent of phosphorus into Lake Erie comes from 48 farms. The next step is to identify and reach out specifically to those farmers.

Summary Report

Public Meeting on the Great Lakes
Your Voice: Buffalo

Tuesday, March 28, 2017
WNED-WBFO Studio
Buffalo, New York

Introduction

As part of the International Joint Commission's efforts to obtain public input on Agreement progress, public meetings were held in six communities across the Great Lakes region. Two meetings were held at the studio of WNED-WBFO public television to hear from community leaders, scientists and other local residents about the accomplishments, challenges and further actions that are needed to restore and protect waters in the Buffalo-Niagara Region and the Great Lakes. The afternoon panel discussion gave the opportunity for Commissioners and citizens to hear eight presentations on the latest research findings related to local water quality issues and innovative, community-based programs to address them.

During an evening public meeting, three presenters outlined key successes and challenges in the Buffalo-Niagara Region related to the Buffalo River Area of Concern, wetlands in the Niagara River corridor, and the importance of water-based recreation in the community's economic development and restoration strategies. A range of other issues were raised during the public comment sessions. Summaries of these discussions follow.

The IJC will incorporate these findings into its assessment report on Agreement progress, and hopes that the conclusions and recommendations made by residents of the Buffalo-Niagara Region also provide direction for cooperative strategies to deal with unique issues facing their part of the watershed.

IJC representation at meeting:
Lana Pollack, US Chair
Gordon Walker, Canadian Chair
Rich Moy, US Commissioner
Richard Morgan, Canadian Commissioner
Trish Morris, Director, IJC Great Lakes Regional Office (GLRO)
Raj Bejankiwar, Physical Scientist/Deputy Director, IJC GLRO
Frank Bevacqua, Public Information Officer, IJC US Section
Matthew Child, Physical Scientist, IJC GLRO
Sally Cole-Misch, Public Affairs Officer, IJC GLRO
Sarah Lobrichon, Acting Public Affairs Advisor, IJC Canadian Section
Victor Serveiss, Environmental Advisor, IJC US Section
Allison Voglesong, IJC Michigan Sea Grant Fellow
Cindy Warwick, Policy Advisor, IJC Canadian Section

Afternoon Panel Discussion Presentations

Key Messages

Community Collaboration for Restoration Action: Jill Jedlicka, Buffalo-Niagara Riverkeeper
The Buffalo River Restoration Partnership is an international model for a comprehensive, community-based collaborative approach. Tributaries such as Scajaquada Creek in the Buffalo River Area of Concern were covered in the 1950s because the polluted water was considered to be a health hazard to local communities. We need a bold vision to turn the situation around: healthy water drives economic revitalization. We can put jobs back into the local economy while re-establishing living connections between people and the water. Restoring water quality can enhance communities by restoring habitat, managing stormwater, creating waterfront communities, watch-

dogging bad actors and bringing residents to the table.

Making the Great Lakes the Place to Be for Outdoor Recreation: Great Lakes Coast Initiative, Krystyn Tully, Vice President, Swim Drink Fish Canada and co-founder, Lake Ontario Waterkeeper
When we talk about protecting the Great Lakes, we are really talking about protecting and restoring the things we care most about in life: health, prosperity, community and culture. Healthy water is an economic advantage making the region a desirable place to work and live. The IJC's poll shows that 86 percent of people agree Great Lakes should be protected for recreational use. We support the IJC's statement in draft TAP report that governments need to pay more attention to recreational matters. The fact that we have clean, swimmable water is the greatest competitive advantage that we have. It is the reason why businesses want to locate here and why people want to invest and innovate in this community.

Emerging Contaminants and Impacts on Fish and Wildlife: Diana S. Aga, Ph.D., Henry M. Woodburn professor of chemistry, University at Buffalo
We've become more aware of emerging contaminants, such as pharmaceuticals, personal care products and flame retardants, because new analytical tools such as liquid chromatography-mass spectrometry have become widely available. Emerging contaminants can cause adverse effects in fish and wildlife at extremely low-levels measured in nanograms/liter. PBDEs at very low levels affect cognition, motor development and behavior in children. The highest concentration of emerging contaminants found in Niagara River fish are psychiatric drugs – anti-depressant drugs. These accumulate in the brain and have neurologic effects that may affect their survival behaviors of fish and wildlife.

Wetland Habitat Restoration Needs for Larval Fish Nursery in the Niagara River: Dr. Alicia Pérez- Fuentetaja, Professor of Biology and Great Lakes Ecology, State University of New York at Buffalo State
Emerald shiners are the glue of the aquatic ecosystem in Niagara River. They are native, abundant and support all the other fish, including game fish, as well as being an economically important bait fish. However, hardened shorelines and bulkheads, and faster water velocities have replaced the pools and wetlands that provided natural spawning and a nursery habitat for larval fish. The health of the Emerald shiner is a good indicator of the health of the ecosystem. Needed actions include improving water quality, softening shorelines, eliminating bulkheads, enhancing existing wetlands and creating new wetlands.

Niagara River Corridor Ramsar Site, Proposal for a Wetland of International Significance: Jajean Rose- Burney, deputy executive director, Western New York Land Conservancy
Our steering committee has been working for four years to obtain Ramsar designation for both sides of the Niagara River. The river has been degraded, but it is turning around and its internationally significant habitat deserves this international honor under the 1971 Ramsar Treaty. The US side of the Niagara River meets eight of the Ramsar criteria and the Canadian side meets all nine criteria. The designation supports many benefits including increased recreation, tourism, conservation efforts and outside funding.

Alternative Futures for Restored Waterfronts: Sean Burkholder, Assistant Professor, University at Buffalo Architecture and Planning
The Great Lakes region is experiencing rapid urban growth. Recreational waterfront amounts to only 20 percent of Great Lakes shoreline. We not only need to preserve accessible, recreational shoreline; we need to reclaim more. There are numerous opportunities in the post-industrial landscapes. We need to focus on best use of land, including accessibility, natural dynamic changes to the shoreline and proper planning, not desperation-based decision making. Encouraging publically-accessible shoreline encourages stewardship.

Green and Smart: Restoring Buffalo's Waterways: Oluwole A. McFoy, general manager, Buffalo Sewer Authority
The latest Long-Term Control Final Plan was approved by the US EPA and New York State in 2014. The plan has a $135 million price tag for water quality improvements (separate from general capital improvements), $100 million of which is for green infrastructure. Green infrastructure focuses on managing water where it falls and keeping it out of the sewer system. Projects include rain barrels, asphalt streets and parking lots, stormwater planning and eliminating structures and impervious surfaces on vacant lots. We are also implementing smart sewers, including at the Lang and Bird Island sites, which store stormwater for treatment instead of releasing it to our streams.

Buffalo Blue, a Sustainable Business Perspective: Mark Shriver, President of Western New York Sustainable Business Roundtable
The Sustainable Business Roundtable was founded in 2014 to support the growth of our business community through sustainable measures. Currently we have 76 members, half of which have sustainability plans. We provide examples, tools and technical support, workshops, access to third-party assistance and grants, and networking to share best practices. Collectively, members have reduced resource use, including 24 percent reduction in water use.

Key Messages from the Afternoon and Evening Sessions

A Holistic Approach to Water Quality

Residents experience Great Lakes water quality from the perspective of end users of the resource rather than in terms of whether agencies are meeting their particular program objectives. Several participants at the Buffalo public meetings said that having access to beaches, parks and boat ramps is as important as having healthy, swimmable waters from the user's point of view. This was similar to the message heard in other communities; that lack of access to safe, affordable drinking water will be experienced as a failure of government regardless of whether the source water itself is safe and healthy. Thus, water quality and safe access to that water for drinking, swimming and fishing are equally important. Participants said the Parties should consider this perspective and do more to collaborate with other units of government to ensure that both countries are delivering the essential services that are part and parcel of the general objectives of the Agreement.

The Role of Water-Based Recreation

Several participants emphasized the importance of recreation to the economic and ecological health of the watershed. In order to appreciate their intrinsic value, citizens need to directly experience the waters of the Great Lakes through activities such as boating, fishing and swimming in the open waters, and picnicking, hiking and bicycling along the shores.

Communities that recognize this connection between clean, swimmable and drinkable water and residents' commitment to their lakes and neighborhoods will drive their own economic revitalization. Community members are likely to become more committed to the ecological health of the region by focusing on restoring habitat, managing stormwater, making waterfront communities more sustainable, reclaiming recreational shoreline, and controlling point and nonpoint pollution sources so that residents can use and enjoy the lake.

Public Engagement and Governance

Great Lakes issues and effective local and regional water management need consistent, systemic approaches by local governments within a region, such as setting sewage discharge regulations regionally versus a city-by-city approach. Governments, businesses and citizens also can focus management efforts on sustainable approaches to engaging stakeholders and gaining their support. Resolving the nutrient loading issue that all lakes but Lake Superior are experiencing will require such a systematic approach to regional water management and stakeholder engagement. The Parties also need to fully implement public engagement subcommittees of the LAMPs to provide consistent structure for residents to participate in Great Lakes protection.

Education can be an essential tool to develop public awareness and commitment to restoring and protecting the Great Lakes. This is especially important in urban, under-represented communities that often deal with the problems, such as deploying 1,000 acres of stormwater management, without seeing the lakes or spending time on or in them. Green infrastructure is an element of effective management that can provide hands-on opportunities for these communities to promote watershed education and participate in creating a cleaner, safer environment.

Wetlands

The Niagara River corridor is home to world class habitat and a wealth of biodiversity. A designation such as Ramsar, which identifies wetlands of international significance under the Ramsar Convention of 1971, can serve to galvanize conservation efforts, tourism and recreation, and outside funding to protect wetlands. The Niagara River's wetlands provide critical spawning and nursery habitat for species such as the Emerald shiner, a prey fish that sustains the food chain and all important game fish species throughout the region. Modelling can be an important tool to design and evaluate alternatives for habitat restoration and protection.

The proposed Northern Access Pipeline Project would create a pipeline that will trench through 185 streams connected to the Great Lakes, disturbing contaminate sediment and increasing siltation, and through 270 wetlands with obvious effects on habitat and the ability of wetlands to filter water effectively. It also will harm native species and encourage further spread of *Phragmites*.

Funding for Great Lakes programs

Several attendees expressed concerns for the proposed US budget that does not provide funding for Great Lakes restoration and protection. The Great Lakes Restoration Initiative has provided focus to work to restore degraded areas such as the Buffalo River, and is essential to stop new threats such as Asian carp. This funding also is essential to create demonstration projects to identify better ways to manage wastewater.

Radionuclides

Approximately 30 miles from Buffalo is the West Valley nuclear waste facility, which is believed to be leaking into Cattaraugus Creek. Nuclear waste and radionuclides are an invisible threat to the lakes. It is not worth the risk to create a new nuclear waste repository next to Lake Huron, and concerns were also raised about a binational proposal to transport more than 100 shipments of nuclear waste across Peace Bridge, from Canada to the southern US region. Participants asked what precautions are being taken to ensure that no leaks or accidents occur, and what steps are in place if either does occur.

CSOs and other threats to water quality

Consistent sewage discharge regulations are needed across the states and provinces to deal effectively with combined sewer overflows (CSOs). New targets and deadlines to create domestic action plans to deal with municipal wastewater are helpful, but we need a systems approach that links science and governance strategies and that creates buy-in and trust across all elements of society. The collective impact approach is a model that will work well for this issue. Regional plans can address upstream and suburban inputs.

Given that all towns have permits to release raw sewage into the Great Lakes under extreme rain conditions, do we know how much is going into lakes and how does this compare with agricultural runoff? How do we reduce both, especially as climate change creates more extreme storms? If extreme highs and lows in lake levels occur, it will be difficult for wastewater treatment plants to prevent raw sewage from going into the lake more frequently. Biosolids and commercial sewage sludge that are used as fertilizer on farmland are also flowing into the lake and must be dealt with more effectively. Hydrofracking waste has been received by the Buffalo Sewer Authority, which was flushed into Lake Erie, and also represents a threat to the lakes' health.

Other issues raised include an increased risk for diversions of Great Lakes water as the climate continues to warm, the need to review negative effects to beaches, shorelines and Lake Erie's food chain from the Niagara River ice boom, microplastics in the waters, fish and wildlife, and additional requirements to treat ballast water to prevent further introductions of aquatic invasive species. An additional Annex in the Agreement to address human health objectives that include more indicators beyond beach closings, such as combined sewer overflows and harmful algal blooms, also was proposed.

Specific Recommendations

Governments should reclaim more shoreline for public recreational use and ensure that measures to enhance opportunities for safe, water-based recreation are a central focus of the region's social, economic and environmental restoration strategy.

Governments should place greater emphasis on stakeholder engagement, including adoption of a collective impact approach to address nutrient loadings and fully implementing the outreach and education subcommittees for the LAMPs.

Governments should strengthen efforts to restore and enhance wetlands, soften shorelines and

improve water quality in order to provide spawning and nursery habitat for native fish species.

Governments should require risk-benefit analysis of pipelines that cross wetlands.

The IJC should pay more attention to the impacts of radionuclides in the Great Lakes basin.

Governments should conduct an environmental assessment of the transboundary shipment of nuclear waste and implement measures to safeguard human health and water quality.

The IJC should urge governments to develop consistent, regional sewage discharge regulations.

Governments should study the potential impacts of emerging, large-scale commercial activities, such as injection of hydro-fracture waste and agricultural application of biosolids, and develop regulations needed to protect public health and the environment.

Afternoon Public Comments: (Click hyperlink on name to view video comments)

Richard Smith, former NYS Assemblyman: I've fished and boated in Lake Erie for more than 70 years. We must push harder to help the Sewer Authority eliminate combined sewer overflows (CSOs) and reduce pollution runoff. These efforts must be funded. We must control ballast water discharges to prevent aquatic invasive species. Finally, ensure proper funding of education and research.

Paul Grenier, Regional Councilor, City of Welland: With respect to protecting water quality, local governments do a lot of the heavy lifting. We need consistent sewage discharge regulations; they are not the same across Great Lakes states and provinces. Having consistent regulation would help me raise the appropriate funds through use and taxation, and secure funding from upper levels of government.

Alan Oberst: Where are we regarding scientific modeling of the lakes? If we had more detailed models for such things as habitat restoration, could we evaluate alternatives for different development projects as well as look at the cumulative impact of multiple projects?

Charley Tarr: We lack a regional sewer plan in western New York. The Buffalo Sewer Authority had to be compelled to complete its own Long-Term Control Plan. The plan is flawed and is Buffalo-centric. We need a regional plan that addresses both upstream and suburban inputs.

Philip McIntyre: The number one priority is to keep Great Lakes basin water in the Great Lakes basin.

Joseph Barrett: The Niagara River ice boom is a big threat facing the lower Great Lakes. It creates a stalled conveyor of ice that contributes to a buildup of biomass in Lake Erie and preventing needed nutrients from entering Lake Ontario. Lake beaches and shorelines are disappearing. Strawberry Island is disappearing, and the food chain in Lake Erie is collapsing. There was no problem with ice prior to 1964. We need to take a serious look at annual cycle of

ice of the Great Lakes.

Thomas Frank, Ellicott Creek Watershed Greenway: The Williamsville Village Board voted last night to create the Ellicott Greenway Parks and Trails Project. I believe the Tonawanda Creek flood mitigation plan information should be made available to the public.

Lynda Schneekloth, Sierra Club Niagara Group: Please take the threat of aging nuclear infrastructure seriously. Nuclear power is not carbon free and from cradle to grave is as bad as coal. We need to close nuclear storage facilities. The West Valley waste facility is 30 miles south of Buffalo and has been problematic since the 1970s. Extreme storms place this facility in serious danger; it rests on glacial till and is not secure. Spilled waste could enter creeks and the Great Lakes. All waste facilities should be looked at with respect to climate change to ensure they are secure. Sierra Club has also tried to stop a shipment of liquid nuclear waste from Chalk River, ON to the Savannah River Site in South Carolina. No environmental impact was done and no alternatives were considered. Shipments are to begin soon. Both governments should insist on environmental assessments. Unitech's proposal to ship 10,000 metric tons of nuclear waste from Canada to Oak Ridge, Tennessee should have an assessment of the dangers and alternatives prior to being approved.

Scott Franklin: I grew up on the edge of Lake Erie, it was a great experience. I had a question about identifying a small fish I once caught that has a red side. As a boy I would eat the resources of the lake including crayfish and freshwater mussels. Without realizing it, I was single-handedly exterminating these animals. These animals are small in numbers and can live a long time, 30 years or more. I put a mussel in a neighbor's pond and came back years later; there it was, still there. Farmers let their cows run into the streams and now they are not in the best shape. I remember there used to be wood turtles too, but they are not around anymore either.

Julie Barrett ONeill: I want to call to attention the critical role that the IJC plays looking after cross-border relations. We lost our Canadian Consulate Office, who used to connect the mayors and communities. They would look at the river as a single waterway instead of two parts. You are in a unique position right now to build bridges between the countries. I had the privilege to work for Mayor Brown working in inner city neighborhoods on water quality issues. The portions of your report that speak to under-represented communities are particularly relevant for us as we deploy 1,000 acres of stormwater management. We need to connect urban neighborhoods that often don't see or use the water resources; some of these children may or may not have ever put a line in the water or boated. I'm happy to see that programs such as the Lake Ontario Waterkeeper are very successful at bringing diversity to the table. But, unfortunately in the room here, we don't have a full spectrum of our community. I would like to work on behalf of Mayor Brown to engage our urban community in these dialogues. Neighborhoods want beautification, they want trees. Communities asked for green infrastructure in their plans five years ago and we were finally able to deliver it. I think that environmental education in urban neighborhoods is very important, along with green infrastructure work in after school programs and other initiatives.

Charley Tarr: I hope you are aware of the recent lawsuit in Lincoln, Ontario, it was a dramatic victory. Hydro-fracture waste is a terrible threat. It cannot be put into injection wells. There are billions of gallons that must be dealt with daily. We are seeing commercial anaerobic digestion of sewage sludge and industrial sludge that is then put onto farmland. We are very concerned about

runoff from that farmland. Take note of Quasar Energy and Forest City, Inc. from Cleveland, Ohio. Forest City has launched an anaerobic digestion of waste for profit model. They will reference yogurt and all things benign, but the infrastructure will be ideal for getting rid of the world's most-polluted water. We lack the regulations for these systems.

Evening Public Comments: (Click hyperlink on name to view video comments)

Barbara Frackiewicz: At the West Valley Demonstration Project, nuclear waste is buried on site. Small amounts have traveled offsite into Cattaraugus Creek and into the lakes. The US Congress is underfunding demonstration work at West Valley. Radiation is invisible and also appears to be invisible in your report. Nuclear issues should be a high priority.

Brian McGowan: I'm concerned about the President's proposed budget cuts and I hope that something can be done to keep the funds needed to ensure clean Great Lakes.

Mike Kearns: I'm a resident of Olcott, NY and work at the wastewater treatment plant. I'm concerned about the recent adjustment in the lake levels. We may see two-foot higher highs and two-foot lower lows. What will happen with the issues of riparian rights? I was wondering if anyone considered the possibility of raw sewage that would go into the lake if the water were to rise two feet?

Paul Siepierski: Could anyone give us a perspective on the effects of hydraulic fracking for gas on any of the Great Lakes?

Thomas Frank, Ellicott Creek Watershed Greenway: I would like to address Jajean Rose-Burney. My suggestion is to designate the entire Niagara River Watershed under Ramsar and not just the Niagara River corridor.

Captain Larry D. Jones, President of Western Lake Erie Charter Boat Association: The algae and dead spots on the west end of Lake Erie have forced fishermen to our end of the lake. It's good for our businesses, but the problem is boat access. We're getting bottle-necked at access points with no room for all of the boats to launch. They built a new launch at Safe Boat Harbor, but it is eight more launches just like we had before. Additionally, Barcelona Harbor was dredged with funds from the Hurricane Sandy Relief Fund – at a cost of a million dollars. But, next season all the sand washed back into the harbor because the Army Corp of Engineers does not upkeep the walls at this end of the lake. They say it is at the bottom of the priority list. There is the same problem at Sturgeon Point Marina because of the way it was constructed. Everyone is trying to go out fishing, but it is closed. The City of Buffalo will not open the Erie Basin Marina early or late, because you need a guard at union wages. We don't have a safe place to go when the winds whip up, we need more access.

Brian Smith, Citizens Campaign for the Environment: Thank you for the past decade of scientific work and citizen outreach that led to the adoption of Plan 2014. Thank for this meeting tonight. It shows that people care about the Great Lakes and will come out on their behalf. While the IJC is doing a wonderful job, there should be full implementation of the outreach and education

subcommittees for the LAMPs. This ensures a consistent structure for people to weigh in on the Great Lakes Water Quality Agreement and Great Lakes Restoration Initiative (GLRI). Second, nuclear waste issues are critical to our area. West Valley is just 30 miles from here. There is also is a bad proposal to store nuclear waste on Lake Huron. There should be more attention in both countries to address nuclear waste issues. Finally, everyone should weigh in to the governments on the importance of the GLRI. It is a game changer for Great Lakes restoration. GLRI keeps Asian carp out and is critical to protecting the health of the Great Lakes.

Nate Drag, Alliance for the Great Lakes: The TAP is a great opportunity for citizens to weigh in on the progress of the Great Lakes. It's a great tool for citizens to keep tabs on their governments. However, the report could have been communicated better and been more visually attractive; there are no pictures in it. We believe it should also emphasize the areas where the Parties fell short. Please include an Annex to address human health objectives. With respect to recreation, include more indicators beyond beach closings, such as combined sewer overflows and Harmful Algal Blooms are very useful. Microplastics are serious concern along with aquatic invasive species. We believe the Laker ships should treat their ballast water too, as a way of reducing the spread of AIS. TAP is useful, but it should be communicated in different media formats. Perhaps create a short video on each objective. Show what the governments have done and not done. It might be a way to provide further education on the issues.

Gail Hall, New York Geographic Alliance: I am a resident of Erie County, NY. The Buffalo News has reported about shipments of nuclear waste from Canada to the US that would traverse the Peace Bridge. The report indicated there are supposed to be over one hundred shipments crossing the bridge. What are the precautions begin taken if there should be a leak? I'm concerned about this.

Joseph Gibson, Clean Air Council: I grew up in Lakeview and swam at Hamburg Beach. When I was young I was not able to swim at Woodland Beach and didn't understand until a later age why. I am concerned about the Northern Access Pipeline 2016 Project and how it could impact Lake Erie and the Great Lakes basin. Citizens have expressed are concerned that it will cross 192 streams, 185 through trenching, which allows sedimentation and silting downstream. These methods could disturb contaminated sediments, such as those in Bull Creek, which will be crossed twice. Bull Creek contains BCCs thanks to the West Valley nuclear project. It will trench through 270 wetlands, with obvious effects on the Great Lakes, including TIS and habitat destruction. When introducing industrial projects we need a method to evaluate the risk to benefits. Many of these projects will not benefit people of western New York and harm the Great Lakes. I'm asking the IJC and citizens to contact the state of NY to ensure the protection of the environment when creating these projects.

Charles Henderson: I would like to reiterate the issue of nuclear waste. Radioactive waste in Lockport, NY drains into the Erie Canal and Lake Erie.

Evelyn Hicks, Town of West Seneca Environmental Commission: Our town is within the Buffalo River watershed. One of our main concerns is the erosion of river banks and sediment loadings into tributaries of the Buffalo River. We have had a difficult time getting enough momentum and interest to repair the stream banks. We need more support. We fully support the mission of the US EPA and The Great Lakes Restoration Initiative; because of the GLRI we have received two

grants for aquatic invasive species eradication and scientific studies. We need to look at other examples from around the world for water management. For example, Israel has come up with more progressive ways to manage their wastewater. We need some demonstration sites with ideas to better manage wastewater, before continuing to build outdated infrastructure.

Mark Arnold, Williamsville Central School District: I hope we keep moving forward with Ramsar. I have great concern over nuclear waste in the Great Lakes basin. I believe this is the elephant in the room, especially in light of the IJC not addressing it. I would encourage the IJC to push forward to obtain answers about nuclear waste.

Charley Tarr: All radiological concerns raised today in Buffalo absolutely dwarf the other concerns that you have heard. We need to educate our youth and fortify environmental education. I would ask that the Commission look at hydrofracturing. My colleagues identified that the Buffalo Sewer Authority received an unknown quantity of hydrofracture waste that was straight lined flushed into Lake Erie. It would be useful for this committee to look into the legal issue of redress. Lastly, we see instances of members of the community who are knowledgeable and willing to enter the court process, but lack the funds to do so. The question of standing is being used to flush cases in the system. We need a better system to bring litigation.

Catherine Brown: Several years ago I became interested in the land application of treated biosolids. During the time that Toledo, OH had its problem with drinking water, I found that there are over 90 Class B permits to spread treated biosolid waste in the Maumee River watershed. When it rains, you can see the runoff coming from fields. In Wilson, NY, they had to pay fines after finding chemicals in the harbor from agricultural runoff during dredging. Because of the chemicals the dredged soils could not be put in the landfill. In Germany, they incinerate the sewage waste, using it for power. I would urge you to look into the application of biosolids and its high phosphorus content and algal blooms.

Janet Lenichek: I worked on an EPA vessel in 1978; some of the issues of that era are still a concern. For example, 40 years later we are still talking about combined sewer overflows and agricultural runoff. What else can citizens do to get governments to take these problems seriously? I'm also concerned about the potential for water diversion from the Great Lakes as the climate warms and communities need more sources of freshwater.

John Joyce, thesupershore.com: All of the water from the upper Great Lakes goes over the falls and is used to generate electricity. It lights the cities on the shore forming a giant letter S, beaming into the cosmos. It is a beautiful symbol seen from space. We need a place to put our ideas together. I've launched a website where we can express our ideas.

Kathryn Friedman, University of Buffalo: I would like to share thoughts on the significant challenge of nutrient loading to the Great Lakes and associated harmful algal blooms. All Great Lakes are experiencing significant water quality issues regarding nutrient loading, with the exception of Lake Superior. There has been progress to set new targets and the governments' report they are on track to meet the 2018 deadline for their domestic action plans. The IJC suggests that the parties should enhance science modeling. Good science and metrics are helpful, but insufficient to deliver the much needed course correction. In our view, we need a systems approach that links science and governance strategies. The next step must be bold and involve

good governance. The course correction should involve good process design to build trust and buy in across all sectors. The region should adopt the collective impact approach, a model that stems from non-profit and social activism literature, in order to develop a common agenda for solving problems. Nutrient loading may be one issue that is suited for this approach and collective action.

Christopher Allan: There is emerging research into microfibers that are washing into the Great Lakes and ending up in the gastro-intestinal tracts of fish. Are you aware of this work and researching this issue?

Ronald Rezabek:. Of the $300 million appropriated for the GLRI, do we spend it all? Is it accounted for? Is there any movement to reduce the number of raw sewage permits? Almost all towns on both sides of the border have a permit to release raw sewage into the Great Lakes under extreme rain conditions. How does this compare to farm runoff? As a resident of Grand Island, please keep up the work reducing pollution.

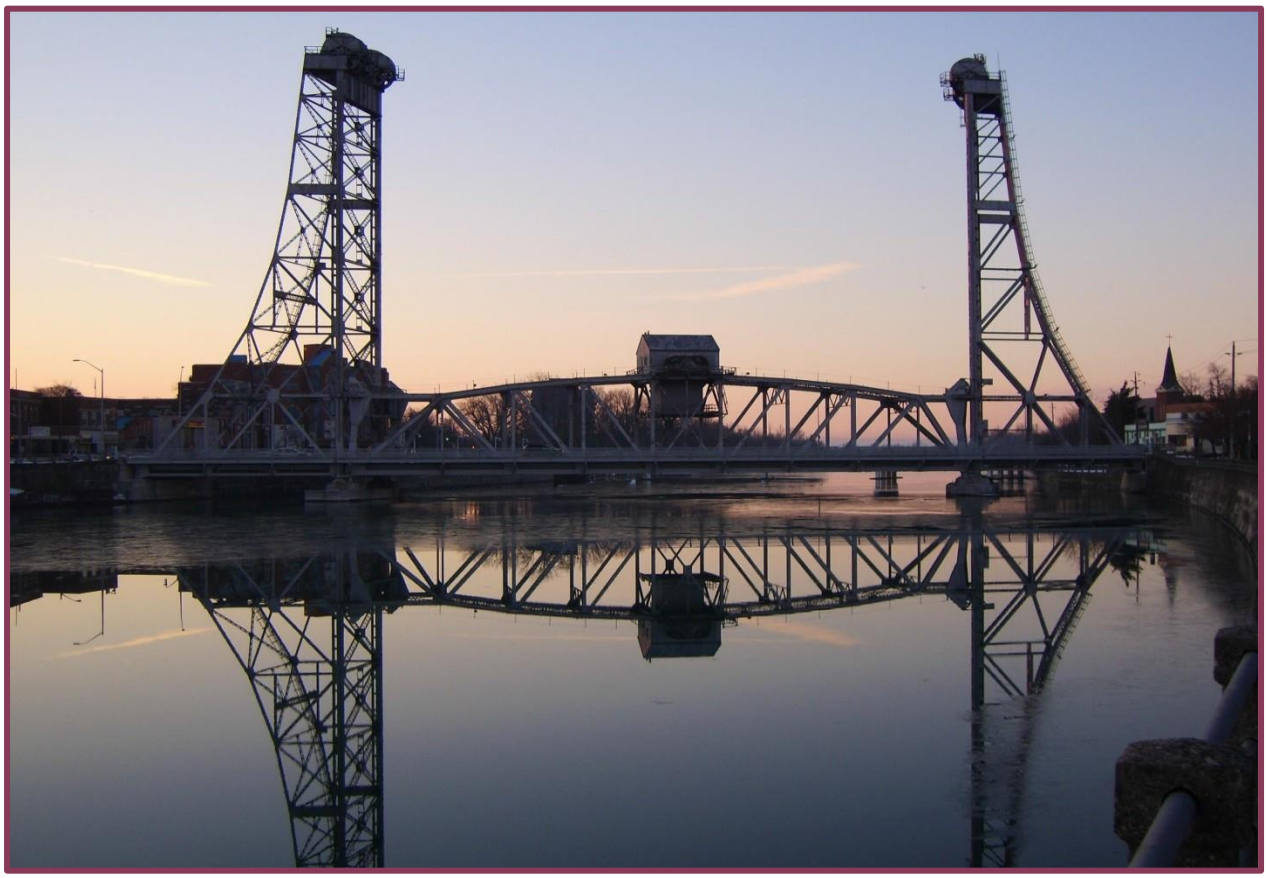
Monica Elderkin, Stronger Together WNY: We are a collection of activists with 12,000 members connecting non-profits and community activists. We have daily calls to action. Besides calling our Congressmen, do you have any advice on what we can do to restore Great Lakes funding to the national budget?

Carl Mrozek, Eagle Eye Media: I'm a videographer and independent film maker. I was recently working with another producer on a film called Lake Ontario Love Story. I was alarmed to find the threats posed to Lake Ontario by the West Valley Nuclear Waste Facility. It's important to get the word out to citizens, but the days of hard-hitting network documentaries are over. As a film-maker people often refer me to public television, but they do not have piles of money to produce documentaries. If I manage to produce something, they may help distribute it. If you really want to get the word out to the public about the work you're doing, please fund media projects. My challenge to you is to think about the ways you want to communicate your message and what can we do to work together to get the report out in a digestible form.

Fred Mikulec: I'm a local fisherman and wondering about the Emerald shiner catastrophe that has been going for the last three years. It is a main item in the food chain from the Grass Perch all the way up to the Muskies and Sturgeon. Is that on the agenda and does anyone have an update? I noticed climate change was part of your report. Hopefully our illustrious master tweeter -leader will come to recognize climate change and stop wanting more F15s and invest in the environment.

Summary Report

Public Meeting on the Great Lakes
Your Voice: St. Catharines



Wednesday, March 29, 2017
St. Catharines Rowing Club
St. Catharines, ON

Introduction

The International Joint Commission visited St. Catharines, Ontario as part of public meetings in six communities in the spring of 2017 to gather public comment on the Canadian and US governments' Progress Report of the Parties (PROP) and the IJC's draft Triennial Assessment of Progress (TAP) report.

During the public roundtable meeting, three presenters summarized progress to improve the water quality of the Grand River and Lake Erie, to reduce nutrient runoffs by practicing sustainable agriculture and using technologies like precision agriculture, and a status update on the Niagara Area of Concern. Two elected officials, Vance Badawey (MP, Niagara Centre) and Jim Bradley (MPP, St. Catharines) as well as Mark LaForme from the Mississaugas of the New Credit First Nations attended and addressed the crowd of more than 80 area residents from both sides of the border. During the roundtable discussions participants discussed, among other topics, sustainable agriculture, the Grand River and Lake Erie, agriculture and nutrients and Areas of Concern. During the public comment period 11 participants provided Commissioners with their comments about Great Lakes water quality concerns. These comments are summarized below.

The IJC's final TAP report will take these comments into account. Both the St. Catharines-specific and broader regional conclusions and recommendations may also provide direction to the St. Catharines region's residents for collaborating on solutions for unique priorities in their particular watershed.

IJC representation at meeting:
Gordon Walker, Canadian Chair
Lana Pollack, US Chair
Rich Moy, US Commissioner
Richard Morgan, Canadian Commissioner
Trish Morris, Director, IJC Great Lakes Regional Office (GLRO)
Raj Bejankiwar, Physical Scientist/Deputy Director, IJC GLRO
Frank Bevacqua, Public Information Officer, IJC US Section
Matthew Child, Physical Scientist, IJC GLRO
Sally Cole-Misch, Public Affairs Officer, IJC GLRO
Sarah Lobrichon, Acting Public Affairs Advisor, IJC Canadian Section
Victor Serveiss, Environmental Advisor, IJC US Section
Allison Voglesong, IJC Michigan Sea Grant Fellow
Cindy Warwick, Policy Advisor, IJC Canadian Section

Main Themes of the Roundtable Discussions

- Lack of beach/waterway access; beach closures
- Collaboration with regulators and farmers
- Integration of ecological traditional knowledge and environmental knowledge into the process
- Lack of control for the agriculture industry, nutrient loadings and toxics that are going into the water
    - identify common causes of nonpoint sources

    - Reduce agricultural runoff, urban sources, and identify methods for stormwater management methods
    - Plan with targets for each jurisdiction
    - Additional monitoring to assess situation to go forward
- Decrease of AOC funding that could impeded progress
- Consequence of water quality from decreasing water levels
- Nuclear waste transport
- Microplastics and plastic garbage showing up on beaches
- Sustainable agriculture
- More education on agricultural science for farmers to understand different technologies for better land use
- Combined sewer overflows
- Niagara AOC shouldn't have been delisted as one of the key objectives was to increase forest cover to 40 percent which was certainly not met

Key Messages from the Afternoon Public Session

Agriculture Runoff

The need for more accessible information, education and dialogue on better land use practices in agriculture to control runoff from farms was raised during the reporting out of the roundtable discussions. Regulators and farmers need to collaborate to identify common causes and sources of nutrients entering the lakes and develop plans with targeted reductions for each jurisdiction.
Additional monitoring is needed to assess the situation going forward.

Urbanization, Sewer Management and Regional Water Plans

On the other end of the spectrum, some argued that the blame should not be put on agriculture practices, but rather on the urbanization of watersheds and on the management of sewage that affect the water quality and the ecosystem of the Great Lakes. Concerns were raised about how pollution caused by raw sewer overflows, combined sewer overflow and separate sewer overflows have led to high *E.coli* levels in Beaverdams Creek and Shriners Creek in the Niagara region. These sewer overflows and the sewage lagoons in the Niagara Region cause medical problems as they produce high levels of *E.coli*.

Beach accessibility, Area of Concerns and nuclear waste storage

You can have the best water quality, but if you can't access that resource, what is the point? The lack of beach accessibility was noted as an important issue that needs to be solved in the Niagara region. Some areas that used to be accessible for swimming and fishing have been gated off in the region. Another issue raised was the possible lack of funding for the binational Niagara River Area of Concern and how it would impede progress. Finally, the issue of the nuclear repository near the shores of Lake Huron and the transport of nuclear waste was expressed as a looming nuclear threat to the Great Lakes.

Public Comments: (Click hyperlink on name to view video comments)

Jean Grandoni : I am from Niagara Falls, Ontario and am concerned about the pollution caused by raw sewage overflows, including combined, separated sewer overflows and pump station overflows. I am concerned about discharges in the Shriners Creek which flows into the Niagara River. Urban runoff is also affecting fish habitat. I am concerned about the causes of pollution, illegal dumping, floodplain filling, and no regard for headwater protection. The fact that there is no proper watershed planning is upsetting. Much of these issues are preventable.

George Jardine, Citizens Against Unsanitary Sewage Effluent: I am concerned about the sewage lagoons in Niagara-on-the-Lake and Fort Erie. Dangerous levels of *E.coli* is generated from the lagoons which can cause medical problems. The temporary sewage lagoon in Willoughby Township was only supposed to last 20 years, but is it still in force and was never shut down.

John Bacher, Sierra Club and Preservation of Agricultural Lands: I recommend that the IJC to look into how the urbanization of watersheds affects the water quality and the ecosystem of the Great Lakes. Beaverdams Creek and Shriners Creek in the Niagara Region are both urbanized watersheds, and as a result have astronomical levels of *E.coli* in their water. The IJC should study urban demand. I believe that there is no need for more urban zoning in the Niagara Region.

Ann Porter Bonilla, Provincial Council of Women of Ontario: The Provincial Council of Women of Ontario recommends that radionuclides be declared a Chemical of Mutual Concern. And we also ask that the research, based on the gaps of scientific knowledge and identified by the 1997 IJC nuclear task force report, begin as soon as possible. There should be an initiative to make up for lost time as part of a binational plan to address the grave and growing public concern with the strong action to protect the Great Lakes from various nuclear threats. More improvements also need to be made on identifying other Chemicals of Mutual Concern.

Christopher McLeod, Waterlution Great Art and Great Lakes: I am a social engagement artist and I just started a new project called Great Art for Great Lakes. I believe social engagement still isn't meeting the mark. I see a room with maybe 100 people. If the public doesn't know about the great work you're doing then they're just not going to get involved and support your work. If you are doing great work, get out there be creative and connect people with what you're doing.

David Alexander, Cross Border Consultants: We need to look at how energy is used and how it moves within the Great Lakes area. We need to look at ongoing citizen engagement from a charter perspective as a way to get people engaged. Data should be made open and available to get people, citizen scientists and organizations involved in the process.

Ian Brindle, retired professor from Brock University: I think that it's very important that we reinstate citizen activism in Great Lakes activities. I would like to share two examples of the law of unintended consequences. 1) Lampricide is harming fish it was not intended for. 2)

Flame retardants are relatively new and their toxicity is not completely known. These chemicals are the silent things that people don't see and don't think about it.

Jason Hamby: We find zebra mussels when we clean the fishing nets of the north shores. I've seen dead fish from botulism in Lake Erie. I would like to encourage the IJC to establish more platforms where concerns about the Great Lakes are shared. Please bring more Native American and First Nations involvement and dialogue to the table.

Bruce Timms, Regional Councillor for St. Catharines: I sit on the board of the Conservation Authority and I have brought a land owner stewardship guide for Walkers Creek and Twelve Mile Creek for the public to pick up. These guides are a small part of the solution, but we are hoping that they are helpful with the urbanized watershed within the Niagara Peninsula Conservation Authority's watershed.

Janice Gilbert, Ontario Phragmites Working Group: Our biggest threat to coastal areas right now is *Phragmites*. We are losing our habitat, biodiversity and wildlife species. We need our government to help us get the herbicide that controls the *Phragmites* and we need an eradication program in place in for the province.

Alice Barker, degree in environmental chemistry: My concern is the US EPA funding cuts that will affect our air, water and land. They allow mine tailings to go into streams. They've basically ripped up the Clean Water Act, and let power plants throw out all the garbage they want. What can we do about it?

III. Public Input Provided via Email or Letter

The IJC sincerely appreciates the time, thought and experiences each person shared during this consultation process, and took all comments into account on the Parties Report on Progress, the IJC's draft Triennial Assessment of Progress Report, and on progress to restore and protect the Great Lakes as it developed the findings and recommendations in its final TAP report. To read a summary of these comments, please go to Chapter Three of the Triennial Assessment of Progress Report. [link] The following people and organizations provided their comments about progress under the Great Lakes Water Quality Agreement to the IJC via email or letter or on its online democracy website, Participate IJC. Hometowns or organization location are listed where provided. All comments follow this list, or click on the name to read their comments as provided via email, letter or on Participate IJC.

Individuals

Dennis Abrahamson, Fredonia, New York
Matt Ahlschwede
Tony Alberico, Romulus, New York
Steven Ald
Connie Allison, Geneva, New York
Anonymous
Anonymous, Bay of Quinte Waterfront Owner, Napanee, Ontario
Michon Ball, Pittsford, New York

Lani Bauer, Henrietta, New York
Paul Beach, Merrill, Michigan
Chrysta Bell
Stephen Bellomo, Rochester, New York
Phyllis Brault, Fairport, New York
Mary Brickley, Jamestown, New York
Samantha Bulkilvish, Buffalo, New York
Vanessa Carbia, Gainesville, Florida
Robert J Carlisle, Grosse Pointe Woods, Michigan
Cheryl Carnahan, Rochester, New York
Beth Carr
Marion Cartwright, Lake Forest, Illinois
Helena Ciccone, Fort Erie, Ontario
James, Ontonagon, Michigan
Jerry Clark, President of Clear Waters Métis Council, Métis Nation of Ontario
Jim Clark, Erie, Pennsylvania
Jesse Collins, Redford, Michigan
Christopher Comparetta, Pittsford, New York
Nancy Creighton
Stephanie Crofts
Judy Csonka, Buffalo, New York
Mike Cushman, Niagara Falls, Ontario
Patricia Cwick, Buffalo, New York
Christy D'Antonio
Kris DaPra, Elk Grove Village, Illinois
Monica Dietrich, Ossining, New York
Michael DiMatteo, Brockport, New York
Margo Does, London, Ontario
Priscilla Drake, Penn Yan, New York
Sylvia J Eastman, Baltimore, Maryland
Shannon Elliott, Sarnia, Ontario
Virginia Elliott, East Otto, New York
Roberta Filanda, Port Huron, Michigan
Beatrice Florescu
Neil Freson, Henrietta, New York
Brenda Frey, Buffalo, New York
Joseph P. Gallagher, Sault Sainte Marie, Michigan
Liz Garratt, Saint Augustine, Florida
Ernie Gatien, Régional Councilor, Région 7, Métis Nation of Ontario
Susan Gateley
Helen H. Gentry
Thomas George, Buffalo, New York
Susan F. Gesner, Belfountain, Ontario
Beverly Geuting, California
Pat Gibbons
Mark M. Giese, Racine, Wisconsin
Lawrence Green, Buffalo, New York
Linda Greene, Unionville, Indiana
Dr. Sandy Greer
Tim Groeger, Buffalo, New York
Norda Gromoll

Joan Hausladen, Webster, New York
Patricia Heil, Greenbelt, Maryland
Linda Hartman, Grand Island, New York
John Heyneman, Webster, New York
Deborah Hoffmann, Buffalo, New York
David Hogg, Ajax, Ontario
Laura Horowitz, Pittsburgh, Pennsylvania
Dr. Latham Hunter, Hamilton, Ontario
Pilar Iwankiw, Rochester, New York
James, Ontonagon, Michigan
George Jardine, Stephensville, Ontario
Barry N. Johnson, Detroit, Michigan
Kay Johnson, Jamestown, New York
Rebecca Josephine Johnson, Buffalo, New York
Gary Junker, Findlay, Ohio
J. Kennedy, Ontario
William Kuehnling, East Amherst, NewYork
Theresa Lane, Toledo, Ohio
K. Liberta, Batavia, NY
Kristy Litz
Jonathan Lynch, Buffalo, New York
Elaine Magee
Vic and Gail Macks, St. Clair Shores, Michigan
Gordon Mac Martin, Buffalo, New York
Mark Mansfield, Geneva, New York
James Martin, Buffalo, New York
Barb McCarthy, Lancaster, New York
Carol McGeehan, Holland, Michigan
Susan Michetti, Mt. Horeb, Wisconsin
Emily Moore
Rhiannon Moore, Goderich, Ontario
Susan Morison, Beverley Hills, Michigan
Jane Murphy, Ripley, New York
Paula Neville, Rochester, New York
Jill Nicholas, Penfield, New York
Esther Colene O'Neill, Syracuse, New York
Elizabeth Oldfield, Amherst, New York
Paula Palmer, Pensacola, Florida
Richard Pfeiffer, Buffalo, New York
Michael Prince, Lockport, New York
Jadwiga Reffitt, Linden 3N, Michigan
Pauline Richardson, Regional Councilor, Region 7, Métis Nation of Ontario
Captain Paul Ruzycki
Sandra Sahguj, Walpole Island, Ontario
Jen Scibetta, Buffalo, New York
Elizabeth Schwartz
Lora Schwartzberg
Joanne Sheldon, Penfield, New York
Robert Sholtez, Derby, New York
David W. Shortt, Sarnia, Ontario
Karin Sleteen-Farjo

Karen Slote, North Tonawanda, New York
Alfred E and Ruth S Smith, Rochester, New York
Jim Soltesz, Grosse Pointe, Michigan
Jeffrey Steenberg
Susan Steepy, Penfield, New York
Lisa E. Stone
Laurie Storm, Buffalo, New York
Jean Kaplan Teichroew
Lisa Thibault, Buffalo, New York
Mary Tibollo, Fort Erie, Ontario
Suzanne V Tilley, St. Catharines, Ontario
Carolyn Tinling, Rochester, New York
Robert Trujillo, Buffalo, New York
Raymond Vaughan, Buffalo, New York
Nerissa Vitello
Christine Voorhis, Panama, New York
William C. Webb, Buffalo, New York
Elinor Weiss, East Amherst, New York
Charles Westerberg, Escanaba, Michigan
Wendy Willis, Victor, New York
Maggie Wineburgh-Freed, Los Angeles, California
Jeffery Young, Rochester, New York
Robert Zahn, Columbus, Ohio
Susan Zakos, Ithaca, New York

Organizations

Advocates for a Clean Lake Erie
Agribusiness Council of Indiana
Algonquin EcoWatch, Manitoulin Island, Ontario
Alliance for the Great Lakes, Chicago, Illinois
Bruce Peninsula Environment Group
Bruce Power, Tiverton, Ontario
Burgundy Bay HOA, Middle Bass Island, Ohio
Canadian Coalition for Nuclear Responsibility, Dufferin, Quebec
Canadian Environmental Law Association, Toronto, Ontario
Canadian Nuclear Association
Citizen' Resistance at Fermi 2 (CRAFT)
Coalition for a Nuclear Free Great Lakes
Council of Canadians, London Chapter
Council of Great Lakes Industries, Ann Arbor, Michigan
Fertilizer Canada
The Fertilizer Institute
Great Lakes Commission, Ann Arbor, Michigan
Great Lakes Environmental Law Center, Detroit Michigan
Great Lakes Observing System, Ann Arbor, Michigan
Healing Our Waters – Great Lakes Coalition, Ann Arbor, Michigan
International Plant Nutrition Institute
The Inverhuron Committee, Ontario
Lone Tree Council, Bay City, Michigan
Michigan Agribusiness Association

Michigan League of Conservation Voters, *Lansing, Michigan*
Northeast-Midwest Institute, Washington, DC
Nuclear Information Service of Chicago
Ontario Clean Air Alliance
Ohio Environmental Council, *Columbus, Ohio*
Ohio Farm Bureau (supported by Ohio Cattlemen's Association, Ohio AgriBusiness Association, Ohio Corn & Wheat, Ohio Dairy Producers Association, Ohio Pork Council, Ohio Poultry Association, Ohio Sheep Improvement Association & Ohio Sheep and Wool Program, Ohio Soybean Association, Ohio Soybean Council)
The Ontario Headwaters Institute, *Toronto, Ontario*
Partners for Clean Streams, *Perrysburg, Ohio*
Sarnia Environmental Advisory Committee, *Sarnia, Ontario*
Save Our Shores, *Southampton, Ontario*
Sierra Club Canada, *Toronto, Ontario*
Sierra Club Niagara Group
Sierra Club, Nuclear Free Michigan
St. Clair River BPAC,Port Huron, Michigan
West Michigan Environmental Action Council, *Grand Rapids, Michigan*

Municipalities and other Governments

Bingham Township, *Ubly, Michigan*
Burtchville Township, *Michigan*
City of Brown City, *Michigan*
City of Croswell, *Michigan*
City of Holland, *Michigan*
Clay Township, *St. Clair, Michigan*
Clyde Township, *Michigan*
Columbus Township, *Huron County, Michigan*
Environmental Services, *York Region, Ontario*
Greenwood Township, *Michigan*
Huron County, *Michigan*
Niagara Peninsula Conservation Authority
Paris Township, *Ontario*
Saginaw Chippewa Indian Tribe of Michigan, Mt. Pleasant, Michigan
Sanilac County, *Michigan*
Sherman Township, *Huron County, Michigan*
Village of Kinde, *Huron County, Michigan*
Village of Sebewaing, *Michigan*

Meeting with the Métis Nation of Ontario

March 25, 2017, Intercontinental Hotel, Toronto, Ontario

At the request of the Métis Nation of Ontario, members of the International Joint Commission made a presentation to Nation representatives during the second annual Métis Nation of Ontario meeting with Canada-Ontario Agreement (COA) co-chairs. The presentation was on the Commission's Triennial Assessment of Progress (TAP) under the Great Lakes Water Quality Agreement, and comments on the Parties Report on Progress, the TAP or any other issues of

concern in the Great Lakes were welcomed. The meeting was attended by approximately 18 Métis Nation representatives.

Key Messages

Métis representatives called for better protection of the Great Lakes for future generations, particularly Georgian Bay, noted the need for better IJC engagement with the Métis and better representation of the Métis in the TAP report, and flagged concerns about climate change. All comments received at the meeting will be taken into account.

Gerry Clark, President of Clearwaters' Métis Council: I don't want to beat a dead horse here, but we talked about it this morning. I have to bring it to you: climate change. First of all, all the work you are doing is phenomenal. It is one of the biggest concerns I see right now, and I don't know how you are going to deal with it. You got your partners in the US, but how are you going to deal with the Trump Administration who doesn't seem to care about climate change? As a matter fact, he doesn't seem to think there is such a thing as climate change, and that really bothers me because they are opening up things like coal mines and what not. They do not care. Again, I do not know how it is going to effect your job and everything.

Ernie Gatien, Region 4, Métis Council: On the draft report, page 75, it says engaging the public. Maybe I am missing it someplace; I don't see where it says engaging Métis or First Nations, so I think that is a real shortfall. Also, on the pamphlet that I got, it says Great Lakes connection Sault Ste. Marie region residents and it speaks to the local First Nations. I speak to Sault Ste. Marie, because I am from Sault St. Marie, home of the Powley decision, that's the Supreme Court Powley Decision. They gave us a lot of our rights; they didn't give us our rights, I am sorry, we affirmed our rights under the Constitution. But it talks about the long standing heritage of the First Nations, so I find that a kind of a hit against the Métis. Because that is one of the historical, and we call ourselves, the Historical Sault St. Marie because the historical Métis community is in Sault Ste. Marie. I think that is a little bit of a slight to the Métis when we are not mentioned. And again, it talks about the First Nations Tribes and also it mentions the Sagamok and Massey, and that is part of our area as well. I don't know what the procedure was where you went, but Sault Ste. Marie didn't engage in this and that area goes up right up to Dubreuiville down to Massey and towards Sudbury and that is Sault Ste. Marie territory torterre. Those items do not speak very well towards representing the Métis Nation of Ontario and the Métis. Thank you.

Pauline Richardson, Region 7 Métis Council: Bonjour, thank you for coming here today. My name is Pauline Richardson. I am from Georgian Bay. My ancestors were one of the first settlers of Penetanguishene and we have the Bouchards in our family. I guess my comment is that I see there is a priority placed on Georgian Bay. If we are going to save the quality of Georgian Bay Lakes, I don't want to be meeting for the sake of meeting. *Phragmites* is taking over the shorelines and the industries are killing some of our fish within our land. Having some of the different components cause accumulative effects on our lakes we are seeing the impacts firsthand. We used to be able to get fish like my mother. Her and my uncle use to say that they could drop a stone and pick up the fish. Now we are at the point where our fishing is almost impossible to do and restocking those lakes isn't the solution if there is nowhere for them to grasp onto things. Fish are not the only problem for us either, we have issues with the frogs and the turtles and even some of the plants, what you guys would call weeds. We also have issues

with the levels of the lake, there were some studies done in our region when I was young. Some people were saying that we should actually be protecting our water and controlling the flow of the water. There were a whole bunch of studies where the government paid for this gentleman to do these research and it got shelved. It's collecting dust and people are bringing it back out and saying what were we saying back then. When you look at those kinds of reports, those are very important factors because it's important to look at what we did in the past. They were meeting, and I am sure they were not meeting for the sake of just meeting either, so I think that we need to prioritize and the lakes. The lakes are in trouble right now and that is the comment I want to make. It's not just the climate change, it's also the human changes on behaviour toward the lakes, and we don't have any clue what we actually doing on the lakes., I went to France for the nuclear issue, and I don't drink wine, but I ended up with a bottle of water and it came from Owen Sound. So I went to France and bought very expensive water, mind you, and it's from Owen Sound. These waters is being taken from our land and that really worries me. How are we controlling that water that is not put back in the system if it is over in France. So, those kind of issues are the issues we bring forward as a Metis woman. I want to make sure my grandchildren have the same opportunities and are as crazy as I was when I was a kid, and that opportunity is not there right now. So those are the concerns I am bringing forward right now.

Bruce Timms, St.Catharines, Ontario: NPCA is remapping the Welland River Flood plain because the 1985 mapping is obsolete regarding mapping technology,watershed modeling and the change in precipitation severity and frequency. The change to date and the changes anticipated in precipitation, as presented at the Great Lakes IJC conference of 2016, is confirmation of the NPCA decision to invest in the remapping of the Welland River.

Letters sent by individuals via email or mail as of April 15, 2017

Name: Monica Dietrich	Phyllis Brault	K Liberta
Robert Sholtez	Christine Voorhis	Paula Neville
Kay Johnson	Alfred E Smith	Priscilla Drake
Liz Garratt (FL)	Ruth S Smith	Gordon Mac Martin
Christopher Comparetta	Connie Allison	Patricia Cwick
Jill Nicholas	Cheryl Carnahan	Judy Csonka
Carolyn Tinling	Dennis Abrahamson	Susan Zakos
Virginia Elliott	Mark Mansfield	Pilar Iwankiw
Wendy Willis	Joan Hausladen	Jeffery Young
Beth Carr	Steven Ald	Mary Brickley
Deborah Hoffmann	Michael Prince	Barb McCarthy
Stephen Bellomo	Susan Steepy	Richard Pfeiffer
Jane Murphy	Samantha Bulkilvish	Linda Hartman
Elinor Weiss	Lawrence Green	Michael DiMatteo
Laurie Storm	James Martin	Jonathan Lynch
Tim Groeger	Michon Ball	Tony Alberico
Thomas George	Lani Bauer	John Heyneman

Brenda Frey	William Kuehnling	Robert Trujillo
Joanne Sheldon	William C. Webb	Neil Freson
Jen Scibetta		

Date of Submission: April 4, 2017
Location: New York
Comment:
Require stronger source water protections for New York's Great Lakes. Dear International Joint Commission:
New Yorkers care about clean, safe drinking water. Source water assessment programs in the Great Lakes are not enough to protect these treasures as a source of drinking water for future generations, and actions must be taken now to prevent contamination and degradation of Lakes Erie and Ontario. Source water protection plans must be put in place at the watershed level to protect these invaluable resources of safe, clean water.
I urge you to protect the Great Lakes as a source of safe, fresh, drinking water for present and future generations by mandating source water protection plans. Ensuring public health will help not only the local residents who depend directly on the lakes for drinking water, but will ensure a thriving outdoor recreation industry and help the broader New York State economy.

Name: Matt Ahlschwede
Date of Submission: February 9, 2017
Location: N/A
Comment:
Chemical Pollution in the Great Lakes. Please, clean up the Great Lakes, not for me, but for future generations. They deserve to have a clean environment.

Name: Anonymous
Date of Submission: February 9, 2017
Location: N/A
Comment:
Great Lakes from Kenosha to New Buffalo: I remember well the Outboard Marine, Wisconsin Steel, Unilever, Sherwin Williams, and US Steel crud along Lake Michigan and its tributaries. Don't get me going on the Calumet Rivers watershed. Ugh! The Chicago River would stink in the summer. The many Alewife kills as well. Chemicals do not belong in the Great Lakes. Is there not a treaty between the bordering US states and Canada? Yes, I lived through all that in the 1960s and 1970s, up to the point the EPA was created and improvements started. I'm still not happy about the nuke plants on the shores. It's a body of water under tidal effects. No need for nukes harness the power of water. I digress. I also refuse to visit any US government websites, so hope this rant is useful or impacts others. #Resist

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Name: Bay of Quinte Waterfront Owner
Date of Submission: January 23, 2017
Location: Napanee, Ontario
Comment:
I have made numerous requests for someone to complete a site visit on the Bay of Quinte, as a crop farmer has been releasing toxins into the waterway, several times per year. This is in the area of Staples Lane and Third Concession Road Napanee. A law enforcement officer did come out, but I was unable to

get the results from that visit. When I contacted the ministry, they had no record of this. We are quick to call our private landowners, but large crop farms, go unchecked, even with complaints. How can we call this environmental protection, when no one returns your calls, or can follow up on a law enforcement visit. They are contaminating the waterways, and road allowances with toxic sprays. They are planting in the ditches to the road edge, with all the winter run off going directly into those ditches. I have advised this crop farm of my concerns, and their response was. No one will uphold bylaws, as they are all busy sitting at a desk, so give it up. I found this to be so true. Even as I tried several times to get a response, no one returned my calls. Basically the site inspection by the law enforcement was a waste of time. So when I read these reports, how can I take it seriously when it has been proven that the employees of these agencies don't seem to want to do their jobs, and protect the environment. They just keep passing you off to another agency that won't pick up their calls, nor return their calls. Send out a questionnaire to people who live along these waterways, and you will find that is a lot of concern, but nowhere to direct those concerns. The crop farmer owns several parcels of land on the bay of Quinte, and Lake Ontario waterfronts. This crop farm is Wynn Farms from Bath Ontario. They continue to spray toxins at the road edge, as along with the shorelines. Without any restrictions. It seems very clear that there are other crop farms, like Hay Bay Genetics, that are farming with the same practices, with no vision for water protection.

Name: Paul H. Beach
Date of Submission: April 7, 2017
Location: Merrill, Michigan
Comment:

P.O. Box 207
Merrill, MI 48637
April 7, 2017

Mr. Frank Bevacqua
International Joint Commission
1717 H. Street NW
Eighth Floor
Washington, DC 20440

Re: Farm Field Run-Off
Dear Mr. Bevacqua:
This letter will address the problem of field run-off from Michigan farms. This is a significant source of siltation, nutrients, pesticides, turbidity and suspended solids to the Great Lakes. Michigan has 35,000 miles of drains and many more miles of roadway ditches which function as tributaries, making them a significant land-to-water interface.
Michigan assumes no responsibility for the management of its drains; but has delegated all responsibility to the counties. The Michigan Department of Agriculture provides an individual to preside over meetings of Boards of Determination for intercounty drain projects. That is the extent of the involvement of the M.D.A. It provides no guidance, oversight or even suggestions for maintenance standards. Other states require annual inspections and the prompt execution of maintenance activities. They require the creation of permanent maintenance funds for each drain and determine how the costs are allocated to each land parcel in the drainage district. By way of preventative maintenance, they require permanent filter strips or restrict tillage next to drains. These activities are carried out by the county drain committees under state guidance and oversight.

In Michigan, the standard method of drain management is to construct and ignore and then construct again after decades of continued loss of function. A new drain is a virtual siltation mine for the many years required by nature for a grass sod to establish itself on its sides.
Michigan requires no filter strips on drains right-of-way and allows tillage up to the edge of drains. The pioneer owners of the land now occupied by drains and their rights-of-way transferred this land to the drainage district by sale or gift. The counties make no attempt at preventative maintenance; probably making the Michigan method of drain management the most expensive and least effective method possible.
My assessment of our drains is not a revelation. In 1979 Governor Milliken commissioned a panel to study the ongoing drain problems. The panel made their findings available in the *1980 Task Force Report on Drains*, which described our history of longstanding drain management problems. The report offered some tentative and partial remedies. That report has been ignored ever since.
In contrast, Michigan has a siltation law for construction sites compelling permits, inspections and fines of up to $25,000 per day for non-compliance.
I believe the IJC should encourage the eight member states and Ontario to combine their accumulated knowledge and experience to create a drain code for all lands in the Great Lakes basin. This would not only improve water quality; but would also engender a spirit of cooperation for all agriculture in the Great Lakes basin.
Respectfully,

PAUL H. BEACH
PHB:ccf Enclosures
cc: Sierra Club
Governor Rick Snyder Knight Center for Environmental Journalism

Changes in weather patterns and in farming practices have made filter strips more necessary. Warmer winters have resulted in less snow cover And more winter rain. Larger farm operations require more fall tillage to facilitate the spring planting rush. These results in more bare ground throughout the winter months.

Road ditches carrying their contribution to country drains and the Great Lakes

Typical back road views in Saginaw Bay Watershed

A new ditch – a siltation mine

A typical ditch after several years.

Michigan siltation control law in action.

More scenes of back road views in the Saginaw Bay watershed.

Name: Chrysta Bell
Date of Submission: February 9, 2017
Location: N/A
Comment:
Please keep the Great Lakes Great! And FREE from chemical pollution.
I can't believe I even have to write to ask this...
But it is the world we live in.
Sincerely, Chrysta Bell

Name: Vanessa Carbia
Date of Submission: April 13, 2017
Location: Gainesville, Florida
Comment:
Please oppose Ontario Power Generation's plans to bury radioactive waste on the shores of the Great Lakes. Please protect the Great Lakes – which supply drinking water for 40 million North Americans across eight states and two provinces – against this and many other radioactive risks. Thank you!

Name: Robert J. Carlisle
Date of Submission: February 7, 2017
Location: Grosse Pointe Woods, Michigan
Comment:
My concerns about protecting the Great Lakes
(1) The proposed repository for Canadian nuclear waste should be nowhere near the Great Lakes. There are no fail-safe assurances that the water will not be contaminated, despite the so-called expert opinions.
(2) Laws should be strengthened to prevent diversion of water out of the Great Lakes
(3) Encroachment of Asian carp should be prevented
(4) Efforts should be made to reduce contamination of the waters caused by ocean-going ship ballast waters, combines storm/sewage systems, industrial waste, and other sources

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Name: Marion Cartwright
Date of Submission: February 4, 2017
Location: Lake Forest, Illinois
Comment:
I agree with and endorse the comments submitted by the The Alliance for the Great Lakes on the Progress Report of the Parties. Thank you for providing the public with the Progress Report and the 70+ page assessment of progress made to date. Yes, I read them and yes, the public is paying attention to your work. Thank you again, I am especially concerned about the Trump Administration budget proposal to cut $300 million from the Great Lakes Restoration Initiative. This cut came after all of your reports, but this cut shows just how important the IJC is.

Name: Helena Ciccone
Date of Submission: April 5, 2017
Location: Fort Erie, Ontario
Comment:
Dear Commissioner Morgan,

It was a pleasure to meet you at the IJC Public Meeting in St. Catharines, Ontario last Wednesday. Thank you for listening to my concerns regarding the severe Cladophora overgrowth ruining our community's public beach in Fort Erie. We seem to have the worst amount of beached algae than any other beaches in Fort Erie. We are desperate to know why and hope the IJC can send out experts to help solve the problem.

As we discussed, I'm sending photos of what I BELIEVE is the source of water contamination along with a short explanation based on my personal observations in the area of when, where, how and why. The areas of concern are the open road ditches draining directly from a contaminated holding field located at Washington Ave. and Helena St. I believe toxic chemicals are continuing to leach from the holding field as pictured above. This area was part of an effort by the Ministry of the Environment to help contain a dangerous industrial spill discovered in the summer of 2015.

These photos are all digitally dated to prove contaminated Spring runoff occurs at the source of Washington and Helena St. early in the season before Lake Erie water temperatures are warm enough to sustain Cladophora growth.

The 1st beach photo dated April 15th 2016 shows the path of the spring runoff from the Waverly Culvert and it's pooling area on the beach. Notice the algae is growing on the beach sand while not evidently yet in the lake.




The two close-up photos of the orange coloured sand illustrates a thick waxy substance floating on the surface runoff and later shows how it has congealed into a plastic-like white substance by April 25th. Note: the chemical spill was an industrial strength epoxy and highly toxic.

The view of the wide expanse of Cladophora spreading along our pubic beach and private beach properties for over 300 feet. We're looking from Southwest to the Northeast view of Waverly Beach.

I have a few more photos to email to you. I'm trying to keep the photo file small enough to avoid slowing the download.

Thank you again for your kind consideration of our community's problems with Cladophora overgrowth. Hope the IJC can help.

Sincerely,
Helen Ciccone
735 Celebration Dr. Fort Erie, Ontario
Tel 289-320-8714 or HelenaCiccone@hotmail.com

Source of Beach Contamination

This album has 6 photos and is available on Skydrive until 2017-06-23

Name: Jim Clark
Date of Submission: January 24, 2017
Location: Erie, Pennsylvania
Comment:
The pollution of the Great Lakes and its detrimental effects on the populist are well documented and supported by scientific data. The longer we discuss without corrective action the larger the problem becomes. The actions of a few are affecting the health and well-being of many. Let's start corrective action now. Don't let the noise of a few effects the health of the millions they are contaminating. Inaction is equivalent to poisoning our offspring. Jim Clark, Erie PA

Name: Jessie Collins
Date of Submission: April 13, 2017
Location: Redford, Michigan
Comment:
The Fermi 2 nuclear reactor on the shores of Lake Erie's western basin sucks up millions of gallons of cool Lake Erie water and has NO thermal limits on the water they dump back in the lake. The water temperature there is 19 degrees higher than anywhere else in Lake Erie. The warmer water invites invasive species and jump-starts algae blooms.

Name: Nancy Creighton
Date of Submission: March 31, 2017
Location: N/A
Comment:
USA Elimination of funding to Great Lakes. I am writing to register my grave concerns resulting from announcements and plans to eliminate funding for the health of the Great Lakes region. This directly impacts water quality for 40 million people. We all need to be water protectors. I have lived around the Great Lakes: Toronto, Thunder Bay, Kingston and Windsor. I remember the lake's changes in my lifetime.
Please tally my concerns and place me on your email list. Thank you.
Nancy Creighton

Name: Stephanie Crofts
Date of Submission: February 9, 2017
Location: N/A
Comment:
To whom it may concern,

I am very much in support of any and all efforts to reduce the amount of new pollutants introduced to the Great Lakes, and continued efforts to clean existing pollutants. The Great Lakes are not only a huge, interconnected ecosystem which deserves our protection and respect, but are also an irrefutable source of revenue for coastal communities in both the US and Canada, through both commercial and recreational interests.

I think it is especially important, when trying to raise awareness and rally support for causes such as this, to keep these interests in mind, in addition to the human health benefits already listed on the NOAA posting. One needs only look to the recent debacle with HR621 to see the effectiveness of rallying outdoors men (and women) to the cause of conservation. In addition to the health risks, I would suggest the agency get out the message about how these pollutants will affect recreation on the lakes: how will this affect our beaches, boating, and sports fishing?

Sincerely yours,
Stephanie Crofts, PhD

Name: Mike Cushman
Date of Submission: January 31, 2017
Location: Niagara Falls, Ontario
Comment:
Environmental Pretense

Gathering the opinions of people on the Great Lakes Water Quality, I hope you listen to them, The current laws are MAJOR PART OF THE PROBLEM WHERE PROPER CLEANUP AND BAD SCIENCE FROM PAID OFF CONSULTING AGENCIES ALLOWS BROWNFIELD REDEVELOPMENT OR JUST IGNORING OF CONTAMINATED AREAS. POOR PEOPLE AND RETIRED ARE SLATED TO LIVE ON CONTAMINATED LANDS THROUGH THIS PROCESS.

The Niagara River Toxic Committee spoke of areas of concern. They were all the industries that operated during the industrial revolution that located near streams, lakes, rivers and canals to bury their waste and have them leak into these waters. The problem is these corporations not only dumped waste on their properties, but were allowed to dump their waste in many areas throughout Niagara. Smoke stacks that pumped out god knows what for 100 years in some cases and also contaminated the ground where ever the fall out plumes from the furnaces fell from wind carry. This ground pollution is always over looked.

So there has never been proper clean-up of the properties involved because of their power from profits. They have so much money it surpasses government's ability to force them to do anything. The company's power is displayed through regulations and laws that were forged from industrial powers. There are many love canals that have plagued the Niagara region for decades with disease, premature deaths and genetic problems that have been passed from generation to generation to make it impossible to count how many have been affected.

Brownfield redevelopment is a prime example of how the properties that were listed as problematic were owned by rich corporations that were here at the beginning of the 19th century because of the abundant power source called Niagara Falls. So these corporations have, for the most part, closed down and moved to another country to flagrantly pollute as environmental and safety restrictions tightened from the hidden knowledge of the sick people in the Niagara region. These companies located near water ways so they could use them like toilettes, allowing leachate to constantly drain into the waters.

The buying a golf course or making a golf course on contaminated lands and then transferring it to rural housing is the new thing and again poorly thought out.

So the companies located in areas that caused concern, were located on water ways or near canals and neighborhoods were built around them as time went by. They became eyesores after a while as they

deteriorated and closed down. The companies and governments were never held accountable and pool their money together to clean up the environmental disasters left behind by the constant game of governments imposing environmental laws and the companies blackmailing extensions from the government through the threat of loss of high paying jobs.

So through this problem of the eyesores in the middles of cities and neighborhoods and no jobs left, Brownfield redevelopment was born. The companies never cleaned up their messes the government never negotiated deals to do so. Instead, caving into the pressures, they allowed reuse of contaminated lands geared to low-income housing. Because who cares about the poor and retired and arenas, parks and golf courses? False science funded by big business and consultants have been allowed by governments and the lands never have been cleaned up properly. So from the studies that cause the concerns in 1972, all the way to today, these problems still exist today because no one is held accountable to clean them up properly before re-use. You want to know the truth about what has been done to help stop the pollution of the Great Lakes? Nothing. The laws in Canada are not helping and the only thing being accomplished is reuse of contaminated lands.

Speaking of reuse of contaminated lands, closed landfill sites that old neighborhoods are built upon and other neighborhoods that are in such close proximity to contaminated sites have been plagued with genetic disease, like multiple sclerosis which is the highest in the world. Or ADHD, which is from lead or heavy metal poisoning, in my opinion, and a couple others I have read. The location of landfill sites is wreaking havoc on our environment and hence our health.

Freshwater is the most important commodity in the world to us for survival, not oil. We have allowed fracking in a world that knows better. The abuse of land and water in the process of fracking, not counting the earth quakes associated should be abolished. So I hope I have shed light on what should be done. Governments, big industry and citizens have all played a part in this and we should all pay to fix it, clean it up properly, then reuse the land.

Force companies to clean up before they leave our country. Industries today still have not focused on a proper way to operate. There should be no waste, or minimal waste, left over in any industrial processes by focusing on the other industries needs to use the waste from an industry. Like if they are burning something and the offgasses from a process can be used for other processes for other companies. Other companies can locate right beside this one so they can use the byproduct and so on, till there is zero, or no waste. I am very interested in this and would like to open dialog on what is being done. To date, the hypocrisy of it all is not a solution and proper cleanup must be administered first, then reuse of the land. The waters are still being contaminated by the same sites.

The abolishment of nuclear power should also be addressed as there is still no idea of what to do with the waste. Fukushima has contaminated the whole Pacific Ocean and the west coast of North America. How can we ignore this fact?

THE LONGER IT TAKES FOR US TO CLEAN UP THESE PROPERTIES THE LONGER THE DISEASE WILL HARM OUR CHILDREN AND GRANDCHILDREN PLAGUING OUR FUTURE GENERATIONS WITH THE SAME DISEASES WE WERE PLAGUED WITH. EVEN AFTER THE PLANTS HAVE BEEN SHUT DOWN FOR DECADES,THE CONTAMINATION IS TRAPPED IN THE BEDROCK AND PERMS UP EVERY TIME THERE IS RAIN SATURATION AND THEN GOES BACK DOWN TO THE BEDROCK, IT DOES NOT GO AWAY

There are many things today that have just been ignored and allowed to drain into the water ways every time it rains or from saturation run off. All the places of concern in the 1970s are still the same ones. Without proper clean-up of these properties and improvement on abatement projects and industrial

neighborhoods, we will never achieve anything. All decisions are made for the purpose of financial gains or losses, not for proper environmental cleanups to save us and the planet. Laws and regulations are being made to achieve profits not environmental and health problems caused by these love canals, that are all over Canada and the USA. The only things learned from love canal was the real estate losses, (better keep quite or your real estate is worth nothing).

Thank You,
Mike Cushman

Name: Christy D'Antonio
Date of Submission: February 9, 2017
Location: N/A
Comment:
Great Lakes Free from Pollution. Hello,

"New pollutants, including pharmaceuticals and plastic waste are equally troubling. Chemicals like fire retardants, polybrominated diphenyl ethers (PBDEs) are present in the water, air, sediment, wildlife, and people who live near the Great Lakes.

This is deeply concerning because these chemicals are persistent (never break down), toxic, and bioaccumulative, absorbed by the body. Exposure to PBDEs has been linked to thyroid disorders, birth defects, infertility, cancer, and neurobehavioral disorders." (Anna McCartney)

I want the Great Lakes to be free from chemical pollution.

Name: Kris DaPra
Date of Submission: February 10, 2017
Location: Elk Grove Village, Illinois
Comment:
Thank you for protecting our Great Lakes. I have lived my entire life on or near a Great Lake. As a child near Lake Huron, a student living on Lake Superior, and now as an adult on Lake Michigan. My career as an ecologist has been focused on protecting our environment for not only itself, but for human life. Please do everything in your power to protect our Great Lakes, especially from the Pruitt and Trump administration.

Name: Margo Does
Date of Submission: March 31, 2017
Location: London, Ontario
Comment:
Dear Commission panel,
I am deeply concerned about the health of the Great Lakes and the now new disregard by the US Trump administration which will allow large scale neglect and polluting to endanger the water, and it's inhabitants. Many people rely on water as their source for consumption and use and there are already plenty of concerns with farm run off problems. Please take the concerns of citizens and tax payers seriously and address this all important issue of water quality. Thank you, Margo Does

Name: Sylvia J. Eastman
Date of Submission: April 5, 2017
Location: Baltimore, Maryland
Comment:
Great Lakes threatened. I grew up on the shores of Lake Ontario. The Great lakes are a treasure for both the United States and Canada for so many reasons, including as a water source, transportation source, fishing, tourism, and much more. I do not want to see these waters further threatened by nuclear plants and the inevitable nuclear waste. Please prevent this from happening. The lakes have endured and survived so many insults from human activity. Do not make them suffer more or threaten the safety, health, and economy of the pole on their shores. Thank you. Sylvia J Eastman

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Name: Shannon Elliott
Date of Submission: February 13, 2017
Location: Sarnia, Ontario
Comment:
Hi There, I'm not sure how to go about this, but I came across hundreds of dead fish by the industrial plants while I was out taking photos with my sister. I don't know much about fish, so I can't identify them, but they're all relatively small and silver. It broke my heart to see this. What is going on? What can I do to help? I sent a video, but the camera wasn't able to pick up a whole lot. Thank you for your time.

Name: Roberta Filanda
Date of Submission: April 15, 2017
Location: Port Huron, Michigan
Comment:
The International Joint Commission (IJC):

The Great Lakes contains Tritium, which since it uses the Hydrogen molecule from water, cannot be separated from the liquid. There are radionuclides in our air and soil. These mostly are a result of the many nuclear reactors and continually radioactive waste inundating the entire Great Lakes basin.

I cannot conceive that these are not areas of concern.

Ontario Power Generation continues to seek approval for their "repository" – essentially a bury and forget-it policy to pretend there is not a nuclear waste problem. All the nuclear proliferation and civilian uses (for electricity, medical, etc.) have resulted in huge amounts of the waste. This must be carefully and safely taken care of to make the world safe for all. They made it, they need to maintain the results in a manner which does not harm life.

There is also the threat of liquid waste and other nuclear waste which Canadian companies, such as Unitech, plan to bring to the U.S. for "processing." What for? Only to cause potential accidents and harm to citizens? And possibly having it end up in steel and / or other household products, many of which we may not even be informed about?

Please consider including all nuclear / radiation as subjects to be evaluated and watched for – essentially forever – the length of time nuclear waste is harmful, as some elements last into the millions of years.

Thank you.
Sincerely,
Roberta Filanda, Retired RN, Environmentalist and very concerned citizen.

Name: Beatrice Florescu
Date of Submission: February 9, 2017
Location: N/A
Comment:
Please keep Great Lakes free of pollution. We value our national treasures. If there is one hope for our future, children and society is that science educates us to know, understand, and save our national resources, in hopes of saving the planet.
Thank you.

Name: Joseph P. Gallagher
Date of Submission: April 11, 2017
Location: Sault Sainte Marie, Michigan
Comment:
I would like to share my views on the IJC's draft Triennial Assessment of Progress (TAP) report under the 2012 Great Lakes Water Quality Agreement.

Without great detail, I submit the following concerns and comments:

The IJC work with local infrastructure issues such as water and wastewater treatment plant operation, which caused the trouble in the Eastern upper Peninsula and Canada which caused beach closure's due to health concerns with raw sewage and waste.

Celebrate the success of the Binational Public Advisory Council process in Areas of Concern and continue support of the process. The cleanup of the Tannery site in Sault Sainte Marie, ON and Michigan is a good example where industry took the lead, but did not receive public notice or celebration. The wetland restoration program and public water quality monitoring need to be improved. The contaminated sediments are still an issue needing remediation. This highlights the need to continue funding the public process on the U.S. and Canadian side.

The Lake Superior Watershed planning process is a good example of the regional planning process that takes into concern the whole ecosystem along with land use planning. This joint US and Canadian effort is a strong example of regional planning which looks at the basin ecosystem and not political boundaries. This approach is in opposition to Lake Erie, where increased agricultural runoff is creating algae blooms. The algae is affecting the sport fishing on the lake.

Continue to monitor and improve lake fish stocks for commercial and sport fishing. The Great Lakes Fisheries are in danger from invasive species brought from ballast water and other threats such as the Asian carp advancing into the Great Lakes. We saw a similar problem with the alewives back in the 1960's. Let us learn from the past and prevent Asian carp from invading the lakes!

The Great Lakes Compact failed us and allowed the Waukesha diversion. We cannot allow any more diversions of the lakes. Back in the early 1980's an Arizona Senator said someday that unemployed auto worker will gladly sell the Great lakes, while the arid southwest will be waiting to buy it. The Great Lakes should not be for sale at any price, the environmental and economic impact would be monumental leaving a negative impact for generations.

FLINT

Enough said! But the IJC should continue monitoring the problem and begin looking at other cities that could suffer the same fate, at the same time find funding to prevent future problems. This issue needs to be monitored for generations to come; the social and economic costs cannot even begin to be calculated. This is a policy failure as well as a moral problem.

Prevent groundwater withdrawals to provide bottled water, such as the Nestle situation. This withdrawal, along with the Flint water tragedy, raises the issue of what happens to all the empty water bottles? Why is municipal water so unfit for drinking without filtration?

The communities along the river and lake fronts continue to promote the beauty of life along the water. Again, this a land use issue that impacts the health of the lakes. While waterfront walkways and development are good, there need to be maintenance programs in place to keep the lakes healthy. These developments are by and large a good thing and should be continued with better land use planning. Other public projects such as the Lake Superior State University Fisheries Research lab expansion should be funded, promoted and shared basinwide.

With regards to policy, the number one critical issue is the cuts to the Great Lakes Initiative and shifting to local funding. There are no local funds. Additionally, this is an economic and environmental issue that affects the nation and the whole world. There have been 3,000 success stories in eight states due to this program. This program was fought hard to see the light of day and needs to be funded to past levels, not cut.

All of these issues prove that Global Warming, or Climate Change is real
Joseph P. Gallagher

Name: Susan Gateley
Date of Submission: March 29, 2017
Location: N/A
Comment:
https://vimeo.com/209491328/747cd68986 Lake Ontario is the most stressed Great Lake receiving pollution from Lakes Michigan and Erie as well as from its own watershed. Voluntary efforts to reduce excess nutrient run off from stormwater especially from agriculture is not working in NY. We need to come up with some incentives, legal, financial or whatever. Please watch the first few minutes of this video we made recently (link above) we still have HAB's and we still have botulism outbreaks. It's not getting better. The photo attached is of liquid manure spread on field last November about a half-mile from Port Bay Lake Ontario. We will continue to have problems as documented in the video until this stops.

Name: Helen H. Gentry
Date of Submission: March 21, 2017
Location: Detroit, Michigan
Comment:
300 million dollars for the care and protection of Great Lakes is being reduced in 10 months by the Trump Administration. Raise Hell!

Name: Susan Gesner
Date of Submission: March 30, 2017
Location: Belfountain, Ontario
Comment:
Greetings;
I represent The GAEL Team, a small consulting team that specializes in public and stakeholder engagement related to the environment, but our key area of expertise is facilitation, both traditional and graphic.

I see that the IJC has recently held six public meetings to gather information about the draft Triennial Assessment of Progress (http://www.participateijc.org/public-meetings). The most recent was held in Port Dalhousie / St. Catharine's, Ontario. I am sure that there was a lot of interest and excitement generated at the meeting. But, at the same time, a room full of keen environmentalists often means that a lot is said, and outcomes are not achieved. Frequently, those individuals with environmental interests go off on single topic tangents, because they care so much. When that happens, the focus of the meeting is lost, time management goes out the window, and the much needed results are not reached.

A good facilitator can help to steer those discussions, and ensure the meeting outcomes are reached. A good facilitator can make sure the meeting is not hijacked and ensures that everyone's voice is heard and recognized for its value. The end result is a meeting where participants contribute effectively, and the client walks away knowing that they have achieved what they wanted to achieve.

We have worked with Environment and Climate Change Canada on AOC / BUI workshops in 2016, and the results were very positive. About four years ago, I facilitated a workshop with Essa for the IJC, where we explored health and environmental database integration. We care very deeply about the health of the Great Lakes, particularly now that there may be some significant cuts to the US EPA budgets related to the Great Lakes. My colleague Laura Dunkley and I want to ensure that any upcoming discussions, meetings or activities undertaken by the IJC are facilitated with care and diplomacy and that the outcomes are achieved.

To that end, we would like you to consider us as facilitators for future IJC meetings of any sort. I have included a flyer outlining our expertise, and associated CVs providing you with our experience. Whoever reads this email may not be the right person to communicate with, but I will hope that you will forward it to the decisionmakers who know that a good facilitator will make their efforts much more successful.

Thank you for your time and interest. I do hope you will read this and consider how we can help you, help the Great Lakes.

Susan F. Gesner
GAEL

Name: Beverly Geuting
Date of Submission: February 9, 2017
Location: California
Comment:
Great Lakes free of chemical pollution. Hi,

I am writing today to vigorously state my belief that the Great Lakes MUST remain free of Chemical Pollution.

The Great Lakes are a treasure to both United States and Canada. We have worked hard to keep a good and stable environment on the Great Lakes. The Great Lakes are an intrinsic environment, not just to the states that share a coastline, but to the Mississippi River and Saint Lawrence Expressway.

Citizens, US Government, Canadian Government, and both countries states / provinces have already spent millions (if not billions) on clean-up and keeping the surrounding ecological environments stable.

The citizens of both countries have shown that they want the Great Lakes to be a good ecological environment. Else, we would not have spent so much money on clean-up of Lake Erie.

Please keep the Great Lakes free of chemical pollution
Bev

Name: Pat Gibbons
Date of Submission: March 28, 2017
Location: N/A
Comment:
1) The IJC is morally obliged to take a stand against OPG's scheme to bury nuclear waste on Lake Huron shores; and

2) The IJC must include all radionuclides as chemicals of mutual concern.

Name: Mark M. Giese
Date of Submission: April 6, 2017
Location: Racine, Wisconsin
Comment:
Please undertake a comprehensive, long-term (looking decades ahead), science-based review of the risks of transporting, "temporarily" storing, incinerating (as done with all of Ontario's combustible "low" level radioactive wastes, at Bruce Nuclear Generating Station's Western Waste Management Facility on the Lake Huron shore), and disposing (burying, or abandoning) radioactive wastes of all categories (so-called low, intermediate, and high-level) on the Great Lakes shore, as well as within the entire Great Lakes Basin.

Far away from the shore would be way better.

Thank you.
Mark M Giese

Name: Linda Greene
Date of Submission: April 13, 2017
Location: Unionville, Indiana
Comment:

I urge you to deny Ontario Power Generation's plan to bury radioactive waste on the shores of the Great Lakes. The lakes provide drinking water, as well as fishing, hunting and other protected rights, as recognized by treaties signed by both the U.S. and Canadian federal governments, for a large number of Native American First Nations on both sides of the border. Protect the water for the 40 million North Americans who depend on it!

Name: Dr. Sandy Greer
Date of Submission: November 18, 2016
Location: N/A
Comment:
Dr. Sandy Greer's submission to IJC as per 2017-19 Priorities for Science and Action, dated November 18, 2016

The Imperative Need for Addition of Radionuclides to the List of `Chemicals of Mutual Concern'
by Dr. Sandy Greer, PhD ©

An Introduction
It is imperative for radionuclides to be added within the second round of `chemicals of mutual concern.' Doing so is not only long overdue but, more importantly, essential at this historic moment when a number of upcoming activities have been proposed by various divisions of the nuclear industry that will cause inevitable, and irreversible, harm to the well- being of the Great Lakes Basin.

Even more emphatically, for too long the environmental monitoring conducted by the nuclear industry as well as the Canadian Nuclear Safety Commission (CNSC) - all of whom continue to suggest that low level radioactive materials do not cause harm - has been carried out by totally inadequate scientific tools. Moreover, such assumptions contradict independent research. Most particularly, international research demonstrates the ongoing quest in efforts to improve on the empirical tools of measurement that the more astute scientists recognize are, indeed, sorely inadequate to measure the multi-leveled impacts upon the environment, through the long term, during which radionuclides will continue to demonstrate differing effects that will continue beyond the era when institutions have been regulated to carry out such studies using human- created measurement tools that are fundamentally flawed, as outlined later in this paper.

Background to Reaching out to IJC to be a Binational Environmental Conscience
As an intervenor at two public hearings, respectively in 2013 and 2014, on a deep geologic repository proposed near Lake Huron's shoreline, and studying numerous international studies to improve the science of determining impacts of radionuclides on the environment, it is apparent that the Canadian nuclear players are not fully honest with the wider public in regard to the serious lack of scientific evidence at this time to justify licensing *any* DGR in the foreseeable future. For even the most recent international studies done in radioecology illustrate that the scientific tools still are not sufficient to identify and understand the complexity of the impacts of various types of radionuclides and, more so, in the long term assumptions.

My specific concern is a deep geologic repository (DGR) for low-and-intermediate radioactive waste proposed close to the shoreline of Lake Huron. As well, a second DGR, for high level radioactive waste, is in earlier phases of being promoted in several communities which include three rural municipalities on agricultural land in the same bioregion as the shoreline DGR.

Eventually both DGRs would corrode, releasing contaminants throughout the regional watersheds and, ultimately, add to the cumulative toxins impacting on the Great Lakes. Other nuclear issues which affect the growing cumulative effects of radionuclides on the Great Lakes include, but are not exclusive to, the proposed shipments by truck of high level liquid nuclear waste from Chalk River, Ontario to the

Savannah River Site in South Carolina. Obviously, whatever route is chosen – if it is allowed to happen - will cross through the Great Lakes/ St. Lawrence water system as well as a number of American river systems.

As well, there is the longstanding issue of releases of radioactive substances into air and water through the regular operation of nuclear power plants, releases which has been underestimated, hence ignored, because they are considered too low. Important to note is the full picture of numerous nuclear industry facilities around the Great Lakes Basin, and cumulative effects that continue to be ignored, most particularly as per the now pertinent recognition of climate change. See http://friendsofbruce.ca/dgr/wp-content/uploads/2016/01/NuclearMap_NOinsert 20161.jpg

Rationale for IJC Adding Radionuclides to `Chemicals of Mutual Concern'
Given the statements by the IJC on binational priorities, the addition of radionuclides for the second round of included `chemicals of mutual concern' would be timely and fits all of the criteria. In `Priorities for Science and Action,' under Lakewide Management, is the action to: **"undertake scientific monitoring and research studies on stressors and cumulative effects in priority nearshore areas of the Great Lakes as identified through development of the integrated nearshore framework,"** [my bold] and Lake Huron is designated for study in 2017. This is most timely.

Thankfully, the 2016 IJC Science and Action document, under Lakewide Management, identifies the need to fill gaps for chemicals of mutual concern and "**provide an early warning for chemicals that could become Chemicals of Mutual Concern** [my bold]." Regarding science per se, this document also identifies the need to "identify potential subject areas for science assessments that would contribute to management actions and policy development."

Therefore, I strongly support the IJC's plan to implement an "ecosystem-based management approach," an approach acknowledged in your Great Lakes Nearshore Framework document, in citing a report by the 2013 European Environment Agency which states: "Maps produced with geospatial data can integrate information that has traditionally been analyzed separately, to achieve a more effective ecosystem-based management.

Indeed, I have seen numerous European Union environmental reports, authored by a number of international organizations that focus on radioecology, that indicate the serious pursuit to develop much more accurate measurements of the environment, from studies of single organisms and individual species to environmental media (soil, water, air) and – increasingly recognized as essential – to impacts by radionuclides based on the fuller ecosystem approach.

By the way, these reports have the integrity to identify the multi-layered scientific challenge, namely, to study: (1) various radionuclides; (2) carried out at different environmental levels, from organisms to ecosystems; (3) using a combination of field and laboratory tests with computer modelling, although (4) recognizing that different computer models show different and often contradictory results, depending on the type of model and the scale studied, again, from single organisms and individual species to ecosystems. The ultimate challenge – which will take many years – is to figure out how to harmonize, if possible, measurements that truly tell us what we need to know, before making decisions from which there is no turning back.

Deep geologic repositories, for example, *do* eventually corrode, and *will* release radionuclides. How can anyone with a good conscience bestow that legacy upon the children yet unborn? For that reason alone no DGR anywhere in Canada, let alone the Great Lakes Basin, should be licensed because the actual scientific data to justify a DGR does not yet exist– if such data ever could. If we have the wisdom to do

the essential - thus far missing - diligent research, the facts could confirm that long term nuclear waste storage methods other than DGRs be investigated.

The 2016 IJC reports, therefore, are heartening in outlining priorities for action. If the IJC is genuine in its cited principle in Article 2(4)(j): "**to anticipate and prevent `pollution and other threats'**…which **`places an onus on the Parties to "think ahead" and "act ahead,"** then essential baseline surveys of radionuclides must be carried out, as well as a diversity of other combined field, lab and computer modelling studies prior to any DGR being given a licence to proceed with construction, because the science simply is not yet there. Even the Canadian federal Minister of Environment and Climate Change has stated publicly, the science is not there. Minister Catherine McKenna has temporarily delayed potential DGR licencing, upon requesting the proponent Ontario Power Generation, Inc., to deliver by December 2016 better updated scientific evidence.

Nevertheless, a wiser, longer term, and totally justifiable longer delay strategy - if not termination of the DGR licencing process - by the Canadian government could be powerfully influenced by the principles and priorities of IJC, specifically in both the Great Lakes Nearshore Framework and the Groundwater Science report (Annex 8). Moreover, the groundwater report does include radionuclides (on page 3) in its list of contaminants.

However, I strongly challenge the suggestion within Major Science Need 2, which refers to the **"evaluation of the efficacy of mitigation efforts"** as the ultimate determinate in regard to anyone's assumptions that released radionuclides can, after the fact, somehow be contained. In a recent cross-country `Environmental Assessment Review' in Canada, the current EA process was severely criticized, one reason being its priority on mitigation before "significant adverse effects" could be identified as conclusive in regard to eventual environmental effects.

Please know that within the final Joint Review Panel's acceptance of licencing of the first above-mentioned DGR, its acceptance is based upon close to a hundred mitigation strategies, most if not all which have not been attempted. In other words, they are totally unproven as per their effectiveness. Mitigation will be too little, too late, with the consequence of ever evolving, and totally unknown, multiple environmental impacts, through time, forever. I recommend, therefore, that one of the IJC's selected `nearshore' study areas on Lake Huron be chosen in the bioregion surrounding the location of Bruce Power which includes the designated area for the proposed DGR regarding low and intermediate level radioactive waste. That same bioregion is where a second DGR, for high level radioactive waste, is being promoted in three municipalities on agricultural land (in watersheds that border Lake Huron), and which would eventually contaminate the groundwater and, ultimately, the wider region of interconnected watersheds that dump into Lake Huron.

Based on Major Science Needs 4, 6 and 8, described within the IJC groundwater science report, a diversity of field-based studies must be carried out, ranging from local-scale to ecosystem scale, together with laboratory tests, and avoiding reliance solely upon computer modelling. The limitations of the latter are well documented, one limitation repeatedly identified as an underestimation of contamination by computers in contrast to what is detected in the field. (I have read a number of European Union studies in regard to this conclusion, later citing an excerpt from a 2016 paper, and providing a major insight regarding the limits of computers.)

As a citizen seriously concerned about the arrogance of the nuclear industry, and its reluctance to be transparent, and honest, about what it does *not* yet know, the IJC process gives me hope that both the nuclear industry, and the Canadian Nuclear Safety Commission (as well as the American counterpart of the latter), will be held to a higher standard of accountability. Assertions of safety cannot be made when the science is not there yet.

Better science, in turn, will inspire and make possible better government regulations. Canada's federal government this 2016 autumn has been conducting a nation-wide `Environmental Assessment Review' in order to regain public trust, in its wise recognition that the EA regulations are seriously flawed. (In that regard, I contributed a 10-minute oral presentation at the EA Review held in Toronto on November 9th, and will prepare a written submission for its December 18th deadline.)

Meanwhile, it is reassuring to witness the IJC receptive to the development of an ecosystem- based management approach. Doing so, hopefully, will inspire both Canadian and American governmental agencies to get up to speed with what other, international jurisdictions are pursuing, in the spirit of planetary environmental well-being. All life is interconnected.

A published paper in 2005 titled "Prescription for Great Lakes Ecosystem Protection and Restoration – Avoiding the Tipping Point of Irreversible Changes" cited a `Scientific Consensus Statement for Marine Ecosystem-Based Management' adopted by over 200 scientists. They collectively emphasized the need for "a holistic, ecosystem-based management approach, including the dangers of managing only individual sources of stress or specific species." They recognized the limits of the natural world's resilience from toxic assaults:

*"**Ecosystems can recover from many kinds of disturbance, but are not infinitely resilient*** [bold in original text]**.** *There is often a threshold beyond which an altered ecosystem may not return to its previous state. The tipping point for these irreversible changes can be impossible to predict."*

A further cautionary statement in this insightful paper, which pertains to the need for much more rigorous study of the impacts of radionuclides is: "**The [Great] lakes represent a more closed system than coastal ocean waters, and respond more slowly to contaminant loadings** (with longer hydraulic flushing times than coastal areas) [my bold]."

Highlights of IJC History as per Radionuclides

Meanwhile, why it is taking so long for the IJC to address radionuclides is an open question, most particularly given the IJC's much more active role historically, as I try to fill in the blanks, through more recent research to explain this omission. Thus far, here is what I have discovered, first of all, citing this Canadian Nuclear Safety Commission (CNSC) document:

"In 1973, historical monitoring of radionuclides in the Great Lakes was initiated as a result of the signing of the U.S/Canada Great Lakes Water Quality Agreement (GLWQA) in 1972. Monitoring was discontinued in 1982 due to the measurement of consistently low levels of radionuclides."

This information exposes more about the historical narrative of the nuclear industry than the IJC. The reason is, the CNSC's consistent message focuses on the safety and cleanliness of nuclear energy. The refusal by nuclear players to be more forthcoming in regard to what is *not* known has resulted in the industry's loss of trust among a growing number of citizens. What is essential is research *independent from* the control – and massaging of the message – by the nuclear industry.

Indeed, it was a disappointment to learn about a former IJC Nuclear Task Force being terminated in 1999. Further, in a press release supported by a number of Canadian and American environmental organizations as recently as 2012, its statement to the IJC reads:

"Currently, the IJC receives reporting from the national agencies governing nuclear industries, including the Nuclear Regulatory Commission in the US, and the Canadian Nuclear Safety Commission."

Frankly, for the IJC to rely so heavily upon the aforementioned agencies is not good enough, given my on-the-ground experience in witnessing the testimonies of the OPG and the CNSC at the two DGR public hearings in Ontario. The fact is, such government overseers of the nuclear industry, whose primary role is supposed to be public safety and, therefore, to be arms-length from the industry, clearly is not true. In fact, most recently, the Auditor-General of Canada published a scathing report about the shortcomings of the CNSC's activities. (See later link.) Meanwhile, the International Joint Commission's (former) Nuclear Task Force (NTF) knew some of the challenges in determining radionuclide environmental impacts as far back as 1997:

"…monitoring of radionuclides in the Great Lakes primarily meets the need for compliance by users of radioactive materials with the conditions of the licences for discharge. This results in differences in the radionuclides reported, how radionuclide levels in the environment are reported, the extent of off-site monitoring, and the specific biological compartments included in monitoring by facilities in Canada and the United States. ***Very little of the monitoring activities are designed to address or are capable of considering the movement and cycling of radionuclides through environmental compartments and ecosystems*** [my bold emphasis].*"*

The above 1997 NTF excerpt certainly identifies some of both governments' problems, in the IJC Eighth Biennial Report Under the Great Lakes Water Quality Agreement, dated June 1996:
"The Governments should address the treatment of radioactive materials discharged to the Great Lakes as they have approached other persistent toxic substances. Many radionuclides fit the Agreement's definition of persistent toxic substances because they are persistent and toxic."

In fact, the former IJC Nuclear Task force produced a commendable set of reports, including a radionuclide inventory in December 1997, followed by a two-part ***Report on Bioaccumulation of Elements to Accompany the Inventory of Radionuclides in the Great Lakes Region***.

In the latter reports `Introduction,' the Nuclear Task Force recognized even twenty years ago:

"An important component of the environmental transport and distribution of Elements is their cycling through biological compartments of ecosystems. This is also one of the most difficult processes to study. Even for the most heavily studied elements in biological compartments (i.e. carbon, nitrogen, or phosphorus), the research has been painstaking, taxed the ingenuity of investigators, pushed to the limits the state-of-the-art of instrumental and chemical methods, and raised more research questions than it answered."

What distinguishes the IJC from the nuclear industry is the honesty in communicating publicly the limitations of science throughout the term of the Nuclear Task Force (NTF) research and, also importantly, being honest in stating the limitations of what could be known at that time. As well, the NTF authors stated more than once that they had to resort to European studies because of the insufficient data available in North America.

The same situation exists today, which is why I had to seek out international, mostly European Union, studies about radionuclides and environmental impacts, which are numerous.

Some Highlights in History of Environment Canada with More Recent Concerns

As for Environment Canada (the former name of Canada's federal Department of Environment and Climate Change), a second Priority Substances List (PSL2) of the Canadian Environmental Protection

Act (CEPA) was published in 1995, with subsequent assessments on whether the identified substances were, in fact, toxic.

Following a draft assessment report made available for public comment through two months in 2000, the follow up revised report concluded: "releases of uranium and uranium compounds in effluent from uranium mines and mills are entering the environment in quantities or concentrations that may have a harmful effect on the environment and its biological diversity.

But, a `Synopsis of PSL2 dated September 2006, in reference to the impact of the release of radionuclides from nuclear facilities on non-human biota concluded: **"There is relatively little evidence that exposure to ionizing radiation resulting from current releases of radionuclides from nuclear facilities is causing environmental harm** [my bold]**."** This conclusion qualifies itself by adding: "However, **uncertainties and some conservative assumptions associated with risk estimates for ionizing radiation complicate their interpretation** [my bold]**."**

The above publicly available federal statement indicates the lack of awareness by the Canadian federal government, and obviously not enhanced by other governmental jurisdictions. Lack of evidence about "causing environmental harm" is for the reason that appropriate and thorough studies, to this day, are lacking. Hence, governmental regulations are flawed in Canada, and I only can guess that a similar situation exists in regard to equivalent American authorities.

In fact, a letter dated November 20, 2015, from Citizens for Alternatives to Chemical Contamination (CACC), a grassroots environmental education and advocacy organization, "opposes the potential by the U.S. Nuclear Regulatory Commission to adapt a theory of hormesis with regards to either low or very low levels of ionizing radiation. The CACC letter then includes citations from a list of independent science experts on the known fact that there is "no safe level" of ionizing radiation to human beings. The CACC also raises questions that pertain to environmental effects that accumulate through time not just from radionuclides but, moreover, states: "There are thousands of chemicals today in our environment, most of which have not been studied for synergistic effects with radionuclides."

Indeed, the fact of "multi-stressors" is increasingly recognized in international studies, and at least one North American example that I discovered, conducted by the University of Michigan – which I cited at the 2014 DGR public hearing, pointed out that the ecosystem immediately surrounding the location of Bruce Power – and the proposed DGR for low-and-intermediate level radioactive waste – is a Lake Huron area under cumulative stress. Also important is the fact that the U. of Michigan study, titled Great Lakes Environmental Assessment and Mapping Project (GLEAM) did *not* include radionuclides. (As I write this submission, I looked up that website to give you, but it had disappeared, and no time here to seek out where it now exists.)

By the way, regarding the controversial issue of `hormesis,' CACC was responding to an NRC request for public comments on the NRC's reconsidering of the Linear No Threshold theory of radiation's effects, to replace LNT with a hormesis model. Of possible interest to the IJC, Dr. Ian Fairlie, an independent consultant on radioactivity in the environment – not cited in the CACC document – severely critiques this potential acceptance by the NRC in his submission: http://www.ianfairlie.org/wp-content/uploads/2015/08/US-NRC-Consultation-4-1.pdf

Returning to information still available on the Canadian federal website for what was formerly named Environment Canada (EC), under the section `Assessment Status and Conclusion,' EC states: "Environment Canada has completed the **ecological science assessment** [my bold] of releases of radionuclides from nuclear facilities (impact on non-human biota). Sadly, this statement is a misrepresentation of the fact that "ecological science" – if that were to be interpreted as the same as an

ecosystem model of assessment – in 2006 was still in the early years of what will be an extended, continuing exploration through continually improved, experiential tools, given the published evidence from international organizations in their ongoing pursuit to study radiological findings that integrate, of necessity, field, laboratory and computer model data.

Incredible to me, therefore, are these statements in an online Fact Sheet, as recently as June of this year by the CNSC, which declares that "licensees' environmental protection programs are working" as are all environmental monitoring programs overseen by the CNSC, in regard both to the health and safety of people and also protection of the environment. To find out the specific shortcomings of the CNSC according to Canada's Auditor-General, please go to: http://www.oag.bvg.gc.ca/internet/English/parl_cesd_201610_01_e_41671.html This report is authored by the Canadian Commissioner of the Environment and Sustainable Development.

The Systemic Problems of Computer Modelling

What is fundamentally important to understand, yet which is overlooked systemically in the current emphasis on science and technology globally to dominate human decisions regarding how we assume to manage the environment , is the disconnect between what the human mind can know vis á vis how the natural world of the planetary environment actually functions. More to the point, computer modelling in recent decades has become one of the standard bearers in how assumptions get created in the various fields of environmental studies, as a primary tool of measurement. Despite the best intentions in the continuing international pursuit ever to improve a fundamentally flawed human-created tool, here is an important insight provided by physicist/author Fritjof Capra in his book ***THE WEB OF LIFE, A New Scientific Understanding of Living Systems*** (1996), based on his research on computer science:

"A computer processes information, which means that it manipulates symbols based on certain rules. The symbols are distinct elements fed into the computer from the outside, and during the information processing there is no change in the structure of the machine. The physical structure of the computer is fixed, determined by its design and construction. The nervous system of a living organism works very differently…[as Capra explains at length earlier in this book], *it interacts with its environment by continually modulating its structure, so that at any moment its physical structure changes. The nervous system does not process information from the outside world but, on the contrary, brings forth a world in the process of cognition… Human decisions are never completely rational but are always colored by Emotions, and human thought is always embedded in the bodily sensations and processes that contribute to the full spectrum of congition. As computer scientists Terry Winograd and Fernando Flores point out in their book* ***Understanding Computers and Cognition****, rational thought filters out most of that cognitive spectrum and, in so doing, creates a "blindness of abstraction."…In a computer program, Winograd and Flores explain, various goals and tasks are formulated in terms of a limited collection of objects, properties and operations, a collection that embodies the blindness that comes with the abstractions involved in creating the program"* [Capra, 1996, p. 274-5].

So, there it is, a powerful humbling insight that ought to give us pause. Sadly, the human condition today is the result, in part, of the longstanding split of human consciousness in recent centuries, from which we became disconnected from the worlds of Nature and Spirit, diminishing the development of all of our ways of knowing, and our schooling systems are partly to blame. But, I digress. Nevertheless, in my graduate studies in education, focused on spiritual psychology and transformative learning, I have gained heartfelt insights in regard to what is essential for the restoration of an imperiled planet – a shift in human consciousness, to pursue through life's journey the continuing quest to protect the planet's life support system rather than support industrial forms of development that undermine its support system.

This imperative recognition is related totally to the risks and dangers of radionuclides that cannot yet possibly be measured even close to accurately, given the aforementioned gap between the human intellectual mind's creation of computerized models and the real life continual flux of all living matter whether plant, animal or mineral, and the countless variants in their interactions with what are referred to as `non-biota' and `environmental media' – note how even our language neglects the interrelatedness of all living matter – namely, the air, the water and the sediments.

Summing Up Why Radionuclides Must be Added to `Chemical of Mutual Concern'

The necessary continuing studies of radionuclides in their implementation, therefore, require the combination of field, laboratory and computer modelling, however imperfect will be these interwoven efforts, to address the dangers already imminent and upcoming dangers via potential nuclear waste dumps, aside from upcoming refurbishments and decommissioning of nuclear power plants as well.

The deadline for delivering this paper to IJC – after weeks of non-stop deadlines on related hearings and meetings related to the nuclear waste issue – curtails my more detailed provision of examples of a few of numerous international studies on how to address the huge dilemma of the impact of radionuclides upon the environment, locally and globally.

However, among the various environmental and science journals which include articles in this continuing, complex area of research – in which it is recognized that interdisciplinary fields need to become increasingly engaged, here is a final, quite recent, sobering quote from the ***Journal of Environmental Radioactivity***, within the article titled "Addressing ecological effects of radiation on populations and ecosystems to improve protection of the environment against radiation: Agreed statements from a Consensus Symposium, in its Abstract excerpt :

"The symposium gathered an academically diverse group of 30 scientists to consider the still debated ecological impact of radiation on populations and ecosystems… Scientific research conducted in a variety of laboratory and field settings has improved our knowledge of the effects of ionizing radiation on the environment. However, the results from such studies sometimes appear contradictory and there is disagreement about the implications of risk assessment… ." [Brechignac, F. et al, 2016, p. 22]

See full entry under *F. Brechignac et al/Journal of Environmental Radioactivity 156-159 (2016) 21-29.*

Another important reference is the website of the International Union of Radioecology, and I could mention several other valuable sources. If you would like further references, and/or more specific sources as per the content of this essay, you are welcome to contact me at: info@awakeningtopossibility.ca

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Name: Norda Gromoll
Date of Submission: April 14, 2017
Location: N/A
Comment:
No more nuclear power please. It is too dangerous and economically bad. We do not know what the spent fuel will do to our world and us. Thank you. Norda Gromell

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Name: Patricia Heil
Date of Submission: February 9, 2017
Location: Greenbelt, Maryland
Comment:
I remember when Lake Erie was dead. https://clevelandhistorical.org/items/show/58. Never going back again.
Patricia Heil, Greenbelt, Maryland.

Name: David Hogg
Date of Submission: April 14, 2017
Location: Ajax, Ontario
Comment:
I would like to make two formal comments to add to your review process: 1) As a concerned citizen of a Ajax Ontario (a Lake Ontario shoreline community), I have watched an Environmental Review process occur for the expansion of a local water treatment plant (Duffins Creek Water Pollution Control Plant) with dismay, frustration, and anger. The Environmental assessment process has downplayed the impacts of phosphorous loading of water effluent into Lake Ontario and continues to maintain that the Great Lakes can tolerate additional phosphorous loading in the effluent discharges. The impacts of the additional phosphorous occur on the shoreline beach and coastline as huge mats of algae that wash up on shore – effectively ruining any enjoyment of the waterfront. Your organization needs to help make this stop. Please become involved in the issue. 2) Please continue to do more to promote the recreational usage of the Great Lakes as well as to increase the public access points. These phenomenal bodies of water are tremendously attractive for helping communities enjoy a high quality of life as long as they stay healthy and are not treated as waste basins. More work needs to be done to curtail the stormwater run offs from the City of Toronto Sewer system.

Name: Laura Horowitz
Date of Submission: April 7, 2017
Location: Pittsburgh, Pennsylvania
Comment:
I would like to urge the IJC to undertake a comprehensive, long-term (looking decades ahead), science-based review of the risks of transporting, "temporarily" storing, incinerating (as done with all of Ontario's combustible "low" level radioactive wastes, at Bruce Nuclear Generating Station's Western Waste Management Facility on the Lake Huron shore), and disposing (burying, or abandoning) radioactive wastes of all categories (so-called low, intermediate, and high-level) on the Great Lakes shore, as well as within the Great Lakes Basin. As someone whose state borders a great lake, I am deeply concerned about the overall health of the entire system.

Name: Dr. Latham Hunter
Date of Submission: January 20, 2017
Location: Hamilton, Ontario
Comment:
I'm stunned that public consultation is even being collected here. What kind of input are you waiting for? If governments have any intention of protecting our environment, then strict restrictions on farms must be put in place immediately. It's not only livestock farms. Nitrogen run-off from agricultural farms are also a

severe threat to the health of the Great Lakes. If anyone from the public is ignorant enough to suggest that farms should be given free reign, and to continue in the irresponsible manner in which they've been allowed to engage, then their comments should be ignored completely. It's way past time for governments to take a leadership role in environmental protection, rather than being wagged by its tail. We know from ample evidence that corporations (including farms, especially factory farms) will not carry out "voluntary" means of diminishing their negative impact on the environment. The concept is laughable and completely irresponsible for any government to accept as plausible. As a life-long citizen of Ontario, I am dismayed that so little has been done to protect the Great Lakes and I demand much, much more stringent legislation in this area.
Dr. Latham Hunter

Name: James
Date of Submission: March 27, 2017
Location: Ontonagon, Michigan
Comment:
To all concerned, I am so glad the paper mill in Ontonagon was shut down and demolished, they polluted for more than one-hundred years. The air, water, and fishing have improved greatly in the first few years since. My only other concern is the over harvesting of the fish in Lake Superior by the Charter fisherman and the local anglers. With the lack of DNR law enforcement and the increase of fishing derbies they may be harming the local fishery by over harvesting. Perhaps a coordinated effort between government, state, GLIFWC, and local officials could set limits on fishing derbies?
Sincerely, James

Name: George Jardine
Date of Submission: March 29, 2017
Location: Fort Erie, Ontario
Comment:
International Joint Commission
My name is George Jardine, resident of 3733 Black Creek Road since 1971.
I am retired from General Motors, a former WHMIS teacher; I supported Maurgerite Howe of N.O.T.L., OPERATION CLEAN fighting pollution of the Niagara River back in the 1970s.
In Black Creek, I was chairperson of a group of Niagara Parkway and Douglastown residents who were unhappy with a proposed sewage lagoon which could impact our environment and health.
The group's name was CAUSE (Citizens Against Unsanitary Sewage Effluent). We had standing at the OMB hearings in Niagara Falls, Ontario, Canada. Rulings of the Ontario Municipal Board are binding, according to literature of that Ontario commission. These rulings are routinely ignored by Fort Erie Council; many other residents have made similar complaints regarding the attitude to enforcing OMB decisions.
Our efforts to protect our water source, Black Creek and Niagara River, were negated by our elected officials. A sewage lagoon with a maximum capacity of 2,750 now accepts fecal waste nearing 5000. The lagoon is the same size as it was when it was built back in 1982.
Our lagoon was slated to be decommissioned back in 2002. Since then raw sewage is dumped into Black Creek at two locations every spring causing *E.coli* and, nitrogen rich effluent to contaminate the drinking water source of 88,000residents of the city of Niagara Falls. *E.coli* and nitrogen can cause a host of medical problems including miscarriages, blue babies, stomach aches or death.

This has already happened in Ontario when a First Nations community had to evacuate 3,000 people. Many deaths occurred when the sewage lagoon outfall fed sewage downstream into the water treatment plant. Many will be on medications for life.
The slated closure in 2002 was stopped by two Regional Councilors who have served as Fort Erie mayors since 2005. The very reason the lagoon has been negated by extending illegal sewage lines allowing eight new subdivisions to be built. These illegal extensions are causing huge violations of the "Great Lakes Clean Water Act" also "Ontario Clean Water Act."

The World Health Organization no longer endorses sewage lagoons for third world countries; Ontario has over 20 of them. Last year in South Carolina, flooding caused many lagoons to break open spilling effluent into waterways.
My feeling is that we do not need any more new laws. We need a mechanism to enforce the laws we already have. Create an agency with teeth.
One of the voices expressing concern about polluting the Niagara River was MPP Vince Kerrio Senior who later became the Minister of the Environment Ontario.
Our concerns are about the health and safety of our residents. This issue is no longer a could happen situation, but a will happen situation. A billion dollar tourist destination is at high risk along with 88,000 residents of Niagara Falls. This is an impending crisis situation.
Not too long ago in Germany, 18 people died and thousands became ill from eating vegetables tainted with *E.coli*. We here in Niagara need action, not more studies.

George Jardine
3733 Black Creek Road
Stephensville, ON L0S 1S0

Name: Barry N. Johnson
Date of Submission: March 22, 2017
Location: N/A
Comment:
IJC, I wish you would look at deforestation as a primary cause of groundwater pollution entering the waterways of the Great Lakes. In nature, trees provide a cleansing effect. Every waterway in the Great Lakes watershed has experienced deforestation. The addition of impervious surfaces contributes to surface runoff.
Dendroremediation can reduce polluted waters from entering the waterways.
In 27 years, the Greening of Detroit has planted 88,000 trees in Detroit, Highland Park and Hamtramck.
We have planted Willow and Cottonwood hybrids in pilot dendro-sites to illustrate best practices.
The IJC should include forestation, dendroremediation and phytoremediation in its approach to reducing pollution from groundwater infiltrating the Great Lakes watershed.
Barry

Name: Rebecca Josephine Johnson
Date of Submission: March 29, 2017
Location: Buffalo, New York
Comment:
Hello,
I would like to submit my public comment from yesterday's forum. I have concerns about the economic growth in Great Lakes cities, without a shifting of burden to the business owners and their waste products.

In Buffalo specifically, I have gone to four new restaurants that opened up this year in Buffalo, hoping to support a local business, only to discover they serve food in Styrofoam and use plastic silverware even when you dine in. This is unacceptable to promote economic growth. especially when business owners make a financial decision to serve in Styrofoam IN house, just because it's cheaper than hiring a dishwasher.
We cannot support local businesses just because it's a sign of economic vitality and not consider the consequences of their actions. I would like to see a serious dialogue about these issues, and ideally a Great Lakes wide ban on Styrofoam, and hopefully plastic bags in the future.
Thank you.

Name: Gary Junker
Date of Submission: April 14, 2017
Location: Findlay, Ohio
Comment:
The draft report is formatted for all the Great Lakes and does not provide information on the status of each of the Great Lakes which is needed. Each lake may have areas that are common to all, but most have their own unique problems which must be handled by specific solutions. For example, Lake Erie and it's excess nutrient problem and large animal farms. Please include in the report a report card type format that includes reporting on each of the five Great Lakes. The report should have the same categories and measurements that can be tracked for this and future reports. The same is asked for an overall assessment for all the Great Lakes.

Name: J. Kennedy
Date of Submission: October 4, 2016
Location: Ontario
Comment:
The health of our water is directly related to the health of our soils. For many countries it is estimated that agriculture causes about 70 percent of the water contamination. Because of the high-level of agriculture in the Great Lakes Basin, water contamination due to agriculture practices is probably even higher than 70 percent. Since the mid-1990s the use of glyphosate in the Great Lakes Basin has risen exponentially. Algae blooms have also significantly increased. Phosphorous feeds algae since glyphosate is an organophosphorus compound. Is glyphosate on the list of Chemicals of Mutual Concern and if not, why not?

Name: Theresa Lane
Date of Submission: April 11, 2017
Location: Toledo, Ohio
Comment:
Each of the five Great Lakes has different issues, which need to be handled individually. I'd like the IJC report to provide meaningful information about which lake problems have changed, how much change has occurred, and the reasons for the changes. I'd like to know how much, for example, Lake Erie's western basin has improved regarding phosphorus/dissolved reactive phosphorous; how many square miles of harmful algae blooms were recorded each year as well as their toxicity levels, rainfall during critical months, and water temps. Have there been changes in legislation that had an impact on changes, a major municipal sewer system overhaul, or a system breakdown of some sort? Have more CAFOs moved

into the region? How much local, state and federal money has gone into the Maumee River watershed (and other regions) for research, pilot, edge of field testing, and other projects? Which practices are effective and which are not? Another category to include is whether each state and province are on track to meet the 40 percent reduction by the deadline, and what must still be done to meet the goals. Is it more aggressive work on the part of the state and province's agriculture, environment, or health departments? The elected officials or citizens? I encourage you to be as aggressive as possible. The quality of our water won't improve without real work and sacrifice. NOTE: The University of Maryland has terrific environmental graphics for charts, graphs, and symbols, and are free to use. Thank you. I applaud your efforts.

Name: Kristy Litz
Date of Submission: February 9, 2017
Location: N/A
Comment:
Keeping the Great Lakes clean is a huge priority!

Name: Elaine Magee
Date of Submission: February 24, 2017
Location: N/A
Comment:
Hello, I would like to share a disturbing pollutant that happens every year all across Canada for over 20 years. I attend Fairs across Canada from BC to NS and every Country Fair holds "Demolition Derbys." This event attracts hundreds of people to watch old vehicles that slam into each other, causing gas and oil to steep into the ground and fill the air with black smoke. There is no cleanup after the events and the oils must ultimately soak into the ground polluting the groundwater. Especially around the Great Lakes! If a regular citizen is not allowed to give their vehicle an oil change in their own yard, why are these pollution causing events allowed? I have written twice to Catherine McKenna Minister of Environment about this, but these events still continue to run every year. I realize the Fairs make big bucks in attendance, but what about the future of our water. Please, if there is any way to stop these Demolition derbys by making them illegal please forward my letter to the proper department. Welland Fair, Niagara Fair, Binbrook Fair Wainfleet fair Caledonia Fair andTruro NS just to mention a few.

Name: Vic and Gail Macks
Date of Submission: N/A
Location: St. Claire Shores, Michigan
Comment:
Copy of written submission received at Detroit public meeting

Vic and Gail Macks
20318 Edmunton St.
St. Clair Shores, MI 48080-3748
586-779-1782 vicmacks3@gmail.com

August 11, 2014
SUBJECT: Toxic Plume on Lake Erie made worse by nuclear reactor discharge.
Lana Pollack
Chair, U.S. Section

International Joint Commission
2000 L Street, NW Suite #615
Washington, DC 20440

Dear Chair Pollack:

To be brief, recognizing your long and serious work on behalf of the Great Lakes biosphere, you left out an important component of toxic algae bloom on Lake Erie in your Detroit Free Press article on August 10, 2014. Not unusual, as most people don't read Nuclear Regulatory documents:

The U.S. Nuclear Regulatory Commission (NRC) has stated in Draft NUREG-21 OS, volume 1, October 2011, page 2-228: "Public and occupational health can be compromised by activities at the Fermi site that encourage the growth of disease causing microorganisms (etiological agents). Thermal discharges from Fermi into the circulation water system and Lake Erie have the potential to increase the growth of thermophilic organisms. These microorganisms could give rise to potentially serious human concerns, particularly at high exposure levels."

While this statement references the Fermi site, the Davis Bessie reactor releases the same discharge into Lake Erie near Toledo.

Why would the NRC favor relicense of Fermi 2 and Davis Bessie for another 20 years and favor approval of a license to build a new reactor, Fermi 3 near Monroe, MI? Why would the public be willing to pay for this through possible increased utility rates, loan guarantees, and indemnification for the utility company DTE? Fermi 2, Fermi 3 and Davis Bessie are risks we cannot afford. Any way you spin it, we lose.

Please let me know your response to this.
Thank you,
Vic Macks, Alliance to Halt Fermi 3

Name: Carol McGeehan
Date of Submission: April 13, 2017
Location: Holland, Michigan
Comment:
I ask the International Joint Commission to issue a scientifically based report on High Level Nuclear Waste in the Great Lakes Basin. The IJC needs to include radionuclides and nuclear waste and commerce as Chemicals of Concern in IJC reports. This is crucial for the health of the Great Lakes Basin and its residents. Thank you. Carol McGeehan, Holland, MI USA

Name: Susan Michetti
Date of Submission: April 14, 2017
Location: Mt. Horeb, Wisconsin
Comment:
1 & 2, 10,000 tons of UniTech Import - Export, Michigan radioactive waste landfills taking Military Legacy Waste, Dry Cask Storage at all nuclear reactors within Great Lakes' basin, Improper and underfunded Decommissioning, Liquid HRLM from Chalk River to Savannah River Site, Chalk River In-Situ Dump on Ottawa River (5X DGR volume), and all other nuclear waste concerns occurring within the Great Lakes' basin. The Great Lakes are in nuclear peril, and this is the largest drinking water source

supplying over 40,000,000 people's drinking water and water used for other life matters. 2. I request the IJC to be accurately inclusive in Chemicals of Concern and do not forget to include radionuclides and nuclear waste in all forms and locations as Chemicals of Concern. The Great Lakes are in nuclear peril and we need scientifically based IJC Report and beyond. 3. Please revisit and update the IJC's Inventory Radionuclides Report which was sent to a Task Force in 1997. 4. I am particularly concerned about the radioactive risks to the Great Lakes in general, and Lake Erie in particular, created by the Fermi, Davis-Besse, and Perry nuclear power plants. They are dangerous ongoing age-degraded reactor operations with brittleness. I am also concerned about dangers posed by the current radioactive waste storage, which is non-Hardened On-Site Storage in pools and dry casks. 5. I cannot emphasize strongly enough that radiation technology must be operated within very tight and limited parameters that guarantee its complete containment away from living organisms including plants, trees, wildlife, livestock, and human beings. As we are seeing across many industries in the USA, we see industry disregard for regulations pertaining particularly to safety of humans and the entire environment. Lies inventing pseudoscience that is claimed to be scientific, as speed of convenience and guaranteed profits to stockholders are pushed to extremes irrationally. Medical science has known for at least 70 years or more that any dose of radiation damages the membranes on the cells within living organisms. NO THRESHOLD EXISTS BELOW WHICH RADIOACTIVE RAY EXPOSURE IS SAFE and does not cause these effects. This is for an external exposure source exposing outside of body. A CLEAR LINEAR DOSE-HARM RELATIONSHIP EXISTS WITH RADIOACTIVE RAY EXPOSURE, showing the highest scientific proof of cause and effect harm. This is for external exposure source exposing outside of body. Those who do not appear to be harmed during transient low exposures are believed to fall into the category of healthy and with a tip-top working immune system that is able to make repairs to cellular damage quickly. Future exposures or on-going exposures may overwork that immune system to the point where the immune system is unable to keep up and radiation sickness symptoms set in, cancer of thyroid, leukemia, and other adverse health effects long associated with radiation exposures. There is also up to a 4-generation effect upon reproductive system in terms of birth defects---a major concern that will become irreversible damage to humanity after too many human exposures. Much larger damage to human tissues will occur from ingestion of radioactive substances in food and water where the exposure to organs becomes constant, instead of transient and passing and where the exposure is closer and more intense than from an external source.

However, those providing "expert" information who fail to make the distinction of an external and internal source of radiation when discussing adverse human health effects are inaccurate and unscientific in a way that is unacceptable, despite the trend going there for industry benefit, which is absolutely not the scientific information needed. These adverse health effects and dangerous to humanity do not disappear because USA's political leaders keep raising the permissible levels in food and water, but rather are a warning that the nuclear contamination worldwide is already out-of-control due to industry-wide negligence and human error. As a result we have excessive dangerous and aging nuclear plants in operation around the Great Lakes endangering the Great Lakes basin. I wish to emphasize the fact that no safe technology has been found in 70 years, in which to safely store and permanently contain these dangerous wastes that will continue to be harmful for much longer than civilizations have existed to date on the face of the earth. Hundreds of thousands of years this nuclear waste will continue to be lethal and dangerous to humanity, but the oldest civilizations with writing only began roughly about 3000 BC, with possible other organized people living together depending on controversial interpretations of archeological and other evidence beginning 6000 BC to 9000 BC. I ask that you seek out the best independent experts to compile, analyze, and report thoroughly on the toxic waste threats, including nuclear waste, that is located in the Great Lakes' basin as well as that located outside of it with potential to harm the Great Lakes' basin. I recommend that IJC make the rational recommendation pertaining to on-going nuclear is that the production of new nuclear waste needs to be stopped and discontinued immediately, that all currently operating nuclear plants need to be shut down in order to stop making new nuclear waste. This needs to occur because continuing to make nuclear waste is irrational. Dealing

permanently and safely with nuclear waste has emerged as an unsolvable problem over 70 years of scientific and technological searching for a safe way to store this lethal waste. No safe method has emerged that will protect humanity permanently by being able to contain this most dangerous and lethal substances generated by mankind's recklessness and hopeful wishing without seeking scientific facts first. The promoters of The Atoms for Peace program lied to Americans that our electricity that would be too cheap to meter---a big bold lie to get American people to welcome dangerous war technology being shifted to domestic use after World War II. Instead, nuclear power became the most expensive and most dangerous electricity ever generated on the face of the earth. The industry's promoters continue to lie. We must use scientific facts and measurements upon which to base safety decisions, not wishful fantasies of industry promoters.

Name: Emily Moore
Date of Submission: February 9, 2017
Location: N/A
Comment:
Please do not allow further pollution of the Great Lakes.
To Whom it May Concern,
Please do not permit further pollution of the Great Lakes, and if possible, let us eliminate pollution that is currently present. So that the waters are clean for fish and other wildlife, and it is easier to purify water from the lakes for drinking.

Name: Rhiannon Moore
Date of Submission: March 29, 2017
Location: Goderich, Ontario
Comment:
Hello,

My name is Rhiannon Moore and I would like to comment on the Great Lakes Water Quality Draft Report.

I am a young environmental professional and also a concerned member of the public. I have lived within the Great lakes basin all my life and want to keep the Great Lakes healthy for myself and future generations.

1) Chemicals of Mutual Concern: I would like to see microplastics (microbeads, smaller plastics and synthetic microfibers) listed as a Chemical of Mutual Concern. Identifying them as a concern would encourage greater research on microplastics and how it affects human health, as well as improved waste management strategies.

2) I would also like to see more aggressive action to remove invasive *Phragmites*. Lots of work has been done to understand how *Phragmites* impacts ecosystems, and now is the time to eradicate it. We need to use best management practices and educate contractors and road crews on the plant. We need the appropriate herbicides and cutting tools.

3) Nutrients in Lakes: I believe the real solution is to decrease consumption of animal products (specifically beef and pork) to reduce these nutrient loads and address climate change. However, that is a really tricky topic, and requires personal lifestyle changes.

Since I am in the environmental science field, I understand the importance of strategic planning and coordinated implementation. However, I would really like to see more "on-the-ground" work to improve the quality of the Great Lakes. We need to put more money into restoration projects and environmental protections, and less money into creating more reports and committees.

I have taken part in multiple community workshops, hosted by the IJC as well as our organization. There seems to be a common feeling of "Not In My Back Yard" in terms of energy infrastructure (Nuclear, Wind). Climate Change is a global issue and needs local solutions –car-sharing and public transportation programs, solar farms, and protection of carbon sinks like forests.

I hope some of my comments are helpful. I think the most effective way to engage the public is through events and community workshops where individuals can voice their concerns. I think the IJC does great work and hope the GLWQA continues to improve the health of our lakes.

Sincerely,
Rhiannon Moore
Coastal Outreach Specialist
The Lake Huron Centre for Coastal Conservation
Goderich, Ontario

Name: Susan Morison
Date of Submission: March 21, 2017
Location: Beverly Hills, Michigan
Comment:
I'm very concerned about the cuts President Trump is trying to push through the Congress to limit the US EPA's work. Will this affect the work of the IJC? Thank you.

Name: Esther Colene O'Neil
Date of Submission: April 14, 2017
Location: Syracuse, New York
Comment:

Esther Colene O'Neill
140 Winchell Drive
Syracuse, New York 13209
315- 263- 4451

Lana Pollack, Chair of United States Section,
International Joint Commission
Great Lakes Regional Office
PO Box 32869
Detroit, Michigan 48232

Dear Madam,

The purpose of this letter is to appeal to you to survey, ameliorate, and provide appropriate compensation for the destruction caused by the extremely high water levels of Lake Ontario. This, in great part, is due to

Plan 2014, International Joint Commission related to "managing the water levels and flows" (quote from IJC website).

I am a retired, part-time resident (May thru October), of the Brennan Beach Resort. The greater than *two* foot increase in the water level is not only destroying *the* resort waterfront, it is destroying the area where my camp is located. The barriers that we have constructed to protect the camp are being destroyed. The water level and the resulting waves are eroding the shoreline, sidewalks, and the area directly in front of my camp- putting the camp structure in peril. I have photos if you would wish to review them, but photos do not adequately portray the damage.

I would ask that strong consideration be given to lower the water level, assist the resort with a solution to prevent future damage, and provide appropriate compensation for losses related to the decisions effected by Plan 2014, International Joint Commission.

The purpose of this Plan was to "balance water levels" in the "interest of all users and the ecosystem" (IJC internet website). It was to "manage water *levels"* and "protect against extreme high and low water levels," as stated by you in an article dated 12/23/2016. This does not seem to be working.

I have sent emails to offices that I was able to find addresses for and that would allow sending. This is the follow up letter that I indicated I would send.

I would be happy to assist you with this endeavor. How may I be of assistance to you?

Thank you for your consideration.
Sincerely,
Esther Colene O'Neill, 140 Winchell Drive, Syracuse, New York 1320980 Brennan Beach, site 42, Pulaski, NY 13142 (Summer address) 315-263-4451

Name: Elizabeth Oldfield
Date of Submission: April 12, 2017
Location: Amherst, New York
Comment:
I'm writing as a US citizen and resident of the Buffalo-Niagara Region of the Great Lakes basin, from my perspective/experience volunteering as a water tester, waterways clean-ups, and various citizen science efforts.
Thank you for creating and distributing this document, hosting the public meetings and providing the means for the public to submit comments.
My feedback is as follows: Drinkability should be the highest priority objective and within that objective, the issues of updating and improving water storage, processing and delivery, and overflow (sewage going directly in the water supply). Swimming and fishing for local commerce, public connection to the water and community health/recreation are very important, but they should build on the foundation ensuring healthy, drinkable affordable water to all citizens. In the US, we need to implement very robust green infrastructure initiatives in the more populated areas of the Great Lakes basin, such as mentioned that is being implemented in Canada (Finding 7). The widespread and carefully engineered use of green roofs, walls, and rain garden infrastructures increase the resiliency needed to deal with climate change and reduces the amount of stormwater and contaminants entering the sewer system and waterways. It also improves people's health and connection to the environment, which in turn helps ensure their commitment to community issues such as protecting the Great Lakes. There are so many municipal (such as city or county water authorities) and not-for-profit (such as river/water keeper) organizations on either

side of the border and within many sub-areas of each province and state. Is there any way to allow these organizations to maintain their unique identity but be organized into “binational focus zones” (such as “time zones” but smaller), that have a commonality of the particular geographic region and not country border? The zones could be determined based on water flow or common ecosystems and could share information in regional databases, report findings, make decisions and/or recommendations such as a regional zone? I believe there’s been much progress locally for addressing AOCs. Moving forward, it’s imperative that funding is provided to employ talented and dedicated professionals within the local/regional organizations to continue testing/researching, reporting, sharing data with other organizations, pursuing improvements through legal channels, and engaging and educating the public and citizen scientists/volunteers. Regarding Finding 9, any outreach is competing with the many other things that engage people’s attention. Unless there's an urgent threat to one’s water supply, people often just take it for granted. From the perspective of an engaged citizen, I’d say that there are so many organizations it can get crowded. Any common “branding” you can agree on is very helpful, such as those “drink, swim, fish” buttons or graphics that can be shared among organizations for a more streamlined message. I don’t know the details of how the IJC or other organizations have attempted to engage with non-majority populations, so I couldn’t guess why a higher success rate hasn’t been achieved for engagement. However, I’d offer that a culturally-sensitive approach is high priority when working with populations that have not had an equal voice at the table since the onset of colonial expansion or who are new members of our nations due to immigration. This would mean reaching out to them in the manner that is culturally appropriate to their customs or traditions, respecting their sovereign nations when applicable, and when they are offering advice in smaller or larger forums, being respectful of their manner of communication.
Also, remembering that members of these communities have been ridiculed or ignored so much in the past. It’s taken hundreds of years for the water to get into the poor state it’s in and that many years for the gap between populations to fester, so patience and sincerity over the long-term needs to be exercised by “majority” people at all times. Regarding effort to reduce phosphorus runoff from agricultural sources, especially if the agricultural business is smaller/family-owned, it’s important that they receive any necessary support (financial/educational) during their transition to ensure they aren’t financially ruined in the process.
I would like to add my voice to those recommending that nuclear waste and hydro-fracking both be studied with regard to how they affect/contaminate water sources. Regarding the reporting of indicators, any use of “apps” or incorporating them into such things as weather reports, radio, social media (like the NWS Tweets) are helpful to become more mainstream and understood by the public.

Name: Paula Palmer
Date of Submission: February 9, 2017
Location: Pensacola, Florida
Comment:
To whom it concerns:
I'm not a scientist, just a common sense American citizen who wants a healthy environment to support a healthy citizenry. What shareholders might want should not affect governmental policy as the safety of American citizens is a stand alone issue, and must be protected and preserved. Business can take care of business, let policy take care of us. Please keep the Great Lakes safe and clean. Thank you for your time and attention.
Sincerely,
Paula Palmer

Name: Jadwiga Reffitt
Date of Submission: April 12, 2017
Location: Linden, Michigan
Comment:
I oppose cuts to the bipartisan Great Lakes Restoration Initiative, we demand action to stop Asian carp and we will defend our waters!

Name: Captain Paul Ruzycki
Date of Submission: January 19, 2017
Location: N/A
Comment:
Good day,
Some ideas that may help to clean up the Great Lakes...
With regards to the shipping industry on the Great Lakes: There should be a complete ban on the dumping of all garbage, including the ashes from onboard incinerators. A lot of the garbage does not burn completely and the ashes are dumped overboard (at least it use to be that way).

Once the ships are loaded with coal (for example), the ship sails and all of the coal that was spilt on deck is washed over the side into the water. Not sure of a solution for that, maybe more precise loading methods.

The ships / companies must be held accountable for all waste on board and the removal / off-loading while in port or the locks. It must be recorded in the official garbage record books, which may be compared with official receipts where the garbage was off loaded.

Foreign vessels pose a big risk with their "imported" garbage. That should all be sent ashore and incinerated, under the Agriculture Canada regulations (I believe).

A remedy for the tainted ballast water: In hindsight, we should have used only Canadian & U.S. vessels to sail the Great Lakes. Foreign ships could sail as far as Montreal, then "local" ships (Canadian & U.S.) could move product on the Great Lakes to the lower St. Lawrence. Below an area that has influence on the lake waters. This may have been possible with strict ballast regulations, as are now in force.

As for the current problems of invasive species, I wish I had the answers.
I hope this may help to keep our Lakes a bit cleaner.
Sincerely, Captain-Paul Ruzycki

Name: Sandra Sahguj
Date of Submission: April 13, 2017
Location: Walpole Island, Ontario
Comment:
Boozhoo Mr. Burrows, Ms. Cole-Misch and Mr. Bevacqua,
I attended a meeting in Sarnia, at a public hearing with the International Joint Commission. I am a native from the Walpole Island First Nation. I would like to send this email as an addition to the comment that I made at the hearing. As I recall, the 15th of April was the last day for comment. I also mentioned that I do not agree with nuclear waste being shipped through the Great Lakes, especially St. Clair River.

At the meeting I informed the Commissioners that Dr. Christianne Stephens was working on a bodymapping health study regarding the native indigenous people at Walpole Island, and just to update you, Dr. Stephens said she would be done probably in the summer and not in the spring like I had mentioned.

Thank you for your time.
Sandra Sahguj

Name: Elizabeth Schwartz
Date of Submission: April 5, 2017
Location: N/A
Comment:
Protect the Great Lakes from Radioactive Risks! I urge the IJC to undertake a comprehensive, long-term (looking decades ahead), science-based review of the risks of transporting, "temporarily" storing, incinerating (as done with all of Ontario's combustible "low" level radioactive wastes, at Bruce Nuclear Generating Station's Western Waste Management Facility on the Lake Huron shore), and disposing (burying, or abandoning) radioactive wastes of all categories (so-called low, intermediate, and high-level) on the Great Lakes shore, as well as within the Great Lakes Basin.

Sincerely,
Elizabeth Schwartz

Name: Lora Schwartzberg
Date of Submission: April 14, 2017
Location: N/A
Comment:
I am urging you to protect the Great Lakes (drinking water supply, and so much more, for 40 million North Americans across eight states and two provinces) against radioactive risks.
Thanks for your consideration,
Lora Schwartzberg

Name: David W. Shortt
Date of Submission: March 27, 2017
Location: Sarnia, Ontario
Comment:
International Joint Commission:
I attended the public meeting in Sarnia on March 22, 2017 and have reviewed the draft report provided to participants and wanted to share the following.

The three biggest threats to the Great Lakes are:
1) Invasive species - Asian carp
2) Invasive species - *Phragmites*
3) Algae blooms caused by phosphorus

Our governments must take action to prevent or remedy the harmful actions from these threats. All of the threats have immediate implications and if not addressed and will cause irreparable harm to the lakes.

As I read through the report I have made the following observations:

- On Page 9 in the Executive Summary, the different organizations are identified that can benefit from the final report. Nonprofit environmental organizations were referenced, but other stakeholders such as industry were omitted. Was this a deliberate oversight or are there not others who should be recognized as benefiting from the report?

- On Page 11 in the Executive summary, with regards to item 4. I strongly disagree that little progress had been made on identifying Chemicals of Mutual Concern. In the Sarnia presentation, a notable number substances or groups of substances were presented as having been identified. In a complex situation this would appear to be quite a responsive effort.

- On Page 11 in the Executive summary, with regards to item 9. I do not agree that "significant" progress on invasive species has been made. Yes, efforts are going forward, but results are needed. We must get out in the field and deliver. I do agree enhanced funding is needed.

- On page 11 of the Executive Summary, with regards to item 5. I agree progress has been made on AOCs, but this progress must go beyond just water quality to all impairments.

- On page 25, the point was raised that enhanced public engagement is needed. While I agree public outreach is important, governments must be cautious. Involving outside organizations can derail progress because of alternative agendas. Any organization must have the expertise to be involved and set aside their agenda to contribute to the greater good. All actions must recognize what is technically possible, what is economically attainable and socially acceptable.

- On page 33, under Swimming and Recreational Use, the point is made the beaches in the US are open and safe 96 percent of the time and this is characterized as "good." I disagree – this is excellent. In school a 96 percent would be an exceptional grade. I think the report is misleading the performance. Similarly, in Canada with a 76 percent, this is characterized as fair. Although I may agree, I think of 76 percent as good. It is suggested the characterization of this measure be changed.

- On page 41, in the conclusions to the pollutants discussion, it states: this is where "the most important improvements needed." I strongly disagree – the most important improvement are the three threats I shared above. We should not divert resources to anything else, including chemicals, away from the serious and immediate threats identified above. We must address invasive species and phosphorus. At least chemicals have made progress and continue to make progress.

- Also in the pollutants discussion, the need for public engagement is suggested. We should be very cautious of stakeholders unless they have the ability to constructively participate, otherwise further delays may result OR inappropriate (agenda driven) non-scientific decisions could result.

- On page 40, the graphs at the top of the page show fabulous improvements – why are we not highlighting the positives? Is the report being written only to criticize or promote a given (IJC or IJC staff) position? Be more complimentary.

- The issues covered by Section 6 (Nutrients) are critical. I learned we have an imbalance. Does this mean we have over reacted by banning (reducing) phosphorus at some locations? Algae blooms are critical and

must be acted upon, but do we really understand all the ramifications of our action in a holistic sense? The conclusion must reflect an action to remedy both sides of the imbalance.

- On page 46, in Section 6 (Nutrients) the text states only 5 percent of wetlands remain on Ohio's northeastern Lake Erie shore. Wow! With the ecological value of wetlands, this is a shame and increasing the wetlands should be encouraged. Furthermore, why is this not mentioned in section 5 (Wetlands and Other Habitat)?

- In Section 7 (Invasive Species), the overview notes progress in a number of areas, but they are all administrative - planning and preparation - there needs to be action in the field to deliver results as these are the most important or CRITICAL issues facing the lakes. The IJC must continue to cajole, promote, encourage or whatever to get the governments to actually act on these concerns. We must continue funding of the Asian carp work in the Chicago area.

- On page 58 is a discussion on climate change, it is recognized that climate change is a popular topic. But, what can the Great Lakes and IJC folks actually do? Is this is a national or international issue? I would hope the report would recognize this and discuss impacts and support the work of others and not be diverted away from critical local issues.

In the Part Key Findings and Questions for Consultations:
- In the finding under Establishing Processes and Meeting Deadlines, the third question asks about new deadlines. I would be cautious about setting (new) arbitrary deadlines. Do not rush good work, it is important that quality work be undertaken as opposed to quantity. We must eradicate invasive species as soon as possible, or for chemicals, we must be scientific and not agenda-based. Although deadlines do have a place as a management tool, I'm not sure deadlines are always good.

- In the finding under Protecting Human Health, first question, I do not agree with the finding – the Parties have made notable progress. An organization like the IJC can always say it is not enough or more needs to be done. In this situation, we should recognize the positive and encourage more. Please do not be negative. As for the second question under this finding, how to increase the focus on human health – more spending is required to support goals. Examples would include fewer beach closures and getting rid of invasive species! This is the answer to the third question.

- In the finding on Moving from Process to Progress on Pollutants, I strongly disagree there has been progress on identification. I do agree there needs to be a development of strategies. Additional resources would be welcome, this includes money, but also people. The people must be qualified and not arbitrarily added due to an agenda or public engagement. This finding may divert resources from other critical actions and I would discourage the IJC from pushing the governments to shift limited resources.

- In the finding for Moving from Process to Progress on Nutrients, "mandatory" protections are suggested. I agree that actions are needed (especially in Lake Erie). But, given nutrients are in an imbalance situation we must understand the full ramifications of our actions. As an individual, I am not qualified or knowledgeable to answer questions two and three, but would look toward scientists to inform the decision. Policy makers should approach with caution, as with an imbalance, one action may make the balance worse.

- In 6, Halting Aquatic Invasive Species, the finding says significant progress has been made but then says there is still an issue – this is a contradiction. Regardless, I disagree – only "some" progress has been made. We are still at "significant" risk from invasive species. I do agree with the finding that further progress can be made, although the specific items listed "to do" don't go far enough. The recommendations should put forth field actions that will reduce the presence of invasive species (aquatic

and land-based *Phragmites*). The second questions asks about improvement on administrative issues – can an amendment to the treaty be negotiated to recognize each other's processes or streamline them or even mutual acceptance?

- Yes, I agree with the finding on the progress for AOCs. I would be somewhat hesitant to limit the finding to "addressing water quality." I would review all impairments and create a positive finding to broadly recognize AOC actions. The second question asks what can be learned, we learned when properly supported by government with adequate resources, a dedicated group of volunteers can make a difference. I would suggest a symposium on AOCs be held and the volunteer AOC groups get together to talk and learn from each other. As they share learnings (action for Question 2) progress can continue (Question 3). As for question 3, progress needs to be supported with funding.

- In the finding for climate change, I believe climate change does impact the Great Lakes. However, I do not see any data or information provided to illustrate it is true or provide a direction for action. Climate change is popular, but we must have a data driven process. The IJC should suggest to the governments they study how climate change impacts the Great Lakes– so informed decisions can be made. Without data there will be no credibility and subsequent action.

- In the finding on public engagement (page 76), the IJC says more is better – this is always true. More people who are engaged, more pressure on politicians, more funding and hopefully more results. But to deliver results, per question 1, engagement should be through the AOC implementation. Then allow the AOCs to communicate to the public (peer to peer is most effective due to credibility). Beyond that, the governments can publish information in media and scientific journals. Do outreach and send newsletters, more general communications.

- In 10, Improving Great Lakes Reporting – I like the additional reporting of *E.coli*. Given the history of *E.coli*, I can understand and relate to this measure.

Overall Comments/Summary:

In closing, I would repeat the three critical issues facing the Great Lakes are: Asian carp, *Phragmites*, and Algae Blooms (including those from phosphorus). These are critical issues where urgent action is required.

Beyond these priorities, we must also recognize resources (funding and people) are not unlimited. There is only so much money and knowledgeable/qualified people. We must prioritize and deliver. We can talk and write reports forever; consult; congratulate ourselves; but never make an improvement. The agreement cannot be everything to everyone. I would suggest tackling the most urgent and fixing/controlling that activity, then move to the next. The organizations whose issues are not priorities will not be happy, but the lakes are improving. We need a focus and to set priorities, the IJC should define criteria and or create a finding to include suggesting criteria. There needs to be a whole section in the report on setting priorities. Tough choices may have to be made but we need to focus.

Also missing from the report was a recognition or celebration of success. Reports tend to be critical and make the case for where actions are needed or failures occurred. Ok, I can accept that as a method to push improvements. But, we must recognize success, we must build upon actions that have delivered. We must say thank you to the people and groups who have volunteered. Please acknowledge the positives. I would suggest the IJC try and find 2 or 3 positives in every section and call them out as such, give them some profile. Success breeds success, and can assist in prioritization, but as importantly it can deliver results.

As I read the consultation document, I am pleased to know the IJC is analyzing the actions of the governments and "working with them" to improve the Great Lakes. I hope my comments and observations are helpful. Thank You.

David W. Shortt
Sarnia, Ontario

Name: Karin Sletten-Farjo
Date of Submission: February 9, 2017
Location: N/A
Comment:
Keep the Great Lakes Clean! Please do everything you can to keep the Great Lakes clean and free of chemicals. People from many states and two countries rely on freshwater from the Great Lakes for sustenance.

Name: Karen Slote
Date of Submission: April 15, 2017
Location: North Tonawanda, New York
Comment:

Dear International Joint Commission:

New Yorkers care about clean, safe drinking water. Source water assessment programs in the Great Lakes are not enough to protect these treasures as a source of drinking water for future generations, and actions must be taken now to prevent contamination and degradation of Lakes Erie and Ontario. Source water protection plans must be put in place at the watershed-level to protect these invaluable resources of safe, clean water.

I urge you to protect the Great Lakes as a source of safe, fresh, drinking water for present and future generations by mandating source water protection plans. Ensuring public health will help not only the local residents who depend directly on the lakes for drinking water, but will ensure a thriving outdoor recreation industry and help the broader New York State economy.

Sincerely,
Karen Slote
4310 Beach Ridge Rd
North Tonawanda, NY 14120-9576

Name: Jim Soltesz
Date of Submission: January 30 2017
Location: Grosse Pointe, Michigan
Comment:
After reviewing the report, there are three areas of concern that need to be considered: 1) Harmful algae Blooms (HABs): these obviously need to be inhibited by regulation, voluntary requests have not been significantly successful, as shown in the report. 2) Aquatic Invasive Species (AIS): the current major risk

is Asian carp. This is not a funding issue as suggested in the report, but is an issue for the Chicago River Highway, these fish need to be stopped. It should be specifically stated in the report. I know it is a US problem, but it will affect the entire basin. 3) Nuclear Waste needs to be addressed specifically. I could not find it in the report. I know this is a Canadian issue, but it will affect the whole basin. Once again, this is not a funding issue. Additionally, I think that Nestle should not be allowed to divert all that water, it will eventually affect Great Lakes waters.

Name: Jeffrey Steenberg
Date of Submission: February 9, 2017
Location: N/A
Comment:
Hello, I would like to share a disturbing pollutant that happens every year all across Canada for over twenty years. I attend Fairs across Canada from BC to NS and every Country Fair holds "Demolition Derbys." This event attracts hundreds of people to watch old vehicles that slam into each other, causing gas and oil to steep into the ground and fill the air with black smoke. There is no cleanup after the events and the oils must ultimately soak into the ground polluting the groundwater. Especially around the Great Lakes! If a regular citizen is not allowed to give their vehicle an oil change in their own yard, why are these pollution causing events allowed? I have written twice to Catherine McKenna Minister of Environment about this, but these events still continue to run every year. I realize the Fairs make big bucks in attendance, but what about the future of our water. Please, if there is any way to stop these Demolition derbys by making them illegal please forward my letter to the proper department.

Name: Lisa E. Stone
Date of Submission: April 13, 2017
Location: N/A
Comment:
Oppose Ontario Power Generation's (OPG) plans. I join all those who urge protection of the Great Lakes, which provides drinking water supplies, and so much more, for 40 million North Americans across eight states and two provinces. I oppose Ontario Power Generation's (OPG) plans to bury radioactive waste on the shore of the Great Lakes because of the plan's serious radioactive risks.
Please weigh the dangers and take the smart, responsible path. Don't allow radioactive waste near the Great Lakes.

Sincerely,
Lisa E. Stone

Name: Jean Kaplan Teichroew
Date of Submission: February 9, 2017
Location: N/A
Comment:
The Great Lakes must be free of chemical pollution.

Name: Lisa Thibault
Date of Submission: March 28, 2017
Location: Buffalo, New York
Comment:
I think it would be very helpful to break this report down to an easy to read/understand short document or video series in order to get the word out. Not many people have the time to sit down and read a 100 page report. Thank you for holding a public meeting in Buffalo today!

Name: Mary Tibollo
Date of Submission: January 19, 2017
Location: Fort Erie, Ontario
Comment:
My concern about water quality is that the IJC is not doing enough to stop Ontario Power Generation from their plan to bury nuclear waste within 1 mile of Lake Huron! This is our ONLY and LARGEST source of freshwater and we desperately need it protected from any source of contamination. There is no guarantee that this nuclear waste won't leak, so why are we not taking a stand to stop this potential disaster from poisoning our water?

Name: Suzanne V. Tilley
Date of Submission: March 31, 2017
Location: N/A
Comment:
I was born in raised in Ontario and spent all of my childhood summer weekends and vacations on Georgian Bay.
I recently moved to the St Catharines area and was pleasantly surprised that the Lake Ontario water at the Port Dalhousie Beach was clear. I chose to swim in it last summer. I also swam at Crystal Beach in Lake Erie.
Ten, fifteen or twenty years ago I wouldn't have dreamed of swimming in either of these two lakes. But, because of the monitoring and cleaning up of the Great Lakes, I felt comfortable enough to submerge myself in these waters.
It is VITAL to all of us to have access to clean water not only for bathing, swimming and water sports, but for our own consumption through other underground resources feeding from/near the Great Lakes. The younger generations and those to come need the lakes to be maintained at least at the level they are at now.
These are my comments and input on the future of the Great Lakes.

Sincerely,
Suzanne V Tilley

Name: Raymond C. Vaughan Ph.D.
Date of Submission: April 15, 2017
Location: Buffalo, New York
Comment:

Please see attached comment letter on the draft IJC report, First Triennial Assessment of Progress on Great Lakes Water Quality.

534 Delaware Ave, Suite 302
Buffalo, NY 14202
April 15, 2017

International Joint Commission
Washington, DC/Ottawa, ON/Windsor, ON
By email: ParticipateIJC@ottawa.ijc.org

Re: Draft Report: First Triennial Assessment of Progress on Great Lakes Water Quality

Dear Commissioners and staff of the IJC:
Thank you for this opportunity to comment on the draft report, First Triennial Assessment of Progress on Great Lakes Water Quality. In my comments below I offer several comments on the draft report and also recommend that the International Joint Commission (IJC) look ahead toward foreseeable risks to the Great Lakes.

Comments on the draft report
I am generally familiar with the IJC's work, having worked on many Great Lakes issues when I worked as an Environmental Scientist for the New York State Attorney General's Office between 2000 and 2012.

Wetlands: I agree that the waters of the Great Lakes should support healthy and productive wetlands and other habitats needed to sustain resilient populations of native species. Wetlands serve other important functions as well.

Groundwater: I agree that the waters of the Great Lakes basin should be free of harmful impacts of contaminated groundwater, and that contamination and depletion of groundwater in the basin should be prevented.

Green infrastructure: I agree that development and implementation of green infrastructure is a priority – with the caveat that paved surfaces to which deicing salt is applied should not drain to local soils, lest those soils become irreversibly contaminated with salt. In particular, permeable paving surfaces should not be installed without *enforceable* prohibitions or restrictions on the application of salt to such surfaces. Salt from paving surfaces that drain to the surface waters of the Great Lakes basin are a concern as well (see next comment), but the gradual flushing of the surface waters of the Great Lakes basin provides at least some relief, albeit often insufficient, to the minimize the problem of salt accumulation in surface waters.

Road salt: The unregulated and unmonitored use of deicing salt and its derivatives is unsustainable and should therefore be gradually curtailed to minimize and eventually eliminate two impacts on the basin's waterways. This issue involves roads, sidewalks, and parking lots. Sand (or other grit) and plowing are alternatives that can at least partly replace the use of salt.

IJC's key findings 2 and 3: I agree that the Parties (i.e., the U.S. and Canada) have made considerable progress in implementing the Great Lakes Water Quality Agreement (GLWQA) but have not made sufficient progress toward achieving human health objectives, including drinkability, swimmability, and fishability.

IJC's key finding 4: It is not clear to me whether there has been "little progress" in the identification of chemicals of concern and "no publicly available progress" in the development and implementation of binational strategies to address them. During the time that I worked as an Environmental Scientist for the

New York State Attorney General's Office, I attended many of the quarterly meetings of the Great Lakes Binational Toxics Strategy and heard presentations on the work being done by U.S. EPA, Environment Canada, and the European Union to identify, assess, and address chemicals of emerging concern. It would be helpful for the First Triennial Assessment of Progress on Great Lakes Water Quality to provide a clearer description of the status of this work. For other chemicals of concern that have been known for a decade or more, such as Dechlorane Plus and other fire retardants, I agree that greater progress is needed in the development and implementation of binational strategies for addressing these chemicals.

Renewal/revival of Great Lakes Binational Toxics Strategy? The Great Lakes Binational Toxics Strategy, convened by U.S. EPA and Environment Canada under the prior GLWQA, disappeared and to the best of my knowledge has not been reinstituted under the current GLWQA. In my opinion the Binational Toxics Strategy was very useful both as a vehicle for seeking voluntary toxics reductions and as a quarterly forum for exchanging up-to-date information on many different aspects of toxics policy, measurement, modeling, reduction, etc. I strongly recommend that some form of the Binational Toxics Strategy be reinstituted by U.S. EPA and Environment Canada under the 2012 GLWQA, both for the transparency it can provide on toxics policy, measurement, modeling, reduction, etc., and for the opportunities it may offer for voluntary toxics reductions.

IJC's key finding 5: I agree that the Parties have shown significant progress in addressing water quality contamination at Areas of Concern. As noted above, more remains to be done toward the achievement of human health objectives, including drinkability, swimmability, and fishability.

IJC's key finding 6: I strongly agree that the water quality of western and central Lake Erie is unsatisfactory and unacceptable. New mandatory protections should supplement voluntary initiatives to reduce nutrient loadings from the Maumee River basin and elsewhere.

IJC's key finding 7: I agree that the Parties have not sufficiently engaged with the public in implementing the GLWQA. Reinstituting the Great Lakes Binational Toxics Strategy would help, as noted above – but there's a much broader need for effective engagement of nongovernment organizations (NGOs), indigenous peoples, minorities, recreational and subsistence anglers, and other constituencies.

IJC's key finding 8: I agree that climate change has been altering Great Lakes water quality and levels, and that its effects need greater attention, including better quantification of likely effects, including rainfall frequency-intensity distributions; ways to assess and address detrimental impacts from foreseeable changes in climate; and ways to reduce the carbon footprint of various activities in the Great Lakes basin.

IJC's key finding 9: I agree that there has been significant progress in preventing the introduction of aquatic invasive species (AIS) to the Great Lakes, that more work is needed, and that *ballast water exchange and flushing are needed in addition to discharge treatment*. I am very familiar with AIS issues, having worked closely on these issues with the New York State Department of Environmental Conservation and other government agencies and NGOs during the time I worked as an Environmental Scientist for the New York State Attorney General's Office. I am very familiar with the binational inspection program conducted in Montreal to ensure that ballast water exchange and flushing have been conducted before vessels enter the Great Lakes. The exchange and flushing requirements and associated inspection program are key parts of the significant progress in preventing the introduction of AIS. Continuation of the exchange and flushing requirements and associated inspection are especially critical in view of the ongoing uncertainty about the protectiveness of various proposed standards for the discharge of treated ballast water. I also agree that environmental DNA (e-DNA) methods are promising for early detection of AIS and should continue to be developed. Where possible, integrated binational programs should be pursued for rapid-response chemical control of AIS detected in early stages of

invasion, but development of integrated programs should not override either Party's unresolved concerns about toxicity of a given chemical control agent.

IJC's key finding 10: I agree that the Parties have significantly improved the selection of indicators to support the assessment of progress toward the achievement of GLWQA objectives, and that reporting could be further enhanced with improved binational coordination and focus on key vital signs. However, despite my agreement on these points, I think that the IJC's ability to protect the Great Lakes would be improved by assessing/addressing foreseeable future risks to the Great Lakes, in addition to the emphasis on current indicators and vital signs. My remaining comments describe two areas in which foreseeable risks need attention.

Foreseeable Future risks: Radionuclides

IJC has rarely looked at radionuclides in the Great Lakes. I believe Dr. Rosalie Bertell coauthored an IJC report on radionuclides in the Great Lakes two or three decades ago; however, that report was a survey of then-current radionuclide levels in the Great Lakes rather than a forward-looking assessment of the risks of radioactive contamination from nuclear sites and facilities within the basin.

In these comments I will use the nuclear waste site near West Valley, NY, as an example of a site that poses a future risk of radiological contamination to its immediate watershed (Cattaraugus Creek) and the downstream binational waters of Lake Erie, the Niagara River, Lake Ontario, etc. As noted, this is an example; similar attention is warranted for other nuclear sites and facilities in the Great Lakes basin. The West Valley site includes a nuclear fuel reprocessing plant that operated from 1966 to 1972, two radioactive waste burial grounds that operated from 1963 to 1975, and various ancillary facilities. Current clean-up efforts are being conducted jointly by the U.S. Department of Energy (DOE) and the New York State Energy Research and Development Authority (NYSERDA). Many other agencies also have a role in the work being done at the site. Decisions have not yet been made on whether buried radioactive wastes at the site will be exhumed and removed. A major factor driving the possible exhumation and removal of these buried wastes is the site's susceptibility to erosion. The buried wastes are located near relatively steep slopes adjacent to actively downcutting streams that flow into Cattaraugus Creek, thence into Lake Erie, etc. Two different official efforts[1] to characterize/quantify the rate of geomorphological evolution, and its likelihood of exposing and releasing substantial portions of the buried radioactive wastes into the steep-gradient tributaries that flow into Cattaraugus Creek, have led to very different and very controversial results. A third effort to characterize/quantify the rate of geomorphological downcutting and its likelihood of exposing and releasing buried wastes is now underway, and a decision on whether the buried radioactive wastes will be exhumed and removed is expected to be made in 2020.[2]

Given the modeling uncertainties, including ongoing questions about climate-change-induced extreme rainfall events (which are a major driver for the rate of future geomorphologic downcutting), etc., this is a very complex issue – perhaps beyond the IJC's ability to assess in detail, especially in view of IJC's other priorities. Nevertheless, this type of foreseeable impact should be of concern to anyone interested in Great Lakes protection. The possibility of downstream impacts is illustrated by the satellite photo(s) in Figs. 1 and 2, showing the sediment plume from Cattaraugus Creek reaching Lake Ontario following a localized August 2009 storm.[3] The storm did not release/entrain radioactive waste, so the sediment plume serves merely as a surrogate or tracer that shows the typical flow pathway from the West Valley site into Lake Ontario. Additional evidence for this pathway is the finding that trace quantities of radionuclides from the West Valley site have been found in Lake Ontario.[4]

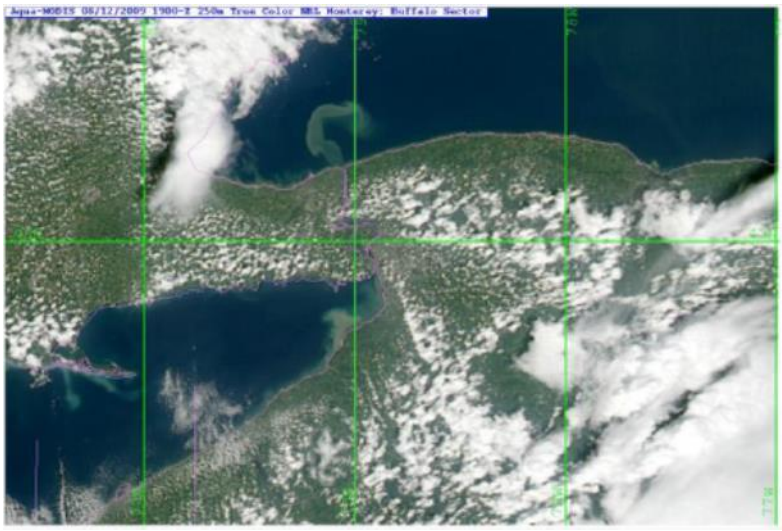


Fig. 1: Sediment plume from the August 2009 storm that delivered 5+ inches of rainfall to the Cattaraugus Creek basin. As noted above, the storm did not release/entrain radioactive waste, so the sediment plume serves merely as a surrogate or tracer that shows the typical flow pathway from the West Valley site into Lake Ontario. This pathway is relevant to the question of whether future rainfall events would release unexhumed radioactive waste from the site and carry radionuclides along this pathway. See also Fig. 2 where features on this satellite view are labeled.

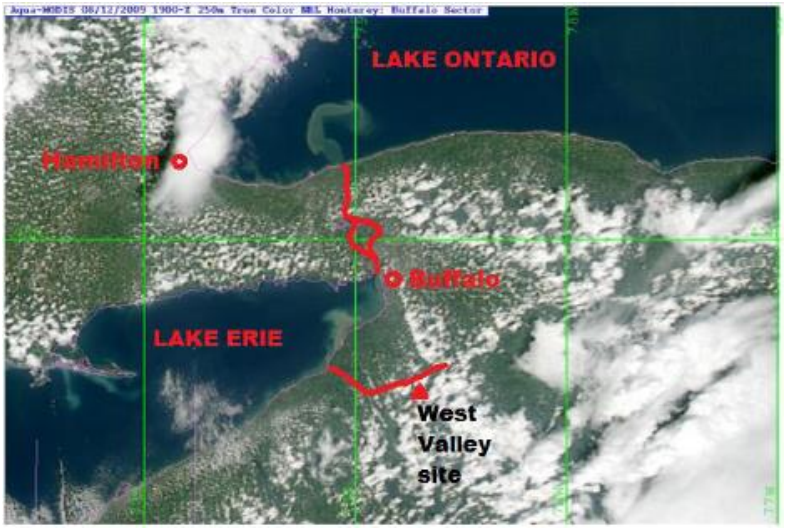


Fig. 2: Sediment plume from the August 2009 storm that delivered 5+ inches of rainfall to the Cattaraugus Creek basin, as in Fig. 1. Cattaraugus Creek and the Niagara River are shown as red lines in this figure, West Valley site is indicated by red triangle, and other features are labeled.

Downstream radiological impacts from unexhumed buried waste at the West Valley site would not be expected in the near future but are a foreseeable problem decades or centuries in the future. The problem may be eliminated if DOE and NYSERDA decide in 2020 to exhume and remove the buried West Valley wastes; however, the decision will be based on U.S. Nuclear Regulatory Commission (NRC) criteria that may be inconsistent with the usual understanding of drinkable, swimmable, and fishable waters. For example, the NRC clean-up criterion of 25 millirems/year to the critical (most exposed) receptor exceeds the widely recognized cancer risk threshold of one-in-one-million. Furthermore, it is unlikely that future

radiological effluent from the West Valley site that barely met NRC's 25 mrem/yr criterion would be welcomed by downstream residents as drinkable, swimmable, or fishable. There appears to be a substantial disconnect between NRC's 25 mrem/yr criterion and publicly acceptable water quality. As noted, this is a complex issue for the West Valley site and would likely be complex for other sites as well. I recommend that such issues at least be put on IJC's radar screen even if they can't be fully assessed.

Foreseeable future risks: Salt

Deicing salt has already been discussed above. The other issue raised here is potential long-term salt pollution of the lower Great Lakes from salt mines located near, or directly under, the lakes.

The 1994 collapse of the Retsof salt mine in the Genesee Valley of New York[5] has shown what appears to be an inevitable long-term brine impact from underground room-and-pillar salt mining. The impact is from a sequence of apparently inevitable events beginning with mine flooding, i.e., either accidental flooding or deliberate flooding, after the mine is abandoned or decommissioned. Such flooding will dissolve unmined salt within the mine, thereby filling the mine with saturated brine, most of which will eventually and inexorably be squeezed out of the mine. Impacts of this expelled brine may affect either surface water or groundwater, depending on mine depth, details of local geology and hydrogeology, etc. Within the Great Lakes basin, two of the salt mines for which such impacts need to be characterized are the Whiskey Island mine under Lake Erie near Cleveland, and the Compass Minerals mine under Lake Huron near Goderich, ON.

According to a report by Bérest et al., "…salt-mine abandonment must be planned thoroughly… The long-term stability of the mine must be discussed – a problem common to all mines, even if it must be kept in mind that, in the case of salt mines, a slow mine closure cannot be avoided."[6] Such closure or convergence, resulting from gradual creep or plastic deformation of the salt pillars in a room-and-pillar mine, is universally recognized as the long-term fate of a room-and-pillar salt mine. There is also widespread recognition that the rate of closure can be slowed but not stopped by flooding the abandoned rooms of a salt mine. As described by Bérest et al., "…It is the gap between lithostatic pressure and mine pressure that is the driving force for the convergence rate (as well as for the subsidence rate), and this gap is divided by two after flooding takes place…. A significantly slower convergence rate can be expected after mine and shaft flooding has been completed."[7] Mine closure or convergence is typically a very slow process of ductile deformation. Bérest et al., citing Van Sambeek,[8] say the process will take "centuries or dozens of centuries." The mine closure process could be somewhat faster if the mine remains dry (i.e., is not flooded), or could be somewhat slower if the mine is flooded and if the available pathways for outward flow are less transmissive than the pathways through which brine is currently flowing out of the Retsof mine.

Bérest et al. assert that a salt-mine closure or convergence process that takes centuries or dozens of centuries is so long "that it has no practical consequences for human activities," but this claim of "no practical consequences" should not be accepted at face value without site-specific analysis of the fate and transport of the brine that will inevitably be squeezed out. Salt mines in the Great Lakes basin will tend to flood eventually, even if not flooded intentionally. *Flooding, whether intentional or inadvertent, will apparently be a "tipping point" beyond which no realistic measures will be available for containing or controlling the salinity associated with the brine that will be squeezed out of the mine*. There may be one or more identifiable local aquifers into which the brine will predictably be squeezed, in which case the volume available to accept/contain the squeezed-out brine needs to be identified and documented as part of the impact analysis.

Some degree of groundwater salinization appears inevitable, but depending on the rate of mine closure this might be shown to be either a relatively minor effect or a relatively major impact on groundwater quality.

In any case, the fate and transport of the brine need to be modeled or otherwise characterized, and the question of whether the brine will also affect overlying surface waters needs to be similarly addressed. In assessing the volume, fate, and impacts of such brine, it is important to recognize the large uncertainty about whether the volume of squeezed-out brine will become substantially larger due to mixing and dilution with other groundwater. Mixing and dilution do not resolve the salinity impacts because the brine being squeezed out of the mine tends to be at or near saturation (~26.5% NaCl), roughly an order of magnitude more saline than seawater and several orders of magnitude above thresholds for potability and groundwater pollution. The salinity of diluted brine would thus remain unacceptably high at the same time as its volume grew.
Experience gained from the Retsof mine in New York, supplemented by data from the Cleveland and Goderich mines, should be incorporated into site-specific assessments of:

- the likelihood or inevitability of mine flooding,
- the likelihood or inevitability of gradual squeeze out of highly saturated brine from the mine as its chambers gradually close and the overlying land undergoes subsidence;
- the transport and fate of such brine that is squeezed out of the gradually closing mine, specifically including the subsurface hydrologic unit(s) that would ultimately receive such brine and whether existing groundwater would thereby be displaced from such unit(s), and
- whether any proposed mitigating measures (such as a mine decommissioning plan, associated financial security requirements, and long-term monitoring requirements) could offer any meaningful mitigation, especially in view of the New York's inability or unwillingness to impose enduring requirements on the operator of the failed Retsof mine.

In the worst case for either the Cleveland mine or the Goderich mine, there would be a relatively open upward pathway due to a collapse, as occurred at the Retsof mine in New York. But even without a collapse, it's likely that either mine – like any other salt mine in the basin – will eventually flood, if not already intentionally flooded. And even without a collapse it's doubtful that a flooded mine could ever be sealed tightly and permanently (such that no net room closure would occur, such that no brine would be squeezed out, and such that the brine would remain sealed in the mine at lithostatic pressure). The brine will tend to find outward pathways from the mine and will flow through these pathways at less-than-lithostatic pressure, resulting in impacts of the type outlined above. See generally the paper cited here by Bérest et al. for the likelihood of mine flooding, and see reports on the Retsof mine collapse for the typical consequence of brine being squeezed back out of the mine as it gradually closes.[9]

Thank you for this opportunity to comment, and thanks also for the IJC's ongoing efforts to protect the shared waters of the Great Lakes!

Sincerely,

Raymond C. Vaughan, Ph.D.
Geologist/Environmental Scientist

1 A 1996 Draft Environmental Impact Statement and a 2010 Final Environmental Impact Statement, both issued jointly by DOE and NYSERDA.
2 For example, see https://www.westvalleyphaseonestudies.org/.

3 For one of several overviews of this storm event, see U.S. Geological Survey, *Flash Floods of August 10, 2009, in the Villages of Gowanda and Silver Creek, New York*, Scientific Investigations Report 2010–5259.
4 S.R. Joshi, "West Valley-Derived Radionuclides in the Niagara River Area of Lake Ontario," *Water, Air, and Soil Pollution* **37**, 111-120 (1988); S.R. Joshi, "West Valley Plutonium and Americium-241 in Lake Ontario Sediments off the Mouth of the Niagara River," *Water, Air, and Soil Pollution* **42**, 159-168 (1988).
5 For example, see R.M. Yager, T.S. Miller, and W.M. Kappel, *Simulated Effects of Salt-Mine Collapse on Ground-Water Flow and Land Subsidence in a Glacial Aquifer System, Livingston County, New York*, USGS Professional Paper 1611 (2001) (https://pubs.usgs.gov/pp/pp1611/PP1611.pdf). See also R.M. Yager, P.E. Misut, C.D. Langevin, and D.L. Parkhurst, *Brine Migration from a Flooded Salt Mine in the Genesee Valley, Livingston County, New York: Geochemical Modeling and Simulation of Variable-Density Flow*, USGS Professional Paper 1767 (2009) (https://pubs.usgs.gov/pp/pp1767/pdf/pp1767body_508rev080609.pdf).
6 P. Bérest, B. Brouard, and B. Feuga, *Dry Mine Abandonment*, Solution Mining Research Institute (SMRI) Technical Conference Paper, Wichita, KS, Spring 2004 (http://www.brouard-consulting.com/sites/default/files/smri-wichita.pdf), p. 8.
7 Id. p. 12.
8 Id. p. 2.
9 See esp. R.M. Yager, *Environmental Consequences of the Retsof Salt Mine Roof Collapse*, USGS Open-File Report 2013-1174 (http://pubs.usgs.gov/of/2013/1174/), p. 10.

Name: Nerissa Vitello
Date of Submission: February 9, 2017
Location: N/A
Comment:
Please protect our public lands. Keep chemicals out of the Great Lakes.

Thank you,
Nerissa Vitello

Name: Charles Westerberg
Date of Submission: January 24, 2017
Location: Escanaba, Michigan
Comment:
We have done a terrible job of protecting the Great Lakes from invasive species! The future looks bleak to control of the 180 or so invasive species, and not allowing any more invasive species into the Great Lakes.
The only control that will work is to close the door! Let foreign ships only as far as Montreal, close all other entrances to the Lakes to prevent incoming species.
Pass laws to have the Great Lakes vessels install ballast water treating equipment on their fleets. Pass laws to fine and confiscate ships not complying with these new laws. Have the laws take immediate effect for every ship in the Great Lakes Fleet!
Genetic research has to be done on the most troublesome of the invasive species to study if a solution can be found to eliminate them from the Great Lakes.

In my short lifetime living on the shores of Lake Michigan I have witnessed a total failure of our Governments to protect these great waters! The lack of protection is only because of the greed of a few for more money!

Name: Maggie Wineburgh-Freed
Date of Submission: May 4, 2017
Location: Los Angeles, California
Comment:
I urge you to undertake a comprehensive, long-term (looking decades ahead), science-based review of the risks of transporting, "temporarily" storing, incinerating (as done with all of Ontario's combustible "low" level radioactive wastes, at Bruce Nuclear Generating Station's Western Waste Management Facility on the Lake Huron shore), and disposing (burying, or abandoning) radioactive wastes of all categories (so-called low, intermediate, and high-level) on the Great Lakes shore, as well as within the Great Lakes Basin.

Name: Robert Zahn
Date of Submission: March 19, 2017
Location: Columbus, Ohio
Comment:
While progress has been made, we still need to continue to spend money on our Great Lakes. No other single resource is more important for the state of Ohio. Our State Senators need to ensure that the Federal Government also doesn't cut funding to these efforts.

Letters sent by organizations via email or mail as of April 15, 2017

Name: Advocates for a Clean Lake Erie
Date of Submission: April 11, 2017
Location: Toledo, Ohio
Comment:
Each of the five Great Lakes has different issues, which need to be handled individually. I'd like the IJC report to provide meaningful information about which lake problems have changed, how much change has occurred, and the reasons for the changes. I'd like to know how much, for example, Lake Erie's Western Basin has improved in terms of phosphorus/dissolved reactive phosphorous; how many square miles of harmful algae blooms were recorded each year as well as their toxicity levels, rainfall during critical months, and water temps. Have there been changes in legislation that had an impact on changes, a major municipal sewer system overhaul, or a system breakdown of some sort? Have more CAFOs moved into the region? How much local, state, and federal money has gone into the Maumee River Watershed (and other regions) for research, pilot, edge of field testing, and other projects. Which practices are effective and which are not? Another category to include is whether each state/province is on track to meet the 40 percent reduction by the deadline, and what must still be done to meet the goal. Is it more aggressive work on the part of the state/province's agricultural environment, or health departments; the elected officials or citizens? I encourage you to be as aggressive as possible. The quality of our water

won't improve without real work and sacrifice. NOTE: The University of Maryland has terrific environmental graphics for charts, graphs, and symbols, and are free to use.
Thank you. I applaud your efforts. Tahree Lane

Name: The Fertilizer Institute
Date of Submission: April 13, 2017
Location: Washington, D.C.
Comment:
To Whom It May Concern,
Please find attached comments on the Draft Report "First Triennial Assessment of Progress on Great Lakes Water Quality" submitted on behalf of the following organizations: Agribusiness Council of Indiana, Fertilizer Canada, International Plant Nutrition Institute, Michigan Agribusiness Association, Ohio Agribusiness Association, The Fertilizer Institute

If you have questions regarding these comments, please contact me.

Lara Beal Moody, P.E.
Senior Director, Stewardship and Sustainability
The Fertilizer Institute

RE: January 18, 2017 Request for Comments on the Draft Report "First Triennial Assessment of Progress on Great Lakes Water Quality"
To Whom It May Concern,
The co-signers of this submission are pleased to have an opportunity to provide comments on the draft report "First Triennial Assessment of Progress on Great Lakes Water Quality." The participating organizations and our members are working to advance development and implementation of new technologies and scientifically-based management practices for agricultural cropping systems to better meet social, environmental and economic goals.

Whether from organic or commercial sources, fertilizer nutrients are a key component of sustainable crop production systems. Fertilizer is a key ingredient in feeding a growing global population, which is expected to surpass 9.7 billion people by 2050. Half of all food produced around the world today is made possible through the use of fertilizer. As demand continues to grow, farmers around the world will continue to rely on fertilizer to increase production efficiency to produce more food while optimizing inputs. Fertilizers play an essential role in replenishing nutrients in the soil that are used by plants each growing season, raising soil productivity, and improving soil health; but incorrect nutrient use may lead to negative impacts on a grower's return on investment and risks increased impacts on the environment.

We are committed to researching, designing and implementing 4R Nutrient Stewardship (utilizing the Right Nutrient Source at the Right Rate, at the Right Time, and in the Right Place) in coordination with supporting conservation practices. We support this effort through stakeholder engaged initiatives and research.

Comments
Collectively, we are concerned with the narrow view of the following two statements occurring in pages 44 through 46 of the report.

"Over the past ten to 15 years, governments at all levels have focused on incentive-based and voluntary programs to reduce nutrient loadings in the western basin of Lake Erie. These voluntary programs include funding and support for implementation of best management practices on agricultural lands, t he leading source of bioavailable

phosphorus in the western Lake Erie basin. But frequent HABs in the last ten years suggest that the voluntary programs are not sufficient in achieving target loadings set by the Parties in 2016."

"CONCLUSIONS: Excess phosphorus loadings to the western Lake Erie basin remain a critical problem. The Parties are meeting GLWQA deadlines for targets and domestic action plans, but a greater sense of urgency and inclusion of regulatory protections in domestic action plans are needed."
Specifically, in agriculture, nongovernmental voluntary efforts for nutrient stewardship to address water quality have increased significantly in the last five years, and they should be recognized for their contribution to addressing Lake Erie water quality. Efforts by industry in partnership with crop and conservation organizations are growing and leading to successful implementation of practices on the farm.

In March 2016, the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) released the Conservation Effects Assessment Project (CEAP) report, Effects of Conservation Practice Adoption on Cultivated Cropland Acres in Western Lake Erie Basin, 2003-2006 and 2012. The report used survey points within the basin to assess conservation and nutrient management practice adoption on cropland acres and to model environmental outcomes. While the report provides details regarding both structural and cultural conservation practices, nutrient management, and specifically the 4Rs, are highlighted in chapter 2, pages 14-24 and point to increased adoption of the following practices.

Between 2003-2006 and 2012, there was a marked increase in the adoption of application methods in which each nitrogen application is incorporated; acres of incorporation increased from 29 to 43 percent.
More nitrogen was removed at harvest than was applied as fertilizer on 22 percent of the acres.
In 2003-2006 and 2012, split nitrogen applications occurred on 51 and 63 percent of the acres, respectively.
Between 2003-2006 and 2012, the use of a nitrogen inhibitor increased from 8 to 30 percent of acres.
Between 2003-2006 and 2012, there was a marked increase in the adoption of application methods in which each phosphorus application is incorporated; acres with incorporation increased from 45 to 60 percent. Broadcast without incorporation fell from 55 to 40 percent.
In 2003-2006 and 2012, 52 and 58 percent of acres received less phosphorus than was removed with harvest, respectively.
GPS mapping of soil properties increased from use on 8 to 36 percent of cropland acres between 2003-2006 and 2012.
The majority of cropland acres are managed with moderately high or high nutrient management levels for both nitrogen and phosphorus.
Partnering with Stratus Ag Research under a 4R Ontario Memorandum of Cooperation, Fertilizer Canada surveyed over 500 growers in Ontario to assess fertilizer practice adoption in 2016. The survey captured practices on just under 400,000 acres of corn and soybean crops. Just under half of the growers that participated were in the Western and Central Lake Erie basins.

In the Western and Central Lake Erie Basins, growers are 4.6 percent more aware of 4R Nutrient Stewardship, and 5.1 percent more familiar with the 4Rs relative to growers in the rest of Ontario.
Agri-retailers are the predominant source of information about the 4R program for growers in Ontario, particularly in the Western and Central Lake Erie basin, where 10 percent more growers ranked agri-retailers are their top resource for 4Rs.
Forty-three and one-half percent of Ontario growers soil test for nitrogen every three years or more frequently, and just over 63 percent of Ontario growers soil test for phosphorus every three years or

more frequently.
The most common timing of phosphorus fertilizer is in the spring at planting.

The most common placement of phosphorus fertilizer is broadcast followed by incorporation which was higher in the Western and Central Lake Erie Basin (43.7 percent crop acres) compared to the rest of Ontario (27.9 percent crop acres). Phosphorus fertilizer placement as side banding at planting or by the seed were the next two most common placement practices.
Forty-three percent of corn growers applied manure to over 30 percent of corn acres; mostly in the fall or in the spring before planting. Only 10 percent of soybean growers applied manure to just 13 percent of soybean acres; mostly in the fall or in the spring before planting. The most common placement for manure (liquid and solid) is on surface and incorporated within one to two days.

With increased industry and stakeholder efforts to further advance 4R adoption since 2011, on-farm implementation continues to grow (see 4R Certification below). While 4R related programs and actions are based on best available science, it is important to recognize the complexities surrounding practice adoption impacts on dissolved phosphorus load reductions. **Given the complexities, we must look at practice-based metrics in conjunction with performance-based metrics when assessing results**.

The voluntary efforts described in these comments rely on the best available science, while recognizing the need to continually evolve based on new research and data. **A two pronged approach of leading voluntary efforts and funding supporting research allows for adaptive management and more direct stakeholder input into changes to program criteria.** Mandatory regulations risk undermining innovation, reduce the incentive to go beyond minimum requirements and are time consuming and difficult to update and modify.

The Science of Practice Change is Being Studied
Recent assessments point to the complexities of practice change, and evolving research suggests opportunities to create change. For example, an international team of research scientists led by Dr. Helen Jarvie[1] concluded that increases in dissolved phosphorus loading to the western basin of Lake Erie since 2002 could be attributed partly to water flow increases, partly to unintended consequences of conservation tillage practices intended to reduce loading of particulate forms of phosphorus, and partly to other factors not yet well understood. If specific tillage practices had been made mandatory, consequences could have been worse, and more difficult to change. Alternatively, voluntary programs that include an adaptive research component, measuring edge-of-field losses from actual farms where practices have been implemented, can quickly correct misperceptions regarding practice efficacy. For example, reported findings[2] from a multidisciplinary study supported by the fertilizer industry's 4R Research Fund point to "right place" application of phosphorus fertilizer as a practice with greater likelihood of reducing losses of dissolved phosphorus. This study is continuing to inform a wider range of practice criteria for the 4R Certification Program described below.

Voluntary Programs are Leading the Way
The fertilizer industry and conservation partners are working together to advance 4R Nutrient Stewardship (http://www.nutrientstewardship.com/) around Lake Erie. In the last five years, 4R efforts in the United States and Canada have significantly increased; programs in place now were not a part of the solution a decade ago. Specifically, these efforts include significant research, education, outreach and advocacy all geared towards increasing adoption of nutrient stewardship on the farm. And, they are yielding results. Below are descriptions of multiple voluntary initiatives focused on the Lake Erie region and their growing impact on fertilizer best management practice (BMP) adoption.

4R Certification Program The 4R Certification Program (http://4rcertified.org/) was initiated in the

Western Lake Erie Basin (WLEB) watershed (encompassing portions of Ohio, Michigan and Indiana) in March 2014, and it has since expanded to the whole state of Ohio and is being adapted for the province of Ontario, Canada.
The program certifies agronomic service providers (including fertilizer retail locations and independent crop advisors) based on third-party audit procedures, verifying program requirements including employee education, customer education and 4R practice recommendations and adoption by their farmer customers. The effort was initiated in partnership with the fertilizer industry, grower organizations, state and federal agencies, and conservation groups. Operating with stakeholder committee guidance, the program is led by local fertilizer industry organizations.
Within three years, the WLEB and Ohio program have resulted in 39 agronomic service providers earning certification who provide services to 5,200 grower customers, covering approximately 2.8 million acres which is equivalent to 37 percent of the WLEB cropped acres.

In Ontario, collaboration is underway with the Nutrient Stewardship Council, Ohio Agri-Business Association and The Fertilizer Institute in the U.S. to ensure alignment between cross-border efforts to implement 4R Nutrient Stewardship and reduce nutrient losses.
Formalized in 2015, Fertilizer Canada signed a 4R Memorandum of Cooperation (MOC) with the Ontario Ministry of Agriculture, Food and Rural Affairs and the Ontario Agri Business Association (OABA). Additional collaboration under this agreement includes the Ministry of Environment and Climate Change; Grain Farmers of Ontario; the Ontario Federation of Agriculture; the Christian Farmers Federation of Ontario; Conservation Ontario; The Nature Conservancy – OHIO; the International Plant Nutrition Institute; the Ontario Certified Crop Advisor Board and Ontario agri-retailers.
In 2016, the 4R Ontario Agri-Retail Certification Pilot project was launched under this agreement to evaluate the validity, suitability and accountability of the 4R Certification model for implementation in the Ontario marketplace. In year one, four Ontario agri-retail locations in the Western Basin of Lake Erie volunteered to participate in the audit program. Audits were conducted by the lead auditor from the US based program in the fall of 2016. Ontario agri-retailers will be implementing the 4R Certification program province-wide December 2017, allowing Fertilizer Canada to count the acres under 4R Nutrient Stewardship and demonstrate the tangible commitment being made by Ontario's agricultural industry.

Certified Crop Advisor 4R Nutrient Management Specialty Certification In September 2014, the North American Certified Crop Adviser board unanimously approved a plan to develop a specialty certification for Certified Crop Advisers (CCAs) who wanted and needed to demonstrate a higher level of expertise in the area of nutrient management. This specialty certification utilizes the 4Rs as the foundation for nutrient management and protecting soil and water. Individuals who have attained certification as a CCA 4R Nutrient Management Specialist have taken special training and passed an additional exam to ensure they are promoting practices that optimize nutrient use by the plant and minimize loss to the environment. To become certified, crop advisers are taking a significant step to demonstrate their competency in specialized nutrient, soil and water management and will share this knowledge with their farmer clientele and other stakeholders. Currently the specialty certification is offered in multiple states and providences along Lake Erie, including Indiana, Michigan, Ohio and Ontario. Fertilizer Canada collaborated with the Ontario CCA Board on development of a 4R Nutrient Management Specialty Certification Exam and Resource Study Guide in Ontario. There are now over 200 CCAs certified in North America on 4R Nutrient Management.

4R Research In 2013, fertilizer industry members in the U.S. and Canada initiated an effort committing funds to the 4R Research Fund in support of efforts to understand the impacts of fertilizer BMPs collectively known as 4R Nutrient Stewardship. Specifically, the funds are used to inform knowledge gaps related to quantifying the role fertilizer BMPs have on water and air quality, climate change, soil health, nutrient cycling and productivity.
In Ontario, research efforts have been endorsed by the Government of Canada, who invested $1.1-

million matched by industry to further quantify the outcomes of 4R Nutrient Stewardship application. Under this project, nine leading Canadian researchers are conducting 10 projects to quantify economic, social and environmental benefits resulting from 4R Nutrient Stewardship. We expect additional economic and environmental outcomes such as reductions in greenhouse gas emissions, nitrogen losses to the atmosphere and groundwater, phosphorus losses to surface waters and improved productivity, efficiency and profitability of production. Ontario is home to three of the Canadian 4R Researchers, providing leading research on the environmental, economic, and social benefits of 4R Nutrient Stewardship for optimal nutrient management of major Ontario crops.
In the United States, the research funds have awarded $2.8 million for projects that have been matched by $2.1M in government and stakeholder funds. One of the supported projects is based in Ohio and is evaluating 4R Nutrient Stewardship practices and effects of 4R Certification Program implementation. Results from the study will be used to inform practice selection to reduce nutrient loss by crop advisors and their grower costumers.

Additional Efforts Signees to these comments are engaged with a number of stakeholder partners to develop a wide range of national and regional 4R-based programs which further expand voluntary efforts with agribusiness, farmers and homeowners.
The Michigan Agri-Business Association has initiated the Michigan Certified Fertilizer Application program, voluntary effort providing training and certification for custom fertilizer applicators in the implementation of nutrient management practices, equipment safety and operation, and application technology. Certification is based on annual accumulation of credits obtained from training and educational sessions provided by MABA and individual companies. In 2016, the program's first year, 450 applicators in the state accumulated credits, representing 38 individual agribusinesses and 45 large farms. 270 applicators achieved full accreditation in the program. Already in 2017, more than 430 applicators have attended training events, with over 265 achieving full accreditation.

The Ontario Government has embraced 4R Nutrient Stewardship as an important tool to meet agricultural and environmental goals, referenced in government publications such as *A Phosphorus Primer* and *Soil Fertility Handbook (OMAFRA Publication 611)*.
The US government has embraced 4R Nutrient Stewardship as an important tool to meet agricultural and environmental resource goals, as referenced in the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) 590 practice standard for nutrient management.
Implementation of 21 4R Demonstration farms in Canada since 2015 mobilizing knowledge on the 4R program with government, agri-retailers, growers, conservation authorities and soil science researchers. In 2016, over 115 Ontario growers, representing over 113,000 acres of cropland, were reached through 4R Nutrient Stewardship workshops. An online 4R Nutrient Stewardship Ontario course is in development to provide training on how the 4R framework fits into the Ontario geography, cropping systems and regulatory environment.
Through The Fertilizer Institute's 4R Advocate Program, we have identified 30 pairs of growers and crop advisors who have worked collectively to implement 4R practices on 144,425 acres in 17 states. Fertilizer Canada's Greener World program teaches home gardeners how best to fertilize lawns and gardens using the 4R principles. Healthy grass makes several important contributions to the environment. It reduces pollution, absorbs the greenhouse gas carbon dioxide and supplies oxygen. Lawns also clean water through filtration, reduce soil erosion and reduce water run-off. Phosphorus specifically, is important for establishing new lawns because it promotes the development of strong, healthy roots, vibrant flowers, seeds, early maturity, and a normal healthy green color. Within Canada, Fertilizer Canada members have kept phosphorus in its starter-fertilizer products for new lawns, but have voluntarily eliminated phosphorus from mature lawn fertilizer products.

We appreciate the opportunity to provide comments on the draft version of this report. Our primary

view is that in agriculture, non-governmental voluntary efforts for nutrient stewardship to address water quality have increased significantly in the last five years, and they should be recognized for their contribution to addressing Lake Erie water quality. Further, a two pronged approach of leading voluntary efforts and funding supporting research will allow for adaptive management and more direct stakeholder input into changes to program criteria. If you have questions or comments regarding the items expressed above, please contact Lara Moody, Senior Director of Stewardship and Sustainability at The Fertilizer Institute (lmoody@tfi.org, 202-515-2721).

Agribusiness Council of Indiana
Fertilizer Canada
International Plant Nutrition Institute
Michigan Agribusiness Association
Ohio Agribusiness Association
The Fertilizer Institute

References

1. Jarvie, Helen P, LT Johnson, AN Sharpley, DR Smith, DB Baker, TW Bruulsema, R Confesor. 2016. Increased Soluble Phosphorus Loads to Lake Erie: Unintended Consequences of Conservation Practices? Journal of Environmental Quality doi:10.2134/jeq2016.07.0248
2. Williams, M.R., K.W. King, W.I. Ford, A.R. Buda, and C.D. Kennedy. 2016. Effect of tillage on macropore flow and phosphorus transport to tile drains. Water Resources Research 52: 2868-288.

Name: Algonquin Eco Watch
Date of Submission: November 10, 2016
Location: Spring Bay, Ontario
Comment: Document attached (copy of testimony at Great Lakes Public Forum, IJC session)

BILGE AND GRAY WATER

QUESTION/REQUEST:
Please outline the requirements regarding the treatment of bilge and gray water disposal in Canadian waters for all pleasure and commercial water craft, up to and including lake freighters.

COMMENTS:
After having diligently searched the internet, I have been unable to locate any reference to legislation regarding the treatment of gray water or bilge water in Canadian waters.

From a practical point of view, I realize that storing either gray or bilge water in an onboard facility is probably impractical; particularly in the latter instance if you have a leaky boat.

However, it seems to me that it should/must be legislated that all gray water and bilge water be filtered for noxious substances, such as petroleum products, prior to exhausting outside of the hull, or be stored on board until suitable pump-out facilities can be accessed.

Filter systems are available for smaller pleasure craft that are well within the disposable income of the average pleasure boater, but must be made compulsory if success is to be achieved.

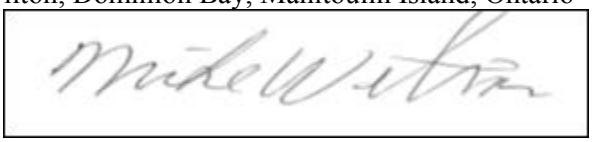
Do you plan to seek such legislation? If so, when?

NOTE: I recognize that clogging of filters can occur through time, effectively disabling bilge pumps and resulting in serious problems.

I do not accept that as a viable reason not to enact legislation prohibiting bilge and gray water from entering Canadian waters untreated.

It is the shared responsibility of boat owners and government agencies to ensure that Canadian water remain clean.

Mike Wilton, Dominion Bay, Manitoulin Island, Ontario



October 5, 2016

Name: Alliance for the Great Lakes
Date of Submission: April 14, 2017
Location: Buffalo, New York
Comment:
Good Afternoon,
Please see the attached comments from the Alliance for the Great Lakes on the IJC's Draft Assessment of Progress. Thank you for the opportunity to comment and enjoy your weekend.

Nate Drag | Water Project Manager | ndrag@greatlakes.org
Alliance for the Great Lakes | www.greatlakes.org
Innovation Center, Suite 437, 640 Ellicott St| Buffalo, NY 14203 | 716.261.9393

ALLIANCE *for the* GREAT LAKES

April 14, 2017

VIA ONLINE SUBMISSION at: www.participateIJC.org

Mr. Gordon Walker, Q.C., Canadian Chair
International Joint Commission
234 Laurier Avenue West, 22nd Floor
Ottawa, On K1P 6K6

Ms. Lana Pollack, U.S. Chair
International Joint Commission
2000 L Street NW, Suite #615
Washington D.C. 20440

RE: Triennial Assessment of Progress on Great Lakes Water Quality – Draft Report

Dear Commissioners Walker and Pollack:

On behalf of the Alliance for the Great Lakes, we appreciate the opportunity to comment on the International Joint Commission's (IJC) Triennial Assessment of Progress on Great Lakes Water Quality. The Alliance and our supporters truly appreciate the IJC's evaluation of the governments' progress in the past three years and greatly value your recommendations. We would also like to thank the IJC for the opportunity to participate in public meetings in various regions and for the ability to add additional comments on specific sections of the assessment. Our comments focus on several general objectives of the Great Lakes Water Quality Agreement, and their associated Annexes, which are of particular concern for our organization.

The Alliance works to protect the Great Lakes for all people and wildlife, forever. We involve tens of thousands of people each year in advocacy, volunteering, education, and research to ensure the lakes are healthy and safe for all.

General Objective 1 – Drinking Water

The Alliance is pleased the IJC acknowledges the current gaps in monitoring source water quality in the United States. In addition to addressing these gaps, there are further measures the IJC should call for with regard to drinking water. We feel that specific measures should be implemented to increase source water protection, monitoring, reporting and evaluation in the US. These measures should be identical in Canada and the United States to ensure parity in drinking water quality

In addition to increased monitoring of water quality, the IJC should also encourage the Parties to ensure more transparent processes in municipal water utility operations. For example, in southeast Michigan, there are two separate water utility agencies. The Great Lakes Water Authority (GLWA) oversees water and wastewater management, while the Detroit Water & Sewerage Department (DWSD) oversees retail distribution and customer service for water delivery. The roles that each organization plays with regard to drinking water quality and accountability are not often clear.

It would be beneficial to the public to better understand how they can learn about and become involved in decision-making processes with regard to billing rates, infrastructure maintenance and upgrades and related policies and programs that impact drinking water. A universal policy that outlines a civic engagement strategy and information sharing could help to strengthen public trust in their water utilities. The IJC should call for a dashboard that maintains up-to-date calendars of scheduled water finance and infrastructure meetings, water advisories and water saving tips and resources that are accessible to the public. Municipal water agencies should also demonstrate a commitment to working with nongovernmental and community groups, specifically on efforts that support conservation, nature-based stormwater management and water affordability. The IJC should recommend that each Great Lakes community have a hazard mitigation plan in place. The IJC should partner with municipal water utilities to host quarterly public meetings to update on progress outlined on this objective.

Finally, we agree with the IJC's observation that the absence of an Annex or implementation committee for this objective (as well as the swimming/recreation and fish/wildlife consumption objectives) have limited the resources devoted to, and therefore the progress made, on this objective. As communities across the region have struggled with access to safe and affordable drinking water, it is important to develop the processes that will coordinate the efforts of governments and non-governmental agencies in a transparent manner to achieve the goals of the human health objectives.

General Objective 6 – Nutrients

The Alliance is pleased that the governments have adopted nutrient reduction targets for Lake Erie. The Western Basin of Lake Erie needs urgent attention and action to address runoff from agricultural sources that feed algal blooms. We are hopeful that the final Domestic Action Plans will provide guidance on how to aggressively address nutrient issues. However, we remain concerned that preliminary documents (i.e.: the Ohio and Ohio Collaborative Implementation Frameworks) continue to rely on voluntary adoption of agricultural best management practices, which have been unsuccessful in reducing pollution from farms enough to curb toxic algae.

The Alliance and our partnering organizations are also interested in detailed information on how policies and programs outlined in the Domestic Action Plans will bring us closer to achieving the 40 percent phosphorus reduction goal. This information is vital as we seek to implement the most effective practices that will aid us in reaching our goals within the specified timeframe. These analytics will also help to create a roadmap that will bring us from a framework plan to a final Domestic Action Plan.

Beyond Western Lake Erie, the Alliance is concerned about other watersheds that are facing similar challenges from nutrient pollution that do not have similar structures in place. Locations such as Green Bay and the Lower Fox River, where the Alliance has engaged directly with the agriculture community, are in need of increased support for monitoring, outreach, and enforcement of existing regulations on nutrients like phosphorus. The existing standards on phosphorus in Wisconsin could serve as a model for other states and we feel that the assessment should include a reference to the work to reduce phosphorus entering waterways in Wisconsin and support sharing this work with other jurisdictions facing challenges with nutrient pollution.

General Objective 7 – Invasive Species

The Alliance is pleased to see that the IJC rightly recognizes the threat to the Great Lakes posed by aquatic invasive species. We feel that the assessment should recommend that the federal governments maintain or strengthen current ballast water regulations on both ocean going vessels and vessels that solely operate in the Great Lakes, known as lakers. This recommendation is especially important in the United States because of proposed legislation, known as the Commercial Vessel Incidental Discharge Act, which would undermine the role of the Environmental Protection Agency and the Clean Water Act in ballast water regulation and put the Lakes at great risk. We have and will continue to oppose these Congressional efforts.

Regarding Asian carp, the Alliance remains concerned that the "Contingency Plan" developed by the Asian carp Regional Coordinating Committee only provides a menu of possible response actions and a process flow chart with no guarantee that any particular actions will be taken. The region deserves to have a plan with assurances that certain measures listed will be taken in certain parts of the system in response to specific threats.

One other key area of work related to Asian carp that has been halted is the release of the Brandon Road Tentatively Selected Plan (TSP). The Brandon Road TSP was scheduled to be released on February 28, 2017. On February 27, 2017 the White House pulled the study and stopped the U.S. Army Corps of Engineers from releasing it for public comment. This is unacceptable. The draft report should be released immediately. As it is, the Army Corps says it will not have any advanced control measures completed at Brandon Road until 2030. That leaves only the electric barriers between the fish and Lake Michigan -- barriers that studies have shown allow small fish to pass through. This is an urgent situation and deserves a more immediate solution.

General Objective 9 – Other Materials, Substances, and Conditions

Crude Oil

The Alliance is very concerned by the risks presented by the movement crude oil — especially nonfloating tar sands crude – throughout the Great Lakes region. Currently, the United States Coast Guard has stated that there is no proven, effective method for recovering or cleaning heavy crude oil from the floors of sensitive waterbodies like the Great Lakes.

Despite this fact, heavy crude oil is currently moving through various pipelines and being carried on rail cars. As efforts increase to transport this volatile product through our region to be exported to distant markets, shipment of heavy crude oil on vessels may again be proposed. While the Alliance was encouraged by the creation of a working group on Maritime Transportation of Hydrocarbons and their by-products, we are concerned with the work plan's focus on facilitating such transport through preparedness, response, liability and compensation. We urge the IJC to recommend very careful study of the risks of crude oil vessel transport on the Great Lakes, including a cost-benefit analysis of a crude oil vessel shipment ban.

Microplastics

The Alliance is very encouraged by the attention the IJC has paid to the microplastic pollution in the Great Lakes. While the Canadian and United States' governments have passed legislation to phase out personal care products that contain plastic microbeads, more action is needed. Microbeads only represent a small portion of microplastics that are found in the Lakes. Other forms include plastic fibers, fragments, foam, film, and pre-production plastic pellets.

These other forms of microplastics were discussed in great detail at the Microplastic Workshop hosted by the IJC in Windsor, ON in April of 2016. The resulting recommendations from this workshop encourage the Parties to support research on the source and fate of microplastics and to explore ways to reduce their input into the Lakes. We feel that these recommendations should be referenced in this assessment to highlight the impact microplastics could have on general objectives focused on fish consumption and public health.

Public Engagement

The Alliance would like to commend the IJC's efforts to engage the public in various ways throughout this process. In addition to the series of public meetings held across the Great Lakes in locations like Buffalo, NY and Detroit, MI, the use of webinars, the forums on the ParticipateIJC website, and social media have hopefully helped to reach new audiences that would not have been involved previously. We would like to see these efforts continue to explore the use of technology in communication of important environmental issues and the progress that is being made by the governments charged with addressing them. The use of sharable inforgraphics and videos, for example, could communicate components of a larger reports in fashion that may be more accessible to a wide audience.

Sincerely,
Todd Brennan, Watershed Project Manager Crystal Davis, Policy Director
Nate Drag, Water Project Manager Molly Flanagan, Vice President for Policy
Khalil Ligon, Southeast Michigan Outreach Coordinator

Name: Bruce Peninsula Environment Group
Date of Submission: April 15, 2017
Location: N/A
Comment:

Dear Chairs and Members of the IJC,

Please permit me to file additional comments on behalf of the Bruce Peninsula Environment Group again on the public Review of the GLWQA 2012.

It was exactly twenty years ago that the IJC assembled the team of experts to investigate the effects of the nuclear generating plants around the Great Lakes under the Great Lakes Water Quality Agreement (GLWQA). The Nuclear Task Force of the International Joint Commission highlighted the inconsistency in reporting and monitoring of radionuclides in the Great Lakes basin as far back as 1997.

Here is the quote from their final report:

"Most monitoring activities in the Great Lakes basin are inadequate for tracking how radionuclides move through the ecosystem, according to the International Joint Commission's Nuclear Task Force."

Now over these last two decades, there have been no further efforts made by the Parties to check on these very important issues that affect our drinking water, our fishing, and our recreational activities- as far as we are aware.

Four of the Great Lakes are covered by so called Lake-wide Management Plans (LAMPs). The second largest of our five Great Lakes, Lake Huron, was supposed to have a full-fledged Lake- wide Action Management Plan (LAMP) by 2016, however we note that this has been postponed again until the end of this year.

Lake Huron hosts the world's largest nuclear generating plant and one of the largest nuclear waste facilities on the Canadian shore of the lake, as well as some polluting paper mills.

It is unconscionable to delay the LAMP for Lake Huron any further.

The effects of these polluting industries must be consistently monitored and this lake must have the protection NOW that the other Great Lakes have had for decades.

Under the Great Lakes Water Quality Agreement, the governments of Canada and the United States have committed to restore and maintain the physical, biological and chemical integrity of the waters of the Great Lakes.

So why does our Lake Huron still have only a 'Binational Partnership Agreement,' and not a full-fledged LAMP?

Those eight huge reactors at the Bruce Power nuclear plant siphon billions of litres per second from this freshwater lake to cool the fission process. And then return this water, combined with numerous chemicals and radionuclides at a much higher temperature, to the lake.

This has been a procedure for many decades and still no consistent monitoring of the effects on our precious water source.

A huge facility at the Bruce site has been incinerating plastic suits and gloves 24/7, 365 days of the year for many years, polluting the air despite State-of-the-Art prevention measures with the deadly toxin of dioxin.

At one of the binational events, an official of the Michigan Environmental Quality Department mentioned to me that they were very concerned about high levels of dioxin in the fish caught on the Michigan side of the lake. These toxic air emissions end up in our food sources, endangering human health.

Ontario Power Generation has proposed a first-of-its-kind project to bury nuclear waste in a large underground repository, less than a mile from the shore of Lake Huron, near Kincardine. These wastes will be deadly for hundreds of thousands of years, and there is no guarantee that they can be safely kept out of the environment for any length of time. There is massive opposition to this proposed project from citizens of both sides of the lake. It is high time that the Parties empower our binational agency under the GLWQA to again establish a team of experts to conduct an in- depth review of the high risks of this never before attempted disposal of nuclear waste.

We implore you, Chairs and Members of the IJC, to urge the Parties in the strongest sense to rapidly establish a full- fledged Lakewide Action Management Plan for Lake Huron and to include radionuclides as Chemicals of Mutual Concerns (CMCs) in the List under Article V, Section 2(c).

Thank you for accepting these additional comments and concerns filed on behalf of the Bruce Peninsula Environment Group.

Siegfried (Ziggy) Kleinau,
Co-founder and Outreach Director (BPEG).

Name: Bruce Power
Date of Submission: April 12, 2017
Location: Tiverton, Ontario
Comment: Document follows

SENT VIA EMAIL
April 12, 2017
Ms. Lana Pollack
Chair, United States Section
International Joint Commission
1717 H Street NW, Suite 801
Washington, DC 20006

RE: First Triennial Assessment of Progress on Great Lakes Water Quality Draft Report for Purposes of Public Consultation

Dear Ms. Pollack,
I am writing on behalf of Bruce Power to provide comments on the Draft Report entitled "*First Triennial Assessment of Progress on Great Lakes Water Quality*" (referred to as Draft Triennial Report). Bruce Power operates the Bruce Nuclear Generating Station A (Bruce A) and Bruce Nuclear Generating Station B (Bruce B) located on the east shore of Lake Huron within the Municipality of Kincardine, Ontario.

Bruce A and Bruce Beach house four CANDU® reactors with a production capacity of 6,400 megawatts of electricity for the Ontario grid.

The Draft Triennial Report indicated that one issue addressed repeatedly during public comment session was "the need to consider radionuclides and radioactive nuclear waste from energy production as Chemical of Mutual Concern (CMCs), and take action to prevent their storage in the basin". Under the CMCs Annex, once a CMC is identified, Canada and the United States collaborate to develop strategies to address it which may include research, monitoring, surveillance and/or pollution prevention or control measures. This may be carried out through the development and implementation of federal or provincial regulations and guidelines.

Bruce Power does not agree that radionuclides should be added to the list of CMCs given the rigorous federal regulations, standards and licensing requirements for nuclear facilities that are already in place to protect human health and the environment. Under the Nuclear Safety and Control Act, the Canadian Nuclear Safety Commission (CNSC) regulates radioactive and hazardous substances emitted from Canadian Nuclear Generating Stations. The Class I Nuclear Facilities Regulations set out the requirements related to environmental protection that must be met.

The Canadian Standards Association (CSA) standards outline the requirements for environmental and effluent monitoring programs. Bruce Power complies with federal regulations, programs, and standards which protect human health and the environment under the Nuclear Safety and Control Act. The conditions of the Bruce A and Bruce B Power Reactor Operating License requires that all reasonable precautions to control the release of radioactive nuclear substances within the site of the licensed activity and into the environment as a result of the licensed activity.

As part of licensing requirements, Bruce Power has successfully completed two Environmental Assessments under the Canadian Environmental Assessment Act for the Restart of Units 3 and 4, refurbishment of Units 1 and 2. All environmental assessments concluded that Bruce Power operations do not have a significant impact on the environment. Furthermore, the current Environmental Risk Assessment (ERA) for the Bruce Site, which was conducted in accordance with applicable CSA standards as confirmed by the CNSC, concludes that there is no radiological risk to humans or non-human biota. It should be noted that the ERA directly assesses the radiological aspects of General Objectives 1 to 4 inclusive of the Great Lakes Water Quality Agreement (GLWQA).

A Environmental Monitoring Program Report is prepared annually to fulfill regulatory requirements on environmental protection in accordance with license conditions and CNSC regulatory requirements. The report describes the effluent and environmental monitoring programs related to Bruce Power's operations including radiological, non-radiological and hazardous substances and quantified the effect on humans. In 2015, Bruce Power's radiological waterborne effluent emissions were well below regulatory limits. Historical trends illustrate that all waterborne emissions were well below limits and the dose to public values remains *de minimus*. Bruce Power's 2015 Environmental Monitoring Program Report is provided to the CNSC and is available to public at http://www.brucepower.com/2015-emp-report/.

Bruce Power has recently improved its Quality Control/Quality Assurance (QA/QC) processes for environmental sampling and analysis to align with CSA N286-12 Management System Requirements for Nuclear Facilities. These improvements provide additional confidence that the appropriate processes are being implemented, with sufficient verification and validation, to accurately determine the level of contaminants in effluent released from the stations and in environmental samples (e.g. water, sediment and aquatic species from Lake Huron).

The CNSC and Environment and Climate Change Canada (ECCC) signed a Memorandum of Understanding in June 2012 identifying areas of cooperation to "minimize the duplication of effort and encourage efficient delivery of services through information sharing, consultation in developing policies, training opportunities and joint inspection and enforcement actions" (source: http://nuclearsafety.gc.ca/eng/acts-and-regulations/memorandums-of-understanding/mou-environment-canada.cfm).

In summary, Bruce Power asserts that radioactive substances should not be considered Chemicals of Mutual Concern. Through numerous environmental risk assessments and continued monitoring and analysis, we fully understand the level of radioactivity in the Great Lakes caused by energy production, and confirm that there is no radiological risk to humans or the environment.

Francis Chua, Manager – Environment, Community & Indigenous Relations
Bruce Power P.O. Box 1540, B10, Tiverton, Ontario N0G 2T0
Telephone (519) 361-2982; Email: francis.chua@brucepower.com

Name: Burgundy Bay HOA – Matt Richardson
Date of Submission: April 11, 2017
Location: Middle Bass Island, OH
Comment:
I have been a son of a property owner and property owner on Middle Bass Island since 1963. The smells of the recent annual algae blooms in Lake Erie brought me back to the late 1960s early 1970s prior to Governor Rhodes hammering P&G to eliminate phosphates from Lake Erie. There are reams of data on phosphates in the lake, but much less information on where it comes from. (Kind of like reporting on cases of radiation in a population without ever mentioning a factory is dumping radioactive material in the stream running through town). Hopefully a source study and TMDL determination for the Maumee River will happen in the future. Common sense tells me that immediate change can happen if CAFO's are required to treat sewage waste just like municipalities do. This would make a huge impact on phosphate and nutrient flow into the Lake and be much more efficient than chasing down individual farmers and checking their buffers and application records. This could work politically as well, as the CAFO's are mainly owned by out of state corporations. And this would send a message of support to the MANY smaller farmers in Ohio who are taking the brunt of the blame for fertilizer run-off.

Name: Canadian Coalition for Nuclear Responsibility, via Sierra Club Canada
Date of Submission: October 26, 2016
Location: Toronto, Ontario
Comment:
These are our submissions endorsed by 44 other NGOs from around the Great lakes

Canadian Coalition for Nuclear Responsibility

Regroupement pour la surveillance du nucléaire

October 17, 2016

The Right Honourable Justin Trudeau
Prime Minister of Canada
House of Commons
Ottawa, ON K1A 0A6
justin.trudeau@parl.gc.ca

President Barack Obama
United States of America
White House, 1600 Pennsylvania Ave. N.W.
Washington, DC 20500
president@whitehouse.gov

Dear Prime Minister Trudeau and President Obama:

Re: Elimination of irradiated weapons-grade uranium from Chalk River

The Canadian Coalition for Nuclear Responsibility (CCNR) and the organizations listed below fully endorse the goals of the Global Threat Reduction Initiative (GTRI) to eliminate stocks of irradiated weapons-grade uranium from civilian facilities as stated in our letter of September 30. We are convinced that the fastest, safest, and cheapest way of achieving this goal is to down-blend the contents of the Chalk River Fissile Solutions Storage Tank (FISST) on-site, thereby converting the current inventory of highly enriched uranium (HEU) to non-nuclear-weapons-usable low-enriched uranium (LEU). The down-blending of this type of liquid waste has already been carried out in Indonesia just this year, in a matter of months, as documented in our earlier letter.

Because the GTRI is an agreement between Canada and the USA, your intervention in this matter is needed. Down-blending is preferable to transporting 23,000 litres of highly radioactive liquid waste over public roads and bridges in 100 to 150 truckloads, over a period of four years, at a cost of $2,600 per litre, thereby endangering the waters of the Great Lakes. Calculations have shown that the cesium 137 concentration in the FISST liquid waste is about four times greater than that of the post-reprocessing liquid waste stored in hundreds of tanks at Hanford Washington, left over from the separation of weapons-grade plutonium for use in nuclear weapons. Seventeen additional organizations have given their endorsements to the letter that I addressed to you on September 30; please see the attached list.

We look forward to hearing from you on this important matter.

Gordon Edwards

Gordon Edwards, Ph.D., President,
Canadian Coalition for Nuclear Responsibility
53 Dufferin, Hampstead QC, H3X 2X8

c.c.

Gordon Walker, Commissioner, Canadian Chair
International Joint Commission
234 Laurier Avenue West, 22nd Floor
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Lana Pollack, Commissioner, US Chair
International Joint Commission
2000 L Street, NW, Suite #615
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Great Lakes Executive Committee
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Michael Goffin
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Great Lakes Executive Committee
U.S. Co---Chair
Cameron Davis
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The Honourable Jim Carr
Minister of Natural Resources
House of Commons
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Jim.carr@parl.gc.ca

The Great Lakes Executive Committee
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Ernest Moniz, Secretary
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Monica C. Regalbuto, Assistant Secretary
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The Honourable Catherine McKenna
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THE LETTER OF SEPTEMBER 30 CAN BE ACCESSED AT: http://ccnr.org/GLWQA_Letter_2016.pdf

THE LETTER HAS BEEN ENDORSED BY THE FOLLOWING NON-GOVERNMENTAL ORGANIZATIONS:

Sierra Club Binational Great Lakes Committee
Rochester NY and Toronto ON
Lino Grima, Canadian Co---Chair lino.grima@utoronto.ca,
Wayne Howard, US Co---Chair whoward@rochester.rr.com

Le Conseil provincial des femmes du Québec
Provincial Council of Women of Quebec
Elizabeth Hutchinson, President
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Savannah River Site Watch
Columbia South Carolina
Tom Clements, Director
tomclements329@cs.com

Citizens' Network on Waste Management
Kitchener Ontario
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Canadian Association of Physicians for the Environment
Port Huron Michigan
Cathy Vakil M.D., cathyvakil@gmail.com

Great Lakes Environmental Alliance Kingston Ontario
Tanya Keefe, Board Chair
tanya_keefe@yahoo.com

The Provincial Council of Women of Ontario
Ridgeville Ontario
Mary Potter, President
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Coalition for a Nuclear Free Great Lakes
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Women's International League for Peace & Freedom
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Western New York Environmental Alliance Detroit Branch,
Buffalo, New York
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National Council of Women of Canada
Ottawa, Ontario
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Ontario Clean Air Alliance
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Fairmont, MN Peace Group
Fairmont, Maine
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Durham Nuclear Awareness
Whitby, Ontario
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Nuclear Information and Resource Service
Takoma Park, Maryland
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Don't Waste Michigan
Holland, Michigan,
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Citizens for Alternatives to Chemical Contamination
Pembroke Ontario,
Wes Raymond, Administrator
wesraymond.cacc@outlook.com

Concerned Citizens of Renfrew County Lake, Michigan

Contact: Ole Hendrickson,
ole@nrtco.net

Lone Tree Council
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Terry Miller, Chairman
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Environmentalists Inc.
Columbus, North Carolina,
Ruth Thomas, Co---Founder
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Toledo Coalition for Safe Energy
Toledo, Ohio
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Wisconsin Resources Protection Council,
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Straits Area Concerned Citizens for
Peace, Justice and the Environment
Cheboygan, Michigan
Anabel Dwyer, David Dwyer, dwyer@msu.edu

Northwatch
North Bay, Ontario
Contact: Brennain Lloyd
brennain@northwatch.org

Letter to Prime Minister Trudeau and President Obama, October 17, 2016

ADDITIONAL ENDORSERS (NOT LISTED IN THE LETTER OF SEPTEMBER 30)

The Watershed Sentinel Education Society
Toronto Ontario & Comox British Columbia
Contact: Anna Tilman
annatilman@sympatico.ca

Canadian Environmental Law Association
Toronto, Ontario
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Beyond Nuclear
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The Council of Canadians
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Milwaukee Riverkeeper
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Buffalo Niagara Riverkeeper
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Yellow Dog Riverkeeper
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Grand Traverse Baykeeper
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Seneca Lake Guardian (a Waterkeeper Affiliate)
Watkins Glen, New York
Joseph Campbell
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Waterkeeper Alliance
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Marc Yaggi, Executive Director
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The Hiroshima/Nagasaki Day Coalition
Toronto, Ontario
Contact: Phyllis Creighton
phyllis.creighton@gmail.com

Science For Peace
U of T, Toronto Ontario
Judith Deutsch
j.deutsch@utoronto.ca

Name: Canadian Environmental Law Association
Date of Submission: October 10, 2016
Location: N/A
Comment:
I am attaching CELA's speaking notes on the 2016 Progress Report of the Parties. CELA presented at the public forum in Toronto on October 5, 2016. The Commissioners requested a copy of CELA's speaking notes at that time.

Canadian Environmental Law Association
EQUITY. JUSTICE. HEALTH.

Canadian Environmental Law Association Speaking Notes
International Joint Commission, Public Forum October 5, 2016

Introduction
My name is Jacqueline Wilson and I am a lawyer with the Canadian Environmental Law Association (CELA). Thank you for the opportunity to provide comments on the 2016 Progress Report of the Parties.

CELA is an Ontario legal aid clinic with a long history of work on the Great Lakes. We are a member of the extended Subcommittee on Chemicals of Mutual Concern. This presentation will focus on the progress of the parties in implementing Annex 3 of the Great Lakes Water Quality Agreement.

1- Current tracking of pollution levels in the Great Lakes is insufficient

The scope of the issue of toxic substances in the Great Lakes is large. Over 1.5 million kilograms of carcinogens were released to air in Ontario alone in 2012.

Provinces/States Bordering the Great Lakes by 2012 Population and Air Releases of Carcinogens

Province or State	Quantum of Release of Carcinogens to Air (kg)	Population (millions)
Indiana	2,230,276.11	6.5
Ontario	**1,589,212.99**	**13.4**
Quebec	1,220,091.37	8.1
llinois	1,114,305.98	12.9
Ohio	955,879.89	11.6
Pennsylvania	863,564.03	12.8
Michigan	730,259.29	9.9
Minnesota	422,643.16	5.4
Wisconsin	411,036.80	5.7
New York	174,696.76	19.6

Sources: CEC, Taking Stock; Statistics Canada; United States Census Bureau

The data for this table was collected from the Commission for Economic Cooperation website. It is out of date. The public does not have access to up to date data. We therefore recommend prioritizing annual reporting of pollutant releases and transfers to the Great Lakes basin. All parties, particularly the public, should be working from an accurate base of data.

The trend in pollution levels is moving in the wrong direction. In the Great Lakes watershed, on-site and off-site releases of pollutants increased by 35.15percent between 2009 and 2013.[1] There was also a 12.37 percent increase in the levels of bioaccumulative substances from 2009 to 2013.[2]

The current pace of work under Annex 3 does not reflect the urgency of dealing with toxic substances in the Great Lakes. It has taken three years for the parties to confirm the first short list of Chemicals of Mutual Concern. There are no binational strategies in place. There is no clear timeline in the 2014 Canada-Ontario Agreement to identify and address chemicals of concern.

2- **Public engagement under Annex 3 is declining**

We are at a critical juncture in implementation of Annex 3. Work on Binational Strategies on Chemicals of Mutual Concern is underway.

CELA, along with 110 other environmental, health and advocacy groups from both the United States and Canada urged the parties to jointly designate radionuclides as Chemicals of Mutual Concern under Annex 3 in March, 2016.[3] The public requires clarity on the next steps of the decision-making process on what to include as a chemical of mutual concern and public engagement in that process. The process which is developed needs to reflect the commitment of the parties to enhance public engagement, found in the Preamble and Article 2(4)(k) of the Great Lakes Water Quality Agreement.

3- Canadian Environmental Law Association, Great Lakes-St. Lawrence River Basin Roadmap on Toxic Chemicals: Advancing Prevention by Promoting Safer Alternatives, June 2015[4]

CELA's 2015 report examined the challenge of regulating toxic substances from non-point and product-based sources. We drew on the EU's Registration, Evaluation and Authorization of Chemicals framework. Annex 3 binational strategies should focus on prevention and adoption of new approaches, like informed substitution and safer alternatives.

[1] CEC's Taking Stock Online: the 2009 releases were 15,703,237.80 kg (on-site) + 3,938,773.09 kg (off-site) = 19,642,010.89 kg. The 2013 releases were 23,981,298.06 kg (on-site) + 2,564,580.06 kg (off-site) = 26,545,878.12 kg. There was an increase of 35.15%.
[2] CEC's Taking Stock Online: the 2009 releases were 107,527.75 kg (on-site) + 220,646.23 kg (off-site) = 328173.98 kg. The 2013 releases were 39,159.21 kg (on-site) + 329,637.13 kg (offsite)= 368,796.34 kg. There was an increase of 12.37%.
[3] Canadian Environmental Law Association et al., Letter Re: Nomination of Radionuclides as a Chemical of Mutual Concern under the GLWQA, March 2, 2016 <http://www.cela.ca/sites/cela.ca/files/NGO-Letter-radionuclides-nomination.pdf>
Canadian Environmental Law Association, Radionuclides as a Chemical of Mutual Concern in the Great Lakes Basin, February 2016 <http://www.cela.ca/sites/cela.ca/files/Radionuclides-CMC.pdf>
[4] Canadian Environmental Law Association, Great Lakes-St. Lawrence River Basin Roadmap on Toxic Chemicals: Advancing Prevention by Promoting Safer Alternatives, June 2015 <http://www.cela.ca/sites/cela.ca/files/GLRoadmap.pdf>

Name: Canadian Nuclear Association
Date of Submission: April 15, 2017
Location: Ottawa, Ontario
Comment:

April 15, 2017

International Joint Commission
234 Laurier Ave. W.
22nd Floor
Ottawa, ON K1P 6K6

I am writing on behalf of the Canadian Nuclear Association (CNA) to provide comments on the Draft Report entitled "First Triennial Assessment of Progress on Great Lakes Water Quality Agreement". The CNA has approximately 100 members, representing over 60,000 Canadians employed directly or indirectly in uranium mining and exploration, fuel processing, electricity generation and the production and advancement of nuclear medicine. A number of our members have facilities on the Great Lakes and as such are very interested in this report.

CNA Members take great pride in our environmental programs and are committed to ensure our operations have a minimal impact on all elements of the environment including the Great Lakes. Our members have highly developed environmental monitoring programs that closely monitor all environmental pathways to the Great Lakes as well as any releases. In addition to the nuclear industries high standards, all nuclear activities are closely regulated and monitored by an independent federal regulatory body - the Canadian Nuclear Safety Commission.

The CNA has noted that the Draft Triennial Report indicates that "the need to consider radionuclides and radioactive waste from energy production as Chemicals of Mutual Concern" (CMCs) was raised a number of times in a public comment session. If added to the list of CMCs, the Parties could consider the development and implementation of regulations and/or guidelines.

The CNA notes that its members already operate under federal regulations and guidelines and therefore the CNA does not believe that radionuclides need to be consider as CMCs. The CNA would like to make the following comments:

The Canadian Nuclear Industry operates under licenses granted by the CNSC. The CNSC ensures that licensees operate under a rigorous series of federal regulations, standards and licensing requirements that are in place to protect human health and the environment.

The CNSC requires licensees to have effective control measures in place such as wastewater treatment facilities, engineered barriers and other techniques to minimize any impact on the environment.

The CNSC requires licensees to monitor the levels of radionuclides around their facilities including within the Great Lakes. Monitoring programs include effluent monitoring which measures releases and environmental monitoring which measures the concentrations of radionuclides in different environmental media such as air, water, food and soil. These programs apply to hazardous substances as well as to radionuclides.

In addition to release limits, the nuclear industry employs regulatory action levels to ensure effluent is controlled. Action levels are set at the upper bounds of a facilities normal operating performance and act as an early warning system to ensure licensees are carefully monitoring their operations and performance. If an Action Level is exceeded (Action Levels are well below release limits), the licensee must notify the CNSC, investigate and take appropriate corrective actions.

All licensees prepare an Annual Environmental Monitoring Program Report which describes the effluent and environmental monitoring programs and contain data on releases and concentrations. These documents are made available to the public.

In addition, the CNSC maintains an Independent Environmental Monitoring Program that carries out sampling to independently verify licensee results. Historical survey results and current monitoring results indicate that the level of radionuclides and radiation are substantially below regulatory limits.

The CNA would also point out that unlike individual chemicals which can have a unique risk criteria, the risk from radionuclides is exposure to radiation. This is addressed by determining an overall measure of radiation dose which includes naturally occurring radiation as well as man-made radiation. It should be pointed out that naturally occurring radiation is far more significant than radiation created by the nuclear industry.

In summary, the CNA believes that given the comprehensive environmental programs and monitoring already carried out by the Canadian nuclear industry and the rigorous independent regulatory oversight provided by the CNSC that any move to declared radionuclides as a Chemical of Mutual Concern would be an unnecessary duplication.

It is the CNAs strong belief that the high environmental standards our industry operates by, verified by independent oversight by the CNSC, ensures that there is no radiological risk to humans or the environment.

Sincerely,

Steve Coupland
Director, Regulatory and Environmental Affairs Canadian Nuclear Association

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Name: Citizens' Resistance at Fermi 2 (CRAFT)
Date of Submission: April 13, 2017
Location: Redford, Michigan
Comment:
The Fermi 2 nuclear reactor on the shores of Lake Erie's Western Basin sucks up millions of gallons of cool Lake Erie water and has NO thermal limits on the water they dump back in the lake. The water temperature there is 19 degrees higher than anywhere else in Lake Erie. The warmer water invites invasive species and jump-starts algae blooms.

Name: Coalition for a Nuclear Free Great Lakes
Date of Submission: April 15, 2017
Location: Monroe, Michigan
Comment:
Dear International Joint Commission,
Thank you for the recent public forums and opportunity to comment. Congratulations for the standing room only turnouts. The Coalition for a Nuclear Free Great Lakes goes on record expressing our grave concern for the chronic and acute radioactive contamination of the Great Lakes basin airshed and the watershed resulting from nuclear power and nuclear waste. Some recent examples include:

1)The Canadian and U.S. federal approval to ship highly radioactive liquid waste from Chalk River, Ontario to Savannah River Site, South Carolina. This highly radioactive liquid waste has never been shipped before in North America. These shipments would travel through the Great Lakes en route to Savannah River Site.

2) The Canadian nuclear industry intends to ship 10,000 tonnes of low level radioactive waste through the Great Lakes at potentially six U.S. border crossings en route to Morris, IL and Oak Ridge, TN. ultimately returning radioactive waste export to Canada.
3)In-situ burial of Chalk River complex reactor and waste immediately adjacent to the Ottawa River where this massive nuclear complex is located.
4)The Deep Geologic Repository of low and intermediate nuclear waste proposed immediately adjacent to Lake Huron. Also in progress is a search for a Deep Geologic Repository to store high level nuclear waste.
5) Current multiple decommissioning and storage of high-level nuclear waste immediately adjacent Lake Michigan, Lake Erie, Lake Ontario.
6) Current modifications of landfill licenses to accommodate low level radioactive waste from fracking (technologically enhanced normally occurring radioactive material, TENORM) and legacy military radioactive waste.

This is but a handful of current radiological threats both chronic and acute. In December 1997 the International Joint Commission Nuclear Task Force Report entitled: Inventory of Radionuclides for the Great Lakes was issued. The link to this report is provided here The Coalition for a Nuclear Free Great Lakes requests that the 2017 International Joint Commission reconvene the Nuclear Task Force to update the 1997 Inventory of Radionuclides for the Great Lakes. The current storage of high level radioactive waste in spent fuel pools at reactors and the use of temporary dry cask storage on the shores of the Great Lakes represents an immediate cataclysmic threat. Please see a 2016 Science Magazine discussion by Professor Frank von Hippel and Physicist Edwin Lyman. Discussion excerpt: "A fire from spent fuel stored at a U.S. nuclear power plant could have catastrophic consequences, according to new simulations of such an event. A major fire "could dwarf the horrific consequences of the Fukushima accident," says Edwin Lyman, a physicist at the Union of Concerned Scientists, a nonprofit in Washington, D.C. "We're talking about trillion-dollar consequences," says Frank von Hippel, a nuclear security expert at Princeton University, who teamed with Princeton's Michael Schoeppner on the modeling exercise."

The Coalition for a Nuclear Free Great Lakes request that the IJC sponsor an independent scientifically based investigation into the storage of high-level nuclear waste in the Great Lakes basin. Please provide independent scientifically based recommendations on the disposition of high-level nuclear waste. The nuclear power producers and regulators do not constitute an independent analysis in the public interest. Thank you for working so hard on behalf of the Great Lakes environs.

Michael J. Keegan Chair, Coalition for a Nuclear Free Great Lakes
P.O. Box 463 Monroe, MI 48161
mkeeganj@comcast.net

Name: Council of Canadians, London Chapter
Date of Submission: March 30, 2017
Location: N/A
Comment:
I participated in the discussion and comments concerning the Great Lakes Water Quality in Sarnia, ON on March 22. At my table were First Nations representatives from Walpole Island and Aamjiwnaang of Sarnia. They have submitted a position paper to your Commission which should be taken seriously as they live on the frontline of environmental devastation, in the "sacrifice zone."

I am alarmed when the Trump administration decided not to use the term, "climate change." I am alarmed when the US EPA has the ability to cut the funding for the important projects that are taking place, as listed in the report, and stand by to watch the water quality deteriorate. If the US EPA does not fund the IJC adequately enough to continue the monitoring and research, then I think Canada has the right to sue. We drink the water from Lake Huron. First Nations rely on fishing as a protein source, while Chemicals of Mutual Concern migrate through the food chain and poison all animals, not just humans.
We are very, very anxious about the US position on environmental issues. We will not stand by and watch.

Name: Council of Great Lakes Industries
Date of Submission: April 4, 2017
Location: Ann Arbor, Michigan
Comment:
Good morning. CGLI's comments on the First Triennial Assessment of Progress on Great Lakes Water Quality are attached. Additional comments will be submitted to the co-chairs of the IJC Science Priority Committee. These comments also have been sent directly to Mr. Walker and Ms. Pollack.
Thank you for this opportunity to provide comments.
Kathryn A. Buckner, President, Council of Great Lakes Industries

CGLI Council of Great Lakes Industries

April 3, 2017

Mr. Gordon Walker, Chair
Canada Section International Joint Commission
234 Laurier Avenue West, 22nd Floor Ottawa, ON K1P 6K6

Ms. Lana Pollack, Chair U.S. Section
International Joint Commission
2000 L Street, NW, Suite #615
Washington, DC 20440

Re: **Comments on *First Triennial Assessment of progress on Great Lakes Water Quality (draft, January 2017)***

Dear Commissioners Walker and Pollack:

Thank you for the opportunity to provide comments on the ***First Triennial Assessment of progress on Great Lakes Water Quality (draft, January 2017)*** . These comments are provided on behalf of the members of the Council of Great Lakes Industries (CGLI). CGLI is a binational nonprofit organization representing the common policy interests of Canadian and US industrial organizations that have significant assets in the Great Lakes region. The mission of CGLI is to promote the growth and vitality of the region in harmony with its human and natural resources (sustainable development).

Report Focus
Focusing the first Triennial Assessment of Progress (TAP) report on Great Lakes Water Quality Agreement 2012 (GLWQA) objectives is a good approach. As was evident during the recent public meetings held throughout the Great Lakes basin, people have diverse views regarding the status of the Great Lakes and the future focus of any additional management action. All of these views are important and need to be addressed. The 2012 revisions to the GLWQA provide an orderly means for categorizing, prioritizing, and identifying specific measures that resource managers can use. Viewing Great Lakes protection needs within the context of the GLWQA objectives is an important example for all to follow.

Applying the Science
Presenting the TAP draft in narrative vs. scientific style also makes a lot of sense. As was reflected by citizen comments provided during the public meetings, the science that is provided through most Great Lakes status presentations can be difficult to grasp. The narrative approach advances the desire of IJC Commissioners to encourage public in the triennial review process by "the public," or non-science community.

However, it is also important to make this effort a "two-way" proposition. Not only is it advantageous to encourage the public to provide lay-person input, focus, and impact assessment recommendations to inform Great Lakes policy, but it is also necessary to "take the science to the public." Understandable explanations of scientific findings that reflect the science that underlies observed water quality outcomes, the "cause and effect" associated with those outcomes and best practices for moving forward are needed. The TAP process provides an opportunity for the Commission to help non-scientific members of the public understand why policy decisions cannot always be made in ways that reflect public preferences, hypotheses, or popular beliefs.

The Progress Report of the Parties
In response to the Commission's request for reaction to comments in the draft TAP report about the Progress Report of the Parties (PROP), CGLI agrees with the need for more collaboration between the governments and stakeholders. CGLI also agrees with many of the general PROP shortcomings that are cited in the draft TAP report. However, as acknowledged to some degree in the draft TAP, limitations on resources available to the Parties are responsible for many of the shortcomings. It would be helpful if the PROP more completely acknowledged and explained this reality. Perhaps the Commission could recommend to the Parties that a transparent prioritization process is needed that explains

why some actions can be taken immediately and others must be deferred. Actions that best serve the Great Lakes ecosystem given available resources should be prioritized.

IJC Outreach
CGLI concurs that a key objective of the draft TAP report is to provide a mechanism for publicly reporting the results of Great Lakes management actions. However, any outcomes communicated to the public must be tied to specific monitoring data, research, and other scientific information. Tying results to science strengthens the connection between the public and Great Lakes science and research at a time when strong public support is needed to retain funding for environmental science programs. The need for enhancing "environmental literacy" is mentioned in the TAP discussion on climate change. This need is much broader than that and should be emphasized in other sections of the draft TAP report, too.

Assessment Statements
The draft TAP report assessment statements are of value. However, caution is urged on "second guessing" PROP report conclusions regarding significance, status, and outcomes pertaining to certain Great Lakes stressors. This is especially true in the chemical impact sections. Chemical impact science is complicated and requires multiple studies to establish cause and effect. Selecting best study protocols is difficult and a task best completed in concert with representatives of the chemical industry. Enhanced collaboration is needed in this area.

It has been said that, overall, better collaboration on science is needed throughout all Great Lakes programs. At the same time, the draft TAP report includes two examples of excellent efforts for organizing, vetting, and carrying out work aimed a accomplishing GLWQA objectives: the work undertaken by the committees focused on Annex 6 (Invasive Species) and Annex 7 (Habitat and Species). The Commission should commend these Committees on their work and recommend that the collaborative processes and work practices used by these groups serve as models by other GLWQA objective and/or Annex working groups. In addition to the excellent work and outcome of these committee activities, the implied priorities expressed regarding these particular stressors, relative to potential for impacts on the Great Lakes ecosystem, should be highlighted to (perhaps) attract more funding for these restoration efforts.

Thank you for the opportunity to provide comments, which we offer as a high level overview of the draft TAP report. As you are aware, Dale Phenicie (CGLI's Technical Director) serves as a member of the IJC Science Priority Committee and is currently participating in that group's detailed review of the draft TAP report. He will be submitting more detailed comments to the SPC co-chairs.

Please contact us for any needed additional information or clarification.

Very truly yours,
COUNCIL OF GREAT LAKES INDUSTRIES


Kathryn Buckner, President


Dale Phenicie, Technical Director

cc: Trish Morris, Director
International Joint Commission
Great Lakes Regional Office
100 Ouellette Ave., 8th Floor
Windsor, ON N9A 6T3

Name: Great Lakes Commission
Date of Submission: April 13, 2017
Location: Ann Arbor, Michigan
Comment:

2805 South Industrial Hwy., Suite 100 Ann Arbor, Michigan 48104-6791
Office 734-971-9135 ▪ Fax 734-971-9150 ▪ glc@glc.org

April 13, 2017

International Joint Commission
Washington D.C. and Ottawa, Canada
Transmitted Via E-mail

Comments on Draft Triennial Assessment of Parties' Progress

Dear Commissioners:

The Great Lakes Commission (GLC) appreciates the opportunity to comment on the International Joint Commission's (IJC) Draft Triennial Assessment of Progress (TAP) on Great Lakes Water Quality. These comments are made on behalf of the Great Lakes Commission and should be considered in addition to any comments from individual state and provincial members of the GLC.

We commend the IJC for the comprehensive nature of the draft report on the Parties' progress. We are also impressed by the IJC's commitment to soliciting input from the public on this draft, through public meetings and electronic outreach. The Great Lakes region and our federal governments are fortunate to have an institution with the expertise of the IJC to help ensure that our shared natural treasure – the Great Lakes – are sustained and improved for the benefit of our region's citizens.

The GLC is limiting its comments on the draft report to the issue of infrastructure necessary to operate, maintain and supply the region's residents with clean, safe drinking water and treatment for runoff and wastewater. The TAP report includes only brief reference to the importance of infrastructure, even though infrastructure has captured the public spotlight since the crises in Toledo, Ohio and Flint, Michigan. While there were a variety of human and other factors that contributed to these crises, the state of our nations' infrastructure has been brought into stark relief.

The quality and state of water treatment and supply infrastructure is a critical element of government programs to achieve the General Objectives of the Agreement, notably General Objective 1, "The waters of the Great Lakes should be a source of safe, high quality drinking water." Since the Toledo and Flint crises, the Great Lakes Commission has adopted several resolutions concerning water infrastructure. These resolutions are attached. The first resolution, among other things, calls on governments to recognize the importance of integrating planning efforts for waste, storm and drinking water infrastructure. The second resolution resulted in the creation of a GLC working group to explore various challenges and offer recommendations for addressing needs – in both countries – to maintain and upgrade drinking water infrastructure. Finally, a resolution adopted last October in Toronto expanded the charge for that working group to examine storm and wastewater runoff as well. This working group will be exploring the needs of the region in the areas of infrastructure, innovative approaches to meeting the financial demands imposed by degraded infrastructure, and opportunities to raise awareness of the value of water infrastructure and the need to pay for it. We believe the GLC's recommendations and the progress of this working group will be of interest to the IJC in fulfilling its mandate to help the governments meet their obligations

of ensuring a safe water supply. Early last month the Great Lakes Commission released a statement calling on the federal governments to recognize the importance of investing in clean water infrastructure as discussions unfold in Washington D.C. about a possible infrastructure program. This statement (attached) underscores the terrific challenge and the need we face in this region. Without a doubt, we are at risk of more calamities like the recent sinkhole in Macomb County, Michigan and the crises in Flint and Toledo if we fail to plan and invest in water infrastructure.

We urge the IJC to expand the draft report and include recommendations to the Parties to support programs – including funding – designed to maintain and upgrade critical water infrastructure. Our citizens expect clean water coming out of their faucets, yet they too often fail to fully understand the connection between government programs, their tax dollars and the safety of their water supply. The IJC can help remind governments of the vital role they play in ensuring the safety of our water supply.

Thank you for considering these comments.

Sincerely,

Tim Eder
Executive
Director

Enclosures

Great Lakes Commission
des Grands Lacs

RESOLUTION
Adopted September 29, 2015

Healing the fractured urban water cycle through integrated water management

Whereas, water management across the Great Lakes and St. Lawrence River region is often characterized by aging water and wastewater infrastructure that can pose a risk to a healthy and safe water supply and to thriving economies, animal and plant communities that symbolize and depend on this freshwater treasure; and

Whereas, in many urban areas, the natural hydrological cycle that provides services such as flood control, aquifer recharge, water treatment, and clean and reliable water supply has been fractured by a legacy of poor land use planning, wasteful water use, and a disjointed approach to water management generally; and

Whereas, in the Great Lakes region, municipalities have primary responsibility for water supply, wastewater management and stormwater management and these programs are often fractured within local government institutions; and

Whereas, federal, provincial and state agencies in the U.S. and Canada provide policy guidelines and funding to support municipal efforts to manage water supply, wastewater and stormwater; and

Whereas, integrated water resource management—which joins decision making related to water supply, water use, wastewater treatment and disposal and stormwater management—can help to restore the fractured water cycle and improve the efficiency of programs to enhance the quality and quantity of services provided by this freshwater treasure; and

Whereas, water efficiency and green infrastructure are also core aspects of municipal infrastructure and can augment the economic, environmental and social outcomes of integrated water management; and

Whereas, through the Greater Lakes project, which was supported by the Great Lakes Protection Fund, the Great Lakes Commission has learned that there is broad agreement among municipal, provincial and state experts on the need to integrate water, wastewater and stormwater infrastructure on a watershed basis; and

Whereas, the full benefits of integrated water management can be boosted by stronger partnerships with federal, state and provincial governments that will inform, educate and improve local decision making.

Therefore, be it resolved, that the Great Lakes Commission calls for U.S. and Canadian federal, state and provincial agencies with responsibilities related to water supply, wastewater management and stormwater management to work with municipalities to develop and promote principles of integrated water resource management for application within the Great Lakes region; and

Be it further resolved, that federal agencies in the U.S. and Canada, in partnership with states and provinces, where appropriate, utilize funding incentives, such as low cost/low interest loan programs, that will encourage local units of government with direct responsibility for water infrastructure improvements to apply the principles of integrated water resources management that includes measures for water efficiency and green infrastructure; and

Be it further resolved, that Great Lakes states and provinces, where appropriate, should pursue enhanced coordination among their respective agencies with responsibilities related to water supply, wastewater management and stormwater management; including integration of programs when working with municipalities; and

Be it finally resolved, that the Great Lakes Commission should explore the establishment of a project and/or working group with municipalities, other agencies and landowners to:
identify and promote sustainable water use and management policies, programs and practices;
recommend and establish reliable long-term funding to design, build, operate and maintain water infrastructure and to ensure that these funding mechanisms include water conservation/efficiency and green infrastructure as core components of the infrastructure mechanisms;
explore and advance the establishment of an information platform to enhance the development of shared goals and metrics for sustainable water supply; and
explore and advance regulatory and non-regulatory approaches to advance integrated water management on a watershed basis, including market-based and other cost-effective incentives.

Adopted at the 2015 Annual Meeting of the Great Lakes Commission, September 28-29, 2015 in Chicago, IL.

Great Lakes Commission
des Grands Lacs

RESOLUTION
Adopted July 27, 2016

Maintaining safe and sustainable drinking water and infrastructure in the Great Lakes Basin

Whereas, more than 48 million Americans and Canadians depend on the Great Lakes and St. Lawrence River for drinking water, recreation, manufacturing of products, power generation, commercial fishing and maritime navigation, among other benefits; and

Whereas, public water supply and safe drinking water are assets that citizens and communities in the Great Lakes and St. Lawrence River region depend on and that are fundamental to health and the viability of our economy; and

Whereas, the recent events in Flint, Michigan, have raised awareness in our two countries of the consequences and risks from aging infrastructure; and

Whereas, the American Society of Civil Engineers, in their most recent infrastructure report card, gave U.S. drinking water infrastructure a grade of D, and no graded Great Lakes state a grade better than C; and

Whereas, U.S. EPA data show that at least $384 billion in improvements will be needed through 2030 to maintain, upgrade and replace drinking water infrastructure and these costs will grow if needed investments are delayed; and

Whereas, investments in the Great Lakes through the Great Lakes Restoration Initiative have yielded significant environmental and economic benefits to the Great Lakes and there exist similar opportunities for focused investment in the region's water infrastructure; and

Whereas, Great Lakes-St. Lawrence River regional governors, premiers and leaders have proposed and are moving forward with state and provincial programs to address water infrastructure needs and challenges, including the challenge of lead contamination in drinking water; and

Whereas, the presence of lead in some of the drinking water infrastructure, service lines, piping and plumbing can pose health concerns to residents of the Great Lakes and St. Lawrence River basin; and

Whereas, the current U.S. Maximum Contaminant Level Goal for lead in drinking water is zero but the Action Level for public water systems, which was established in 1991, is 15 parts per billion in more than 10 percent of homes sampled and the Maximum Acceptable Concentration for lead set by Health Canada for drinking water is 10 parts per billion; and

Whereas, on December 15, 2015 the National Drinking Water Advisory Council provided extensive recommendations to the Administrator of the U.S. Environmental Protection Agency for long-term revisions to the Lead and Copper Rule.

Therefore, Be It Resolved, that the Great Lakes Commission initiate the formation of a working group to advise the staff in the preparation of a report on the state of drinking water infrastructure in the Great Lakes and St. Lawrence River basin and to make recommendations for future Great Lakes Commission activities to address these needs; and that this working group will address topics that include:

Exploration of options to provide information services, perhaps in conjunction with the Blue Accounting Initiative, to GLC member jurisdictions and other audiences on the status of drinking water infrastructure, progress toward improving it, risks and consequences to businesses and people, and such other information services as may be beneficial to its members; and

Exploration and assessment of opportunities to raise awareness of the fundamental value of water and the infrastructure supplying it, and the scope and depth of the financial challenge facing this region's governments to meet its infrastructure needs; and

Exploration and assessment of options for financing strategies that could be employed by Great Lakes-St. Lawrence River region jurisdictions and their municipalities to maintain and improve drinking water infrastructure assets; and

Make recommendations for further action at future meetings of the Great Lakes Commission.

Be it Further Resolved that the Great Lakes Commission calls on U.S. EPA to expedite long-term revisions to the Lead and Copper Rule; addressing the recommendations of the National Drinking Water Advisory Council; and

Be It Finally Resolved that the Great Lakes Commission calls on federal and provincial authorities in Canada to reassess the risk presented by lead in drinking water, the adequacy of the Maximum Acceptable Concentration level, and determine measures needed to minimize exposure.

Adopted in a special meeting of the Great Lakes Commission, July 27, 2016, held via conference call. The resolution was supported by all states except Ohio, which opposed the resolution.

Great Lakes Commission
des Grands Lacs

RESOLUTION
Adopted October 7, 2016

Providing and maintaining clean water infrastructure and services in the Great Lakes Basin

Whereas, aging water infrastructure across the Great Lakes and St. Lawrence River region can compromise the region's ability to deliver safe and sustainable drinking water as well as manage wastewater and stormwater in ways that support thriving economies and ecosystems; and

Whereas, the American Society of Civil Engineers estimates that the $91 billion capital investment required to maintain and upgrade drinking water and wastewater infrastructure in the U.S. in 2010 will increase to $195 billion if action is deferred to 2040,[1] and that the inclusion of capital investment costs required for stormwater infrastructure raises the estimate to over $1.3 trillion[2] over the same timeframe; and

Whereas, the majority of the nation's water systems are between 50 and 150 years old and many municipalities are unable to meet rising costs;[3] and

Whereas, billions of gallons[4] of combined or untreated sewage and stormwater are currently released into the Great Lakes each year from outdated and aging infrastructure that remains prevalent in several of the Great Lakes region's largest cities as well as in many smaller municipalities; and

Whereas, green infrastructure[5] has shown promise to reduce the anticipated costs of maintaining and upgrading stormwater infrastructure and alleviating some of the burden on existing grey infrastructure while providing complementary economic, environmental and societal benefits; and

Whereas, the Great Lakes Commission resolution Healing the fractured urban water cycle through integrated water management, adopted September 2015,[6] acknowledges broad agreement among municipal, provincial, and state experts in the Great Lakes region on the need to integrate drinking water, wastewater, and stormwater infrastructure on a watershed basis; and

Whereas, the Great Lakes Commission resolution Maintaining safe and sustainable drinking water and infrastructure in the Great Lakes Basin, adopted July 2016,[7] identifies additional challenges and opportunities specifically with respect to drinking water infrastructure.

1 2013. American Society of Civil Engineers. Failure to Act: The Impact of Current Infrastructure Investment on America's Economic Future. Retrieved from http://www.asce.org/uploadedFiles/Issues_and_Advocacy/Our_Initiatives/Infrastructure/Content_Pieces/ failure-to-act-economic-impact-summary-report.pdf

2 2016. National League of Cities. Paying for local infrastructure in a new era of federalism. Retrieved from http://www.nlc.org/Documents/Find%20City%20Solutions/City-Solutions-and-Applied-Research/NLC_2016_Infrastructure_Report.pdf

3 2012. American Water Works Association. Buried No Longer: Confronting America's Water Infrastructure Challenge. Washington, DC. Retrieved from http://www.awwa.org/Portals/0/files/legreg/documents/BuriedNoLonger.pdf

4 2012. Alliance for the Great Lakes. Reducing Combined Sewer Overflows in the Great lakes. Retrieved from http://bnriverkeeper.org/wp-content/uploads/2012/06/AGL-Reducing-CSO-13-FINAL.pdf

[5] Green Infrastructure is a broad term that includes interconnected natural systems and ecological processes to maintain or mimic the natural water cycle across a wide range of land developments. Green infrastructure can provide clean water, clean air, and wildlife habitat. It includes natural areas such as grasslands, forests, wetlands and riparian areas. It also includes manmade features such as rain gardens, green roofs, porous pavement, constructed wetlands and berms, riparian buffers, and parks.

[6] Adopted by unanimous vote.

[7] All jurisdictions voted in favor of the July 2016 resolution except Ohio.

Therefore, Be It Resolved, that investments in clean water infrastructure should complement efforts to protect source water while enhancing practices that work toward restoring or recreating natural hydrologic processes; and that the Great Lakes Commission expand the scope of the working group called for in the July 2016 resolution, *Maintaining safe and sustainable drinking water and infrastructure in the Great Lakes Basin,* to consider all clean water infrastructure (i.e., drinking water infrastructure, wastewater, stormwater and green infrastructure); and to provide advice to guide staff in the preparation of a report on the state of water infrastructure in the Great Lakes and, where appropriate, the St. Lawrence River basin that addresses topics identified in the resolution as well as similar topics for other types of clean water infrastructure. The working group should, where appropriate:

Explore and assess opportunities to raise awareness of the infrastructure needed to support all clean water services, including drinking, waste and stormwater management;
Explore the scope and depth of the financial challenge facing the region's governments to meet all of its water infrastructure needs;
Based on the working group's findings, recommend modifications to laws and policies as may be necessary to ensure that federal water infrastructure investments are a) strategically prioritized based on regional risks and needs; b) provide adequate flexibility and authority to states, provinces and cities; c) address drinking, waste and stormwater management challenges simultaneously; and d) facilitate or drive innovation and use of technologies to increase operational efficiencies in the movement and management of drinking water, stormwater and wastewater; and
Make other recommendations at future meetings of the Great Lakes Commission based on findings of the working group.

Be It Finally Resolved, that the Great Lakes Commission calls on the U.S. Congress and the Canadian Parliament to increase strategic federal water infrastructure funding to complement funding from states, provinces and local municipalities to adequately meet the needs of providing all clean water services (e.g., drinking water, wastewater, and stormwater).

Presented by the Board of Directors for consideration at the 2016 Annual Meeting of the Great Lakes Commission, Oct. 6-7, 2016 in Toronto, Ontario. The resolution was passed unanimously.

Water Infrastructure Priorities
for the Great Lakes Region

MARCH 2017

The Case for Rebuilding our Water Infrastructure

The Great Lakes Commission calls on the President, Congress and Canada to implement a large-scale initiative to rebuild and modernize the infrastructure that provides our region with safe drinking water, treats wastewater, manages stormwater, facilitates commercial navigation, and safeguards the Great Lakes and St. Lawrence River as environmental and economic assets. Sustained and strategic investments will help rebuild our cities, protect public health, support business growth, sustain agriculture and fuel the economy of our industrial heartland.

Abundant freshwater gives the Great Lakes region a unique, competitive advantage to attract new industries, promote economic development, and support growing cities and farm communities. The infrastructure to effectively manage our water resources is the platform for a strong economy and healthy communities. However, after decades of under-investment, failing water infrastructure threatens our region's future prosperity and the health of our citizens. Our national economy is at risk as well from vulnerability to disruption in the Great Lakes navigation system and its capability to deliver raw materials that are critical for our industrial base.

The Great Lakes states and provinces – Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Ontario, Pennsylvania, Quebec and Wisconsin – recognize their significant water infrastructure needs and are prepared to address them in partnership with federal governments, local communities, utilities, and the private sector. Several states and provinces have developed plans and initiatives to invest in water infrastructure, so the time is right for federal leadership.

On behalf of the Great Lakes states and provinces, the Great Lakes Commission presents these priorities for rebuilding and modernizing our region's water infrastructure. Protecting our region's unique freshwater resources and leveraging them as economic assets are longstanding, bipartisan priorities which should help shape infrastructure investment proposals of the federal governments.

Drinking Water, Wastewater and Stormwater Infrastructure

Our access to safe Great Lakes water is threatened by failing water infrastructure, lead in drinking water lines, toxic algae, sewage overflows from overburdened wastewater systems, and impacts from extreme weather events. The Great Lakes Commission calls for increased federal investment to help states and local communities improve and manage all water infrastructure—drinking water, stormwater and wastewater.

The Great Lakes Commission was established in 1955 to help its member states speak with a unified voice and collectively fulfill their vision for a healthy, vibrant Great Lakes-St. Lawrence River region.

glc.org

Drinking Water Infrastructure: Ensuring safe and reliable supplies of drinking water is fundamental to the health of our communities and the strength of our regional economy. The Great Lakes hold 90 percent of our nation's supply of fresh surface water and more than 48 million Americans and Canadians depend on the Great Lakes and St. Lawrence River for drinking water. Upgrading and maintaining aging drinking water infrastructure is a costly challenge for many communities, including addressing threats to drinking water from lead in water lines and contamination of source water from toxins in harmful algal blooms. The 2014 closure of the drinking water system for the City of Toledo, Ohio due to toxic algae in Lake Erie, and the lead contamination of drinking water for the City of Flint, Michigan dramatically illustrate the magnitude and severity of these challenges. U.S. EPA data show that at least $384 billion will be needed through 2030 to maintain, upgrade and replace our nation's drinking water infrastructure and these costs will grow if needed investments are delayed. More than $100 billion – a quarter of the overall national need – will be required in the eight Great Lakes states.

Wastewater Infrastructure: The majority of our region's wastewater systems are between 50 and 150 years old and many municipalities are unable to meet rising costs to maintain and upgrade their systems. In 2014, 22 billions of gallons of untreated sewage and stormwater were released into the Great Lakes from outdated and aging infrastructure that remains prevalent in many of the region's largest cities and many smaller municipalities. These sewage discharges endanger public health, degrade water quality and damage local economies by closing beaches and discouraging recreation in rivers and lakes. In 2013, beaches in the Great Lakes region had the highest rate of sampled waters exceeding federal action values for E. coli bacteria of any coastal region in the country. Nearly a quarter of Michigan's beaches suffered closures in 2015; a single beach closure on Lake Michigan can result in economic losses as high as $37,030 per day. Preventing these and other impacts will not be cheap: U.S. EPA data show that at least $245 billion is needed to maintain and upgrade wastewater infrastructure, of which approximately $73 billion – nearly one-third of the national total – will be needed for the eight Great Lakes states.

Stormwater Infrastructure: Current stormwater infrastructure that was designed to function under historical conditions is becoming increasingly compromised by additional stressors including rising populations, increases in impervious surfaces from urban development, and human-caused changes to river systems. More frequent severe storm events further exacerbate this problem. These compounding factors often lead to increased runoff that can overwhelm stormwater systems and cause increased flooding, sewer overflows, and nutrient runoff that causes harmful algae blooms. As a result, managing stormwater from both rural and urban sources is a growing challenge for cities and towns in the Great Lakes region. U.S. EPA data show that communities need to invest $19 billion in stormwater infrastructure, with nearly $5 billion needed in the Great Lakes region.

Failure to invest in our nation's water infrastructure is impacting our economy now and will only worsen without action. For example, the American Society of Civil Engineers projects a $500 billion loss to our national economy and the loss of nearly 500,000 jobs by 2025 from not making needed investments in our nation's water infrastructure. In contrast, water infrastructure investments will create jobs and strengthen our economy. Every $1 million spent on water infrastructure is projected to generate nearly $3 million in economic output, and every new job created in the water workforce is estimated to add almost four new jobs in the national economy. Many states and provinces have successful infrastructure financing programs, so federal support will leverage and complement state and provincial leadership.

Recommendations:

Support the Clean Water and Safe Drinking Water State Revolving Funds (SRF): These programs are invaluable financing tools that enable the states to assist communities in upgrading drinking water and wastewater systems. They have been highly successful and should be adequately funded and revised, where appropriate, to improve their efficiency and the ability to link with other financing options. These and other programs should prioritize assisting disadvantaged communities and those facing immediate risks to public health or the environment.

Fund and implement new approaches for financing water infrastructure: New approaches are needed to secure the public and private financing required to meet our nation's water infrastructure needs. With a relatively small federal investment, innovative tools such as the Water Infrastructure Finance and Innovation Act (WIFIA) program can leverage private capital to support low-cost financing for infrastructure projects. For example, the Office of Management and Budget estimates that a $50 million appropriation for WIFIA could leverage $3.35 billion in financing. Other innovative financing tools should be explored, such as infrastructure banks and public-private partnerships. Financing programs should be structured to enable communities to expedite water infrastructure projects.

Promote integrated water resource management: Federal programs and policies should facilitate and provide incentives for state and local efforts to integrate drinking water, wastewater and stormwater infrastructure to improve efficiency, reduce energy use, conserve water, lower costs and provide environmental benefits for communities.

Support the use of green infrastructure to help communities manage stormwater: Green infrastructure uses natural features, such as detention ponds, rain gardens and permeable pavement, to manage stormwater. This type of infrastructure can reduce the burden on existing "grey" infrastructure for drinking water, stormwater, and wastewater and increase the effectiveness of existing water management systems. Green infrastructure also offers ecological benefits by restoring more natural flow regimes and filtering water so that cleaner water is returned to rivers and streams. Many types of green infrastructure also have recreational or scenic values that provide benefits such as increased property values and revitalization of urban areas. Green infrastructure is being coupled with urban renewal efforts in several cities in the Great Lakes region.

Commercial Navigation Infrastructure

The Great Lakes and St. Lawrence River maritime transportation system is vital to the economies of the United States and Canada and to our country's overall national security. The system links more than 100 U.S. and Canadian ports to the world economy, moves 181 million tons of cargo annually, generates more than 225,000 jobs, and supports industries such as manufacturing, steel production, agribusiness and power generation. However, the economic viability of the Great Lakes navigation system is threatened by insufficient funding for dredging, diminishing options for disposing dredged material and aging navigation infrastructure, including critical choke points such as the Soo Locks in Michigan, which link vital deposits of iron ore in Minnesota and Michigan with industries in other states. The Department of Homeland Security (DHS) has described the Soo Locks as the "Achilles' heel of the North American industrial economy" and emphasized their vulnerability to an unplanned closure, which would have "devastating consequences for industries … and the National economy." Currently, commercial navigation accounts for about 90 percent of global trade and is predicted to double by 2030. Maximizing the economic potential of commercial navigation on the Great Lakes will require maintaining and investing in harbors, ports, shipping channels, locks and related infrastructure, including regular dredging.

The Conference of Great Lakes and St. Lawrence Governors and Premiers recently issued a comprehensive strategy that aims to double maritime trade, improve environmental performance and support the region's industrial core (Strategy for the Great Lakes-St. Lawrence River Maritime Transportation System, June 2016). It recommends actions to maintain and expand the maritime transportation system and establishes a regional committee to coordinate state and provincial efforts. Fortunately, the $9 billion surplus in dedicated funding in the industry-paid Harbor Maintenance Trust Fund can be utilized for many of these investments.

Recommendations:

Construct a new large lock at the Soo Locks in Michigan: The Soo Locks are a vital part of the Great Lakes commercial navigation infrastructure. They connect Lake Superior with the rest of the Great Lakes and the world economy. Nearly 4,000 vessels pass through the locks every year carrying approximately 80 percent of the raw materials needed for U.S. steel production, coal for power generation, and grain for overseas export, among other cargo. However, 70 percent of the U.S. flag fleet and 90 percent of their cargo – which supports more than 3 percent of total U.S. GDP – are limited to the Poe Lock, the one large lock at the complex. Our sole reliance on this single, 50-year old lock puts our regional and national economies at risk. For example, the DHS projects that a six-month, unplanned closure of the Poe Lock would result in a nearly complete shutdown of regional steel production, 11 million job losses, a severe recession, and a $1.1 trillion decrease in national GDP. Planning has been underway for three decades to build a new large lock to provide needed capacity and resiliency. A recent Treasury Department report identified a new Soo lock as one of 40 infrastructure projects of major economic significance for the nation. The study put the project's benefit-cost ratio at 2.0-4.0 – well above the level required to be included in the Administration's budget – and projected a net economic benefit of up to $1.7 billion. The Army Corps of Engineers is re-evaluating a previous, flawed benefit-cost report that has been contradicted by both the DHS and Treasury Department reports. This re- evaluation is scheduled to be completed in late 2017. Congress should provide funding to begin construction of a new large lock to safeguard our regional economy and national security.

Address system constraints and maintain waterways at their authorized depths: The Great Lakes-St. Lawrence River navigation system is significantly under-utilized, with key components operating at only about 50 percent of their full capacity. Inadequate dredging has left waterways and ports clogged with 15 million cubic yards of sediment, preventing vessels from carrying full loads. An estimated $200 million is needed to remove this dredging backlog in federal channels and harbors and an additional $250 million is needed to repair failing breakwalls and other navigation infrastructure, which often are nearly a century old. The Army Corps of Engineers and the Department of Transportation should evaluate bottlenecks and constraints in the Great Lakes navigation system to help guide future public and private investments.

Ensure appropriation of all annual revenue from the Harbor Maintenance Trust Fund (HMTF): These funds are critical for maintaining commercial navigation infrastructure, including shipping channels and dredging in the Great Lakes. However, revenue paid into the HMFT has not been fully spent and it now has a surplus of $9 billion. Water resources legislation passed by Congress in 2014 calls for 100 percent of annual HMTF revenue to be appropriated by 2025. Congress should comply with the direction in this legislation and ensure that appropriations from the HMTF are used as intended to support dredging and maintenance of navigation infrastructure in the Great Lakes and St. Lawrence River.

Infrastructure for Restoring and Managing the Great Lakes

The Great Lakes form the backbone of the culture and economy of our eight-state region. More than 1.5 million jobs and $62 billion in wages are directly connected to the Great Lakes, which are the foundation for a $52 billion recreational economy from fishing, hunting and boating. Recognizing their value, the past two presidents – with strong, bipartisan support from Congress – have made restoring the Great Lakes a national priority. The Great Lakes Restoration Initiative (GLRI) is implementing our restoration strategy with a focus on cleaning up toxic hotspots, controlling Asian carp and other invasive species, preventing polluted runoff that causes toxic algae, and restoring habitat for valuable fish and wildlife resources. Cleanup work under the GLRI is helping communities revitalize degraded or underutilized waterfront areas and develop new opportunities for recreation, business growth and other uses. For example, removing contaminated sediments from the Ashtabula River allowed the return of normal commercial navigation and recreational boating and sustained the economic viability of the Port of Ashtabula. Cleaning up the Kinnickinnic River south of downtown Milwaukee brought back boaters, revitalized existing businesses and stimulated new development. A large- scale shoreline restoration project on Muskegon

Lake in Michigan created new recreation opportunities that are projected to attract 65,000 new visitors, generate more than $1 million in new spending and contribute $600,000 in new tax revenues annually. Fully implementing the restoration strategy is projected to generate $50 billion in long-term economic benefits. Continued funding, policies and management structures are needed to sustain this progress.

Recommendation:

Advance the Great Lakes Restoration Initiative in collaboration with Congress: The GLRI has generated unprecedented progress in restoring the largest system of fresh surface water in the world. The Great Lakes Commission urges the President to request and Congress to approve $300 million for the GLRI in FY 2018. Continued funding for the Initiative will build on our investments and help the region advance long-term goals for a healthy economy, sustained by a revitalized ecosystem.

Name: Great Lakes Environmental Law Center
Date of Submission: April 14, 2017
Location: Detroit, Michigan
Comment:
To whom it may concern:
The Great Lakes Environmental Law Center, joined by Michigan Welfare Rights Organization, submits this comment on the draft Triennial Assessment Progress report.

Oday Salim, Senior Attorney
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April 14, 2017

Sent by email to ParticipateIJC@ottawa.ijc.org
International Joint Commission
234 Laurier Ave. West 22nd Floor
Ottawa, ON K1P 6K6

Re: Comments on the draft Triennial Assessment of Progress report

Dear Commissioners:

1. Introduction

The International Joint Commission (IJC) recently released for public comment a draft of its first Triennial Assessment of Progress report on Great Lakes Water Quality (TAP or Assessment). While the Assessment was fairly thorough, a few improvements and implementations would greatly enhance its effectiveness. The Great Lakes Environmental Law Center (Center), for itself and on behalf of the organizations listed below, submits the following comments and recommendations on this draft Assessment.

2. Recommendations

Environmental justice (EJ) should be at the heart of the General Objectives within the Assessment. Environmental justice has various definitions but at heart it is the notion that all people, no matter their race, religion, minority or socioeconomic status, or other characteristics, should have equal access to environmental decision-making and environmental benefits. On pages 75-77, the draft Assessment itself commits the IJC to doing more about EJ. Therefore, the recommendations made below focus on ways the IJC can accomplish its own goal.

The IJC can do this by communicating data in ways that will better address EJ through, for example, the inclusion of social and other demographic indicators; creating an interactive map that would serve as a visual aid to those interested; giving examples of effective legal actions and programs; and increasing public outreach and communication with EJ communities.

2.1 To make progress on its commitment to addressing EJ issues and better engaging with EJ communities, the IJC should incorporate certain indicators into its Assessment.

Even if it cannot be done for this iteration of the Assessment, one of the best things the IJC can do to address EJ issues substantively and to improve engagement with EJ communities is to incorporate certain indicators into its assessment reports.

There are several categories of helpful indicators such as social, health, and economic. For example, the United States National Oceanic and Atmospheric Administration's Office of Science and Technology (https://www.st.nmfs.noaa.gov/humandimensions/social- indicators/ind-categories) uses the following

indicators: social vulnerability (personal disruption, population composition, poverty, labor force, housing characteristics); gentrification pressure; sea level rise risk; fishing engagement and reliance. The United States Centers for Disease Control uses a Social Vulnerability Index (https://svi.cdc.gov). It addresses socioeconomic status, household composition, disability, housing and transportation, and minority status and language.

Indicator data are already available on and accessible through various platforms. Indicators are crucial to better understanding progress on the Objectives and addressing EJ issues because indicators help to identify correlations between progress and community. For example, are water quality improvements occurring in minority communities at similar rates to improvements in non-minority communities? Are beach closings happening more often in poor areas or wealthy areas? Policy makers can decide on which communities to place their emphasis, but they can only do that if they have a sense of which communities are seeing what levels of progress. In other words, communicating progress on Objectives through the lens of indicators better defines the problem, which will lead to more effective development of solutions.

2.2 Instead of communicating data in the form of averages, present a broader array of data points so as to communicate where improvement is needed and where it is not.

When reviewing the draft Assessment as to each General Objective the reader sees general statistics as opposed to specific areas that need improvement. For example, on page 33 the Assessment states "Public Great Lakes beaches are open and safe for swimming during 96 percent of the season in the United States and 78 percent of the season in Ontario. However, analysis of trends is made difficult because monitoring and criteria that support beach closing decisions vary across jurisdictions." It would be helpful to the reader, especially those in the areas of concern, if the IJC would provide the overall numbers of beaches that did and did not close, examples of which beaches closed most often and why. In addition to these examples, it would also be helpful to address any correlation to environmental justice and other indicators that could potentially give the reader more information.

The blanket averages do not properly convey the progress of the General Objectives, but specific examples would help raise awareness in areas of concern and give a more accurate assessment of each objective. A reader of this report in its current state would see that for the most part the beaches in the United States are open and safe. However, if the IJC instead used examples of places that made significant progress, and places that made little to no progress the reader would have a more accurate idea of where the issues are. Furthermore, if the reader is interested in improving the areas with little to no progress the reader would know where and possibly how to help. Giving the public the information within the report will incentivize people to act due to the increased convenience and accessibility of the information.

Most importantly, this is more consistent with the IJC's EJ goal. Providing averages can mask different rates of progress among different communities where that difference could be attributed to the presence of indicators referenced in § 2.1.

2.3 Create an interactive map that will allow interested readers to explore in more detail specific areas that are either struggling or succeeding with each General Objective.

An interactive map would allow readers of the Assessment to explore in more detail which geographic areas are succeeding or struggling with each of the General Objectives. For example, if someone read that the beaches of the United States were open and safe 96 percent of the season, but wanted more detail, the interactive map could show him or her which beaches closed, for how long and how often, and the cause of the closure. The map would be a visual tool to more easily identify environmental justice communities as well help with overall awareness.

There are a few examples that are more than appropriate to emulate, and one of the best examples comes from the United States Environmental Protection Agency. The EPA's tool is called the *Environmental Justice Screening and Mapping Tool* (https://ejscreen.epa.gov/mapper/). The map allows the viewer to select

a geographic region and create a report within the selected area. The report contains environmental and demographic indicators, as well as EJ indexes, and compares the selected region with the state and the entire country. This particular map was user-friendly, aesthetically pleasing, and conveyed the wanted data in a comprehensive manner.

Another excellent example is the Center for American Progress's *The Disappearing West* (https://disappearingwest.org/map/) which is a comprehensive interactive map that shows where and why natural areas are being lost to development in the American West. There are two tabs in the map: *What's disappearing* and *Why it's disappearing*. In the former tab a user can search between local, county, state, and congressional districts, and then hover over an area for a brief description of how much natural land has been within the user's selected timeframe. The latter tab allows the user to choose from a variety of causes and also provides a brief description of how each cause is detrimental to natural areas.
The IJC could create something similar to *The Disappearing West* by creating tabs for each General Objective with brief descriptions, color-code the map so the user can see at a glance which areas are doing well or doing poorly, and then hover over an area to gather more detail if interested.

The United States National Oceanic and Atmospheric Administration's *Interactive Radar Map Tool* (https://www.ncdc.noaa.gov/data-access/radar-data/radar-map-tool) allows the user to search the entire country for temperature and climate data from 1995 to the present. Users can select one or multiple areas of the country and see: average, minimum, and maximum temperatures; precipitation; and snowfall and snow depth in hour, day, month, or annual intervals.

The map has a legend in the upper-right corner for users to easily decipher the color- coded map, and also allows the user to select a "basemap" meaning the user can choose between a topographic view, ocean view, satellite view, etc. The simplicity of the color-coding and legend allow for easy updates and makes the map fairly user-friendly.

The final, and most elaborate, example is the EPA's *EnviroAtlas* (https://enviroatlas.epa.gov/enviroatlas/InteractiveMapEntrance/ InteractiveMap/index.html)
EnviroAtlas has data for 48 of the states, and requires the user to choose a specific state before proceeding to the map, but gives the option of selecting a specific county within a state. It allows the user to then layer different maps of data within a particular topic to create a specific and comprehensive visual aid. For example, in the layer "Ecosystem Services and Biodiversity" a user can choose from: (1) Clean Air, (2) Clean and Plentiful Water, (3) Natural Hazard Mitigation, etc. to create a single map with all of the user's necessary data. There are also subcategories under each category if the user wants a more specific view of a particular category. The amount of detail and layering tools within this map make it a useful tool for users who have the time to learn how to use all of the options within the map. While EnviroAtlas is a complex tool, the EPA does provide a User's Guide and a demo video that show basic functionality specifics.

2.4 Improve your process of engagement with EJ communities based on the 2012 Agreement's express commitment to addressing the link between environment and human health.

The 2012 Great Lakes Water Quality Agreement already contemplates better substantive and procedural engagement on EJ issues. The Agreement refers to the link between human health and the environment on numerous occasions. EJ is an important lens through which to view the relationship between environment and human health. EJ communities need to become a priority when addressing the progress of each General Objective, and this means that the IJC needs to expand its outreach into these communities.

The following is a list of references to the link between human health and the environment within the 2012 Agreement:

1. "Acknowledging the vital importance of the Great Lakes to the social and economic well-being of both countries, the close connection between quality of the Waters of the Great Lakes and the environment and human health, as well as the need to address the risks to human health posed by environmental degradation."

Great Lakes Water Quality Agreement 2012, U.S.-Canada, Appendix to the Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality, 1978, as Amended on October 16, 1983 and on November 18, 1987, *signed* September 7, 2012, TIAS 13-212.

2. "Prevention – anticipating and preventing pollution and other threats to the quality of the Waters of the Great Lakes to reduce overall risks to the environment and human health." *Id.* at art. 2 § 4(j).

3. "Allow for human consumption of fish and wildlife unrestricted by concerns due to harmful pollutants." *Id.* at art. 3 § 1(a)(iii).

4. "Be free from pollutants in quantities or concentrations that could be harmful to human health, wildlife, or aquatic organisms, through direct exposure or indirect exposure through the food chain." *Id.* at art. 3 § 1(a)(iv).

5. "Substance Objectives are numeric targets that may be established binationally by the Parties, except where specific to Lake Michigan, to further direct actions to manage the level of a substance or combination of substances to reduce threats to human health and the environment in the Great Lakes Basin Ecosystem." *Id.* at art. 3 § 1(b)(iii)

6. "A pollution incident is a release of any pollutant of a magnitude that causes or may cause damage to the Waters of the Great Lakes or may constitute a threat to public safety, security, health, welfare, or property." *Id.* at art. 6 § (a).

Given all that, it is clear that EJ is already within the IJC's scope. As such, EJ communities need to be properly identified for purposes of the assessment reports. The identification process will help improve public outreach and communication with these communities, as well as bring awareness to the general public about EJ issues. People within EJ communities are often the ones most prominently adversely affected when progress is not made in each General Objective, and their input is an invaluable resource for the IJC when assessing the progress of our governments. Increasing and improving communication will not only educate the people within these communities, but will also give way to decreasing the gap between the most progressive communities and those that are suffering.

There are many other resources available, but should the IJC be interested, one good starting point when considering how to better engage EJ communities is the work of the National Environmental Justice Advisory Council, an advisory committee to the United States Environmental Protection Agency, (https://www.epa.gov/environmentaljustice/national- environmental-justice-advisory-council).

2.5 Give examples of specific legal actions that effectively solved problems and achieved progress toward General Objectives.

It would be helpful to the public and various levels of government if in the assessment reports the IJC included examples of legal actions and programs that were implemented and effective at solving environmental problems and achieving objectives. Providing these examples would potentially inspire the implementation of the same, or similar, legal actions in other communities. The IJC has already hinted at these examples in certain parts of the draft Assessment, but more detail is required for the successful actions to be effective.

For example, under General Objective 7: Invasive Species the Assessment states, "The establishment of a first-ever AIS warning system and the use of environmental DNA (e-DNA) for monitoring and detection..." International Joint Commission, *First Triennial Assessment of Progress on Great Lakes Water Quality*, 49 (2017). Providing more such examples in the assessment reports would be helpful so that readers can more easily identify materials that may be helpful to their communities. Further, these items could also be incorporated into the interactive map mentioned in §2.3 with links to the programs

that correspond with each General Objective. Adding specific examples on effective legal actions will not only raise awareness, but also educate and inspire change.

3. Conclusion

The Triennial Assessment of Progress is a valuable tool for both the public and governments at all levels, but still needs a few adjustments to be more effective. The prioritization of environmental justice is one of the most important adjustments that must be made, as the IJC itself admitted on pages 75-76 of the draft Assessment. We ask that the IJC provide regular updates on the progress it makes on its EJ goal. While the next assessment report should make this a focal area, in the interim the IJC should use the communication tools at its disposal to provide updates and welcome input.

If you have any questions or wish to involve us in your implementation of the recommendations, please do not hesitate to call or email.

Submitted by,
s/Oday Salim

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Senior Attorney
oday.salim@glelc.org

Joined by the following organizations:
Sylvia Orduño
Michigan Welfare Rights Organization

Name: Great Lakes Observing System
Date of Submission: April 13, 2017
Location: Ann Arbor, Michigan
Comment:
Dear IJC Staff,

Thank you for the opportunity to provide feedback on the draft TAP report. The report is beautifully laid out and informative. Attached, please find comments on a few of the report's topics from the Great Lakes Observing System (GLOS).

Please let us know if you have any questions.
Thank you,
Marvourneen Dolor

GLOS Comments on the draft *First Triennial Assessment of Progress on Great Lakes Water Quality*

GLOS' comments are highlighted in bold font and brackets, along with the relevant draft report text for context.

Page 32 (Objective 1: Drinking Water)

US reporting characterizes the quality of drinking water after treatment. But the General Objective describes source water – that is, water quality prior to treatment. Source water quality is reported only on the Canadian/Ontario side of the border. There is no national US database for information on the quality of source

water used as a public drinking water supply. This creates a gap in assessing progress towards meeting the source water General Objective.

[**U.S. Utilities that withdrawal directly from the lakes can deploy sensors at their water intakes to monitor the quality of their source water. GLOS can manage these data for the region. Cleveland Water serves as a real-world model for other utilities in monitoring source water quality. For more details go to** http://www.glos.us/clevelandwater/]

Page 35 (Objective 2: Swimming and Recreational Use)

Ongoing work by the USEPA and the US Geological Survey (USGS) [**Great Lakes Observing System financially supports USGS in partnership with Wisconsin Sea Grant (**http://www.glos.us/community/projects/). **These relationships should be recognized.**] holds promise for predicting real-time water quality conditions and increasing the accuracy of beach closure notifications. These programs are particularly valuable given that the current lag time in availability of E.coli data can be up to 24 hours and the recognition that beach water quality can change quickly.

Page 46 (Objective 6: Nutrients)
While making commendable efforts to fulfill their commitment under the GLWQA with respect to monitoring and modeling of phosphorus and other nutrients in the Great Lakes and their tributaries and connecting rivers, the Parties could enhance modeling with the measurement of nutrients at critical locations and specific times of the year. [**This could be achieved by working with GLOS to expand the geographic focus of the HABs portal (http://habs.glos.us/map/).**]

Page 57 (Cooperative Science and Monitoring)

The CSMI has significantly improved coordination among federal science agencies and some progress has been made coordinating involvement with state/ provincial agencies. The encouraging progress made by the CSMI towards research and monitoring coordination could be built upon in other areas, including academic partner involvement. Reporting also could be improved through greater consolidation and more timeliness [**through existing binational data management infrastructure of GLOS**].

Name: Healing Our Waters-Great Lakes Coalition
Date of Submission: April 14, 2017
Location: Ann Arbor, Michigan
Comment:
Attached are our comments on the draft Triennial Review Report for the Great Lakes Water Quality Agreement.

Healing Our Waters©-Great Lakes Coalition

April 14, 2017

To the Members of the International Joint Commission
(submitted via the IJC online website):

On behalf of our 145 member organizations, the Healing Our Waters-Great Lakes Coalition is pleased to offer the following comments regarding the International Joint Commission's (IJC) draft First Triennial Assessment of Progress Report on Great Lakes water quality under the 2012 Great Lakes Water Quality Agreement (GLWQA).

At the outset, we would also like to applaud the effort to have regular Progress Reports of the Parties (PROP) as well as State of the Great Lakes (SOGL) reports preceding these Triennial reviews. As these reports are revised and updated, it will be important to clarify the intent of each report, the organization of each document and the manner by which the public should comment and engage on the content. If each PROP is to be structured around the Agreement's Annex's, how does that connect best to the priorities of each Triennial review? What ongoing role should the SOGL have in informing both documents? What are the most critical stages for the public to assess drafts and offer input? As the IJC has already acknowledged, the first PROP was issued late and did not have as robust a public input phase as should be expected in future years. These observations and others regarding meaningful public engagement will be essential if we are to sustain a process worthy of our Great Lakes.

For the purposes of these comments, we will follow the format identified in the draft report and address the ten key findings for public consultation. For each area we have listed the finding and a key question from the report (in italics) and our comments.

1. The 2012 GLWQA galvanized new energies, activity and binational cooperation over a larger span of issues than were being actively addressed under previous versions of the Agreement. The Parties are to be commended for authoring the new GLWQA and for giving it momentum. No two countries in the world equal this cooperative effort – harmonized amongst not just two countries, but eight states and two provinces. The Commission salutes the Parties for this accomplishment. Key Question - What advice should the IJC give the Parties about how binational cooperation on Great Lakes issues can be maintained and expanded?

In the GLWQA, the 'public' is defined as "individuals and organizations such as public interest groups, researchers and research institutions, and businesses and other non-governmental entities" (GLWQA, 2012). Concrete actions in the GLWQA include: holding a Great Lakes Public Forum every third year, creation of the Great Lakes Executive Committee (GLEC) including members of public agencies, preparation of a Progress Report before each Forum, and reviewing the effectiveness of the whole GLWQA every three years with consideration of all stakeholder opinions.

The activities of GLEC and the Annex Committees should invite more public involvement and scrutiny. One way to enhance that involvement is to continually strive to make the language understandable and as devoid of jargon and acronyms as possible. When working in this area, it is a natural tendency to fall into discussions that can quickly become an alphabet soup of abbreviations and scientific shorthand. Why, for example, would we expect the interested citizen to have to sift through a statement about what BUIs in AOCs that have to do with LAMPS and CMCs?

Like the indicators, we need to simplify and translate the language of the agreement and its implementation, or it will remain obscure and opaque to many, and seen as a topic only for insiders.

The ParticipateIJC online platform appears to be a good tool for public involvement. How will the IJC assess what worked and what could have been improved with this platform? Does the IJC have some type of a standing committee devoted to assessing the best methods of public engagement moving forward. If not, perhaps one should be created that could focus on the process of meaningful engagement in both the assessment and implementation of these reports. Process matters, and if the public truly feels like their views are wanted and valued, the documents that emerge from these consultations will have greater impact and weight.

Finally, we offer the attached report in case some of the suggestions in it could prove to be beneficial. Public engagement relative to Lake Erie was the focus of the study but there are several suggestions that are relevant to broader public engagement worth considering:

An Analysis of Public Participation in Addressing the Nutrient Reduction Goal for Western Lake Erie
Kate Hanson, Tom Pearce, & Elisabeth Schlaudt
University of Wisconsin, Department of Urban and Regional Planning, Water Resources Institutions and Policies Graduate Class Group Project, Fall, 2016

Lake Erie Public Engagement Report

2. The Parties have made considerable progress in implementing GLWQA, institutionalizing processes and procedures and meeting deadlines for initial Agreement commitments.
Key Question - What principles and approaches from the GLWQA could be better institutionalized in the next work cycle?

As was already mentioned above, the parties are to be commended for establishing a clear process for implementing the GLWQA and for developing procedures for input. Attention needs to be given to how those processes and procedures have been received by the various public stakeholders concerned with the Great Lakes. Is the process fully understood? As noted in the draft report, the Progress Report (PROP) is organized around the Annexes while the Triennial Assessment (TAP) is organized around the nine General Objectives. This structure seems confusing at times and causes the reader to go back and forth to "connect the dots." Also, moving forward what will be the key timelines for input for the next process, once the final report is produced later this year? Are there some revisions contemplated for the next round and how can those plans be best distributed to the public?

This transparency and the commitment to involvement will dictate how these reports are ultimately received. The defunding and dismantling of the binational forums, though not an IJC activity, has tainted public engagement efforts at present in the region. On the other hand, the process for developing the Great Lakes Regional Collaboration document in 2005, which of course led to the structure for implementing the work funded by the Great Lakes Restoration Initiative on the U.S. side of the Lakes, has to this day retained a sense of regional ownership and pride in this work.

Fully understanding the reasons for how each action was either revised or embraced, will offer great insights into the best ways for lasting acceptance of the processes and procedures associated with the GLWQA. One approach, for example, could be to offer a "response to public comments" section with the final report where the IJC could reference when particular comments or areas of comment impacted the substance of the final report.

3. *The Parties have not demonstrated sufficient progress toward the achievement of the human health objectives in their implementation of the GLWQA. Greater binational focus on the achievement of drinkability, swimmability and fishability objectives is needed.*

Key Question - What issues should the Parties address as a priority under an increased binational focus on human health?

We wholeheartedly agree with the need for much more progress toward the achievement of human health objectives in the implementation of the GLWQA. The needs are many but of few of the obvious ones include:

Drinking water threats to areas where the risk of harmful algal blooms (HABs) is high. This should include at a minimum, Western Lake Erie, Saginaw Bay and Green Bay.

Near-shore threats from surface of groundwater contamination linked to extreme weather and nutrient/bacteria loadings.

Drinking water threats from potential contamination from contaminated aquifers, especially bacteria, nutrients, nitrates and agricultural pesticides.

Fish advisories related to legacy contaminants like mercury and PCB's.

Pathogen impacts on surface water intakes and the ability of water treatment plants to remove those pathogens.

Risks to water and human health related to climate change impacts.

4. There has been little progress in the identification of Chemicals of Mutual Concern (CMCs) and no publicly available progress in the development and implementation of binational strategies to address them.
Key Question - How can the Parties improve their processes to designate CMCs and develop binational strategies for their control and/or elimination or generally increase their progress toward achieving the pollutants objective?

The lack of progress regarding the identification of Chemicals of Mutual Concern and the need for the development and implementation of binational strategies to address them is a critical issue. The Parties should evaluate the process they used to develop the initial list of Chemicals of Mutual Concern (CMCs) in this first cycle of the revised agreement, identify strengths and weaknesses, and identify potential approaches to streamline and accelerate the process of identifying future chemicals. This may include consideration of broader classes of chemicals (e.g., with similar use or source profiles), with prioritization based on clearly identified or likely threats to human health or the environment. Implementation of programs should include an emphasis on existing and new regulatory programs, as necessary, as well as innovative pollution prevention approaches. The Parties should put more resources in the development of green chemistry approaches, which can lead ultimately to less piecemeal focus on individual CMCs. In addition, the IJC Science Advisory Board could engage in efforts to identify promising approaches in these areas.

5. The Parties have shown significant progress in addressing water quality contamination at Areas of Concern.
Key Question - What should the Parties learn from progress in AOC restoration?

The parties have shown significant progress in addressing water quality contamination at Areas of Concern (AOC). It is important to note that the reasons for this pretty dramatic improvement in the work to clean up these toxic hot spots can be traced almost exclusively to new, significant funding from the United States government over the last thirteen years as a result of the creation of the Great Lakes Legacy Act and the Great Lakes Restoration Initiative (GLRI). To date, the GLRI has provided more than $2.2 billion and funded over 3,400 projects since 2010. About one-fourth of that funding has been devoted to cleaning up these legacy contaminants at several dozen sites around the Great Lakes Basin. As a result:

Three Areas of Concern – Presque Isle, Pa.; Deer Lake, Mich.; and White Lake, Mich. – have been delisted since the GLRI began.

The management actions necessary to delist four additional AOCs have also been completed. In the previous two decades before the GLRI, only one AOC in the United States had been cleaned up.

Fifty beneficial use impairments (BUIs) at 18 AOCs were addressed in Illinois, Indiana, Michigan, New York, Pennsylvania, and Wisconsin under the GLRI, more than tripling the total number of BUIs removed in the preceding 22 years. More BUIs have been removed in the last seven years since the GLRI began than between 1987 and 2009.

Over 3.5 million cubic yards of contaminated sediment has been removed.

Much credit should also be given to strong multi-jurisdictional cooperation and good science but the major reason for these successes is simple -- money. Unfortunately, the new administration in Washington seems oblivious to this fact and has proposed the elimination of all funding for this critical initiative while dozens of these toxic hot spots remain across the region. Thankfully, as of this writing, a strong bipartisan response in opposition to these cuts will hopefully enable the critical work to continue.

6. The water quality of western and central Lake Erie is unsatisfactory and unacceptable. New mandatory protections should supplement voluntary initiatives to reduce phosphorus loadings.
Key Question -- What are other steps could the Parties take to remedy degraded water quality in western and central Lake Erie?

The water quality of western and central Lake Erie is of grave concern in the region, especially after more than 400,000 people went several days without potable water in Toledo and other localities in 5 August of 2014. Since that time, many excellent documents have been produced suggesting ways to reduce phosphorus loadings -- the main culprit behind these harmful algal blooms.

The HOW Coalition has not taken any official position on specific actions that should be taken in Lake Erie to achieve the needed nutrient reductions. Our role has been to help facilitate the discussion of key nongovernmental organizations working on this issue. It is in that spirit then, that we offer a few reports for your consideration.

These reports focus on the Domestic Action Plans, analyses of current regulations regarding manure spreading, septic systems, water quality standards and effluent limits in Michigan, Ohio, Indiana and Ontario and a report that looks at monitoring and modelling approaches for phosphorus in western Lake Erie. We take no position on whether these are the right steps, but certainly they are some of the key areas of consideration as this work progresses.

Expectations for Domestic Action Plans under the Great Lakes Water Quality Agreement

Alliance for the Great Lakes, Canadian Freshwater Alliance, Environmental Defence Canada, Freshwater Future, Michigan League of Conservation Voters, National Wildlife Federation, and the Ohio Environmental Council. June, 2016.

Expectations for Domestic
Action Plan

Manure Spreading and Septic Regulations
Amanda Smith, Josh Wolf, Sean Spencer & Alex Norpel
University of Wisconsin, Department of Urban and Regional Planning, Water Resources Institutions and Policies Graduate Class Group Project, Fall, 2016

Manure & Septic
Report.pdf

Lake Erie Phosphorus Reductions: Water Quality Standards and Effluent Limits
Abby Cook, Eric Mortensen, Josh Olson, Zhixuan Wu
University of Wisconsin, Department of Urban and Regional Planning, Water Resources Institutions and Policies Graduate Class Group Project, Fall, 2016

WQS & Effluent
Report.pdf

Strategies for Monitoring and Modeling Phosphorus in Lake Erie's Western Basin: A Multi-Model Approach
Jack Cotrone, Mari Dallapiazza, Haley Briel, and Sam Wessel
University of Wisconsin, Department of Urban and Regional Planning, Water Resources Institutions and Policies Graduate Class Group Project, Fall, 2016

Lake Erie
Monitoring & Modeling

In addition, the United States needs to re-visit the Farm Bill and address incentives for phosphorus-importation for commodity crops. Confined Animal Feeding Operations (CAFO's) need to be rigorously monitored and their permits under the Clean Water Act strictly enforced. Land purchases in critical watersheds that significantly reduce polluted runoff should continue to be employed and their use expanded. In addition, incentives for pastured livestock instead of concentrated systems should be assessed and encouraged.

These are just a few of the many areas of emphasis where aggressive steps are needed if the goal of a 40percent reduction in nutrient loading is to be achieved by 2025.

7. The Parties have not sufficiently engaged with the public in their implementation of the Agreement to date. This gap is notable in the development and implementation of Lakewide Action and Management Plans (LAMP), where more effective engagement of nongovernment organizations, indigenous peoples, minorities and other constituencies could meaningfully improve LAMPs and enhance actions to improve lake conditions. Engagement with communities that rely on Great Lakes fish consumption for subsistence is of particular importance.
Key Question -- How could the Parties improve their public engagement performance?

As has been mentioned earlier, the meetings that have been conducted around this review process as well as the IJC's website communicating public engagement opportunities are both very good first steps toward improvement of public engagement activities.

The continuation of a central information hub for communication of public engagement activities that includes clear and consistent opportunities for the public and stakeholders to provide input will remain critical to success. The general public also will need to be continually educated regarding the roles and actions of the Parties and the roles and actions of the IJC relative to the GLWQA. There is no doubt that many people, if they are aware of this process at all, believe that commenting on the Triennial Assessment Report through the IJC achieves the same thing as commenting to the Parties about the Progress Report. In the same way that the IJC has sought to provide

an interactive component for the public through ParticipateIJC, the Parties should work to include an interactive component as well at binational.net for informal comments and ongoing notifications.

While the Parties are experts in many aspects of managing the Great Lakes as a shared resource, they do not possess the expertise, nor should they, of soliciting public input effectively on a consistent basis. Therefore, in order to create the structure and platforms needed for consistent engagement under the GLWQA to garner effective input from the public, a firm with specific expertise in this area should be called upon to help the Parties design and structure this work.

For example, the IJC could build on its current concept of engagement and hold ongoing discussions where, in addition to the full IJC, the IJC boards could also engage with the public and provide opportunities for interaction. GLEC and Annex Meetings could provide advance public notice including topics to be discussed and opportunities to receive input. And just as importantly, the Outreach and Education Subcommittees of the Lakewide Management Plans (LAMPs) should become fully functional in order to meet their commitment of serving as the public engagement conduit for the GLWQA. In order to do this, the OE Subcommittees will need representative voices from a wide range of stakeholders, primarily non-governmental entities, able to help garner engagement from across the basin and its constituencies. In particular, effective public engagement means providing a neutral safe space for constituencies representing diverse voices to bring their concerns and feedback to the table with the expectation of engaging in a dialogue on the subject at hand. For example, dialogue and small group discussion should be used instead of formal hearings and one-sided webinars (primarily presentations with limited time for input). There are many places to look for expertise in the field of public engagement, but one resource is the various University Extension services. These entities have excellent training resources and trained facilitators and there is already a Great Lakes Extension network. By utilizing experts to set up a sound structure for engagement through the LAMP OE Subcommittees, the Parties will provide a critical component to consistent public engagement that can be built upon in the future as needed.

8. Climate change has been altering Great Lakes water quality and levels and further forecast changes will have detrimental impacts.
Key Question - What additional actions should Great Lakes governments and communities take to better adapt to and improve resiliency in the face of climate change impacts?

As noted in the draft, perhaps the most important action taken by the Parties was publication of the *State of Climate Change Science in the Great Lakes Basin Report* in October 2015, which will support Annex 9 commitments. The report captures available science on impacts of climate change in the Great Lakes basin and inventories the climate change assessment methods applied in the region.
While the Annex is primarily focused on science cooperation, it does not address climate change impacts. There is no concerted binational effort to coordinate the identification of needs and priorities for action. The Priorities for Science and Action section at: https://binational.net/2017/03/03/psa-pasa-2017-2/ is a start, but much more research on impacts and potential adaptation approaches is needed.

9. There has been significant progress in preventing the introduction of aquatic invasive species to the Great Lakes. The spread of previously introduced invasive species is a major concern.
Further progress on AIS prevention and control could be enhanced by improving long term program funding mechanisms, reaching agreements on permitting the use of all types of control measures across jurisdictions and requiring ballast water exchange and flushing in addition to discharge treatment.
Key Question - How could the Parties better harmonize permitting, remove administrative barriers and adopt an integrated approach to AIS management?

Steps towards adopting an integrated approach have already occurred. For example, the U.S. Coast Guard, U.S. St. Lawrence Seaway Development Corporation, Transport Canada and the Canadian St. Lawrence Seaway Management Corporation cooperate as members of the Great Lakes Seaway Ballast Water Working Group (BWWG). The BWWG's mandate is to develop, enhance, and coordinate binational compliance and enforcement efforts to reduce the introduction of aquaticinvasive species via ballast water and residuals.

The U.S. harmonized its approach to stopping aquatic invasive species introduced via ballast discharges. The U.S. Coast Guard's established discharge standards in 2012 (matching the standards adopted by the International Maritime Organization) and a requirement of type-approval of ballast water management systems used to meet the regulation. The U.S. EPA also adopted a Vessel General Permit in 2013, which generally aligns with the requirements under the Coast Guard's rule. Strengthening these standards, shortening the timelines for implementation, and enhancing the mechanisms for type-approval of technology is warranted and necessary. We encourage the parties to build off this regulatory base in moving towards harmonizing aquatic invasive species control and prevention on both sides of the border. Regardless of approach, any harmonization must not weaken existing standards and requirements and should not exempt any Great Lakes commercial cargo vessel regardless of whether the point of departure originates outside the Great Lakes system
or not (I.e., Salties and Lakers).

10. The Parties have significantly improved the selection of indicators to support the assessment of progress toward the
achievement of GLWQA objectives. Reporting could be further enhanced with improved binational coordination and focus on key vital signs.
Key Question - What additional improvements could be made in Great Lakes reporting?

A consistent theme across the various analyses of the Annex targets is the issue of data. Although there are gaps at the basin-scale, a cursory search of the literature reveals a plethora of state-, academic-, and NGO-driven initiatives and databases related to virtually all Annex areas in the agreement. There is no shortage of conferences, forums, and workshops addressing these issue areas but what is presently missing is an event that brings together both data suppliers and users from across the Basin states and provinces with the explicit goal of sharing the data results and plans of each state's and province's range of programs. The objectives of such a "Data Summit" would be to increase the cohesiveness of messaging and to reduce "reinventions of the wheel" by providing a centralized opportunity for collaboration. A key aspect of such a gathering would be the diversity of attendees - representing the true makeup of the stakeholder population by including representatives from relevant academic fields, agricultural producers, state and provincial environmental and agricultural departments, local units of government, tribal governments and First Nations, environmental, conservation and community activists, business representatives, and other interest groups.

Consider a more regular report on conditions than once every three years – perhaps a yearly national press conference with scientists and public officials and people from affected communities.

Armed with this data, we need to understand and communicate that behind every "vital sign" are a lot of other indicators and assessments that help make the big conclusion. E.g. a human vital sign like blood pressure could indicate heart issues, weight issues, lack of food, complications from medications, etc. We need the story behind the indicators in order for responsive action to take place.

The story of these vital signs could be told in a variety of formats. A site dedicated to more publicly available information and links to the studies behind the conclusions would be useful. Perhaps establishing a Great Lakes Vital Signs website with frequent updates and a Q&A function would further enhance the information flow.

Summary

The Healing Our Waters-Great Lakes Coalition consists of more than 145 environmental, conservation, outdoor recreation organizations, zoos, aquariums and museums representing millions of people, whose common goal is to restore and protect the Great Lakes. We truly appreciate the opportunity to provide our thoughts regarding the draft First Triennial Assessment of Progress Report on Great Lakes water quality under the 2012 Great Lakes Water Quality Agreement. We look forward to the continued conversation regarding this critical work as we collectively engage in the effort to protect and restore the most significant surface freshwater on Earth – our Great Lakes.

Sincerely,




Lynne McClure	Mike Shriberg	Mike Carlson	Joy Mulinex
Co-chair	Co-chair	Co-chair	Co-chair

Name: The Inverhuron Committee
Date of Submission: November 10, 2016
Location: Ontario
Comment: Document attached (copy of presentation at Great Lakes Public Forum IJC public session)

Good afternoon, ladies and gentlemen of the International Joint Commission, audience and participants.

I represent a group called The Inverhuron Committee. We are citizens who live within 5 kilometers of the Bruce Nuclear site which is the proposed location for a nuclear waste repository.

Before speaking directly to our concerns about this project, I would like to tell you a little bit about who we are and, also, how we came to be opposed to the proposed project by Ontario Power Generation to build a nuclear repository on the shores of Lake Huron to permanently bury low-level and intermediate-level nuclear waste from all of Ontario's nuclear power plants. We are citizens of the previously named Hamlet of Inverhuron which has now been incorporated into the Municipality of Kincardine.

We have both seasonal and permanent residents who live along the shoreline of Inverhuron Bay. Our residents trace their heritage back four, five and six generations to this location. In early days, they drew their water directly from the lake via sandpoints along the shore. More recently, they have relied on wells cut deep into the aquifers that run inland from the lake. Therefore, water quality has been integral to life along the shoreline for more than a century.

For that reason, our community incorporated The Inverhuron Committee as we have a large stake in ensuring that no radioactive contaminants would leak into the lake as a result of this project.

However, it wasn't long into our research that we widened our scope beyond the local shoreline because this potential repository would affect more than 40 million people along the shores of the Great Lakes should a human error, malfunction, severe weather event or act of terrorism occur. There would be contamination of their drinking water of a disastrous magnitude.

Our concern about leakage was re-enforced during the Joint Review Panel Hearings in 2014- 2015 when Ontario Power Generation indicated that, when leakage occurred, radionuclides would be sufficiently dissolved in the waters of the Great Lakes. There is no dilution sufficiency when we look at the importance of our freshwater. As the caretakers of this precious resource, we cannot take a chance with our water.

We soon learned that this would be the first repository to be built in limestone (a karst susceptible geology) and that the only two functioning repositories of this type had, indeed, leaked into the ground water in Europe and they had been closed down. In 2014, another repository leaked in Carlsbad, New Mexico and it has been closed – unable to be entered – since that time.

Our journey quickly led us to discover why the site at the Bruce Nuclear plant had been chosen. We questioned what other sites would be technically and geologically feasible. Surprisingly, the Kincardine site was chosen because the Municipal Council had agreed to host the repository in return for compensation of 35

million dollars. A Hosting Agreement was signed in 2004 and, initially, a Referendum was planned but a telephone survey was substituted in the winter of 2005.
The survey question was introduced in a preamble by indicating that the Council supported this project and the telephone question posed was nebulous in content. Responders were simply asked if they agreed that there should be a permanent solution for the Western Waste Management Facility. There was no mention of nuclear waste or location.

Due to the time frame of this survey, the seasonal residents and the snowbird community were absent, biasing the results to a population which is dependent on the nuclear industry. Even at that, only 60 percent agreed and 13 percent refused to answer. The lnverhuron Committee was astonished to discover both the timing and the content of the survey. The politicians in Kincardine explained that survey forms were mailed to absent citizens but we have only found two households, out of 400, who remember receiving or, actually, received a letter.

Our group believes that a small rural community of 12,000 people should not have the power to decide how and where Canada should dispose of toxic nuclear waste. Our Liberal Federal Government has indicated that science will form the foundation of environmental decisions for Canada and certainly, the process undertaken to find a host for the disposal of low and intermediate -level nuclear waste is at the opposite end of the scale from being science-based.

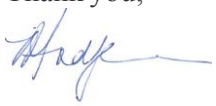
Our Federal Government needs to establish clear guidelines for the disposal of nuclear waste as well as establishing a revised Environmental Assessment Process (Panel is now in place) which includes social license and economic feasibility. We also need to rely on a truly independent overseer to review projects of this magnitude. The Canadian Nuclear Safety Commission was an obvious stakeholder during the Joint Review Panel Hearings on the repository project. They defended processes and conclusions of Ontario Power Generation and openly attacked dissenters, questioned motives of intervenors and qualifications of scientists who asked questions. Policies and guidelines need to be the first order of business and independent oversight needs to accompany this process.

The Honourable Catherine McKenna has directed that the proponent study alternate technically and economically feasible sites for this project. Unfortunately, Ontario Power Generation has refused to carry out this specific request by indicating that they will look at two unnamed sites, one in southern Ontario and one in Northern Ontario. It would appear that the Great Lakes Basin will still be involved in such a study. We cannot allow the permanent storage of nuclear waste in the Great Lakes or in its watershed.

On a final note, The lnverhuron Committee questions the financial wisdom of building a repository for low and intermediate-level waste (more than 80% of which is short-lived low-level waste) when this is not international practice. We want to be able to have this waste monitored above-ground until it is free of radioactivity.

We seek intervention from the International Joint Commission and from our Federal Minister of the Environment and Climate Change to ensure the safety of our water from toxic radionuclides and chemical elements that will change the condition of our environment forever.

Thank you,



Marti McFadzean , Chair
The lnverhuron Committee

Name: Michigan League of Conservation Voters
Date of Submission: April 12, 2017
Location: Grand Rapids, Michigan
Comment:

Lana Pollack, U.S. Section Chair
International Joint Commission 1717 H Street
NW, Suite 801
Washington, DC 20006

Gordon Walker, Canadian Section Chair International Joint
Commission
234 Laurier Avenue West 22nd Floor
Ottawa, ON K1P 6K6

RE: Comments on Draft Triennial Assessment of Progress On Great Lakes Water Quality

Dear Chair Pollack and Chair Walker:

Thank you for the opportunity to comment on the IJC's draft Triennial Assessment of Progress report. Given that the report is the first such assessment conducted by IJC in accord with the 2012 Great Lakes Water Quality Agreement and therefore sets a precedent, we wish to commend the Commission for the thoroughness, independence and balance in the document. In general, it addresses the right issues, asks the right questions, and makes the right findings.

Changes in federal government regimes in both the U.S. and Canada in the last two years position the IJC as the institutional continuity in assuring the two nations' commitment to restoring and protecting the Great Lakes. We urge the Commission to continue to monitor that commitment and to speak forcefully when it appears to be breached. Certainly, drastic proposed cuts in funding of the U.S. Great Lakes Restoration Initiative do not bode well.

Our detailed comments follow.

IJC's Overall Assessment

We agree that the governments have not demonstrated sufficient progress toward the achievement of the human health objectives in their implementation of the GLWQA.

We strongly agree there has been little progress in the identification of Chemicals of Mutual Concern and we believe progress has been inadequate in the development and implementation of binational strategies to address them.

We strongly agree that the water quality of western and central Lake Erie is unsatisfactory and unacceptable. As the report suggests, the general reliance on voluntary initiatives to reduce phosphorus loadings agricultural sources of phosphorus has not done the job.

We agree climate change has been detrimentally altering Great Lakes water quality and levels, and we believe this requires Basinwide action.

We believe further simplification of the government's' reporting is needed, preferably a report card or dashboard that conveys the state of the lakes.

Reaction to Consultation Questions

Finding regarding lack of demonstrated progress toward achievement of the human

health objectives and the need for greater binational focus.

We strongly agree on the priority of assuring Great Lakes waters are drinkable, swimmable and fishable as the Agreement pledges. The lack of an Agreement annex dedicated to human health is a major oversight. The Parties should either add a Health Annex to the Agreement or establish a Human Health Objectives Committee, including general public membership, to increase the focus on health. Either approach should specify tasks the governments will take to assess and reduce human health impacts resulting from pollution of the waters of the Great Lakes.

Finding regarding the lack of progress on Chemicals of Mutual Concern (CMCs).

The Agreement's methodology for CMCs is simply impractical. With 80,000 chemicals in commerce and hundreds detected in the Great Lakes it makes no sense to creep along a few chemicals at a time. The governments should carry out the Agreement mandate for virtual elimination on a general basis by implementing programs and measures to eliminate all chemicals detected in the Great Lakes known to have or suspected of having toxic effects. This requires vigorous public policies to prevent pollution at the source.

Further, the two federal governments, states and provinces should enact Extended Producer Responsibility laws to put the onus on industry to pursue safe alternatives to toxic chemicals in the manufacture of products.

Finding regarding unsatisfactory progress on Lake Erie nutrients.
If anything, the language of the assessment should be stronger. Lake Erie's condition is simply unacceptable. Nutrient pollution and resultant algal blooms endanger human health and could devastate Lake-dependent economic activity. We urge the Commission explicitly to recommend state and provincial regulation of phosphorus application and runoff from agricultural lands. Such measures should include a strict ban in all Great Lakes provincial and state jurisdictions of the application of fertilizers and animal waste on frozen, snow-covered or saturated lands and in the Lake Erie watershed a moratorium on the siting of additional concentrated animal feeding operations.

Recommendation by the Great Lakes Water Quality Board that the Parties, working cooperatively with others, demonstrate global leadership in the development of a binational approach to climate change adaptation and resilience for the Great Lakes and also that a vulnerability assessment should be conducted.
The Water Quality Board's recommendation is long overdue. Climate change is a fact. While the Canadian and U.S. governments should pursue and implement international agreements that reduce emissions contributing to climate change, they should also assist communities and state and provincial governments through negotiation of a binational climate change adaptation plan for the Great Lakes. Climate change threatens to overwhelm the fiscal and engineering expertise of many Great Lakes communities. An adaptation plan should specify fiscal as well as technical assistance that the Canadian and U.S. governments will provide to communities.

How should the Parties seek to incorporate the concepts of fair treatment and meaningful involvement of all populations, including First Nations, Tribes, Métis and minorities, in their public engagement activities?

The U.S. and Canadian governments should adopt an environmental justice policy applying to the Agreement as a whole. Such a policy should go beyond providing procedural equity through fair treatment and meaningful involvement of all. It should be an explicit goal of the policy to ultimately eliminate disproportionate impacts of pollution of the waters of the Great Lakes on low-income and minority populations and subsistence consumers of Great Lakes fish and wildlife.

<u>Additional Issues Not Addressed in Report</u>

In the final version of the Assessment, we suggest the following issues be addressed:

The fate of radioactive waste stored on the shores of the Great Lakes and the upcoming decommissioning of nuclear generating plants. No level of government is considering this challenge as a whole. A steering committee or task force, with full engagement of the public, is needed to develop a plan to protect the Lakes from these threats.

The urgent need to decommission the Enbridge Line 5 pipeline crossing of the Straits of Mackinac and to assess the risks to the waters of the Great Lakes from all potentially hazardous material pipeline crossings. Line 5 in particular presents a significant risk of a catastrophic spill causing immense damage to the Great Lakes ecosystem.

Thank you for the opportunity to comment.

Sincerely,

Charlotte Jameson
Government Affairs Director
Michigan League of Conservation Voters

Bill Wood
Executive Director
West Michigan Environmental Action Council

Terry Miller
Chair
Lone Tree Council

Name: Northeast-Midwest Institute
Date of Submission: April 14, 2017
Location: Washington, DC
Comment:
Dear Commissioners and Staff,

Please find attached the Northeast-Midwest Institute's comments on the IJC's TAP report and the 2016 PROP. Please let me know if you have any questions.

Best regards,
Ankita

Ankita Mandelia |Policy Analyst| Northeast-Midwest Institute
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April 14, 2017

International Joint Commission Great Lakes Regional Office 100 Ouellette Avenue, 8th Floor
Windsor, ON, Canada

Northeast-Midwest Institute Comments on the International Joint Commission's *Triennial Assessment of Progress on Great Lakes Water Quality* and the Governments' of the United States and Canada *2016 Progress Report of the Parties*

Dear Commissioners,

The Northeast-Midwest Institute (NEMWI) has reviewed the Triennial Assessment of Progress on Great Lakes Water Quality and the 2016 Progress Report of the Parties, and offers comments on two subjects of the documents (Nutrients and Areas of Concern), found below.

Nutrients

As noted by the IJC in the Triennial Assessment of Progress (TAP) report's technical appendix, there is a lack of specificity by the Parties in their commitment to "undertake and share research, monitoring and modeling necessary to establish, report on and assess the management of phosphorus and other nutrients and improve the understanding of relevant issues associated with nutrients and excessive algal blooms." (ECCC and USEPA, 2016) It is important that the Parties establish specific monitoring goals to help meet specific nutrient reduction goals.

Achievement of phosphorus reduction goals in Lake Erie, especially dissolved reactive phosphorus reduction goals, would benefit from monitoring that meets the following general criteria:
Targets a variety of watershed scales and loading sources; and
Occurs at significant frequencies over a period of time such that an adequate number of samples are obtained to detect trends in nutrient concentrations.

In the 2016 Progress Report of the Parties (PROP), it is stated that in the U.S., there is work being done to expand edge-of-field monitoring. The Northeast-Midwest Institute (NEMWI) looks forward to seeing the results of these efforts, especially combined with existing watershed-level monitoring efforts already being conducted.

As mentioned in the main body of the TAP Report on page 45, the PROP "provides little discussion of declining nutrient levels in the open waters of most of the lakes and no plans are provided to address the issue." (IJC, 2017) Increasing monitoring to target this issue could help better understand what is causing the nutrient decline.

Areas of Concern

It is important to balance rapid removal of BUIs/delisting of AOCs and ensuring that remedial actions taken at these sites are permanent and robust. Post-delisting monitoring of site conditions should occur at a frequency and for a period of time that is adequate to ensure that recurrence of beneficial use impairments will not occur. Long-term post-delisting monitoring should be designed to ensure that former AOC sites are not degrading.

Annex 1 would benefit from the existence of a Great Lakes Executive Committee Annex Subcommittee. The wider sharing of information, especially between both Parties, may help to develop more effective remediation plans that consider more closely the biogeochemical cycling of the chemical pollutants, which may be more beneficial to the wide variety of physical and chemical conditions present at each AOC site.

A system should be set up to assist the five binational AOCs to better coordinate their actions to more closely follow an ecosystem approach to removing BUIs.

NEMWI strongly supports feedback given to AOCs on their delisting reports as stated on pages 150-151 of the TAP Technical Appendix.

Please feel free to contact us with any questions you may have.

Sincerely,
The Northeast-Midwest Institute

Name: Nuclear Energy Information Service of Chicago
Date of Submission: April 15, 2017
Location: Illinois
Comment:
Because The Great Lakes basin has been used as a site for more than 30 nuclear installations, including 16 functioning and decommissioned power plants, and because extensive useage of this public waterway has been detrimental to the purity of the water, especially to people who drink and bathe in Great Lakes water. I strongly recommend that radioactive isotopes be included in the list of Chemicals of Concern. It's important to monitor pollutants that affect the lakes — particularly dangerous isotopes of plutonium, cesium, strontium, iodine and all transuranic isotopes. The research is not complete on the effect of radioisotopes and their extent in the water we drink. Therefore, the International Joint Commission can perform an essential service by documenting and researching ways to control dangerous radioisotopes in the Great Lakes.

Name: Ontario Clean Air Alliance
Date of Submission: April 13, 2017
Location: Toronto, Ontario
Comment:
Dear International Joint Commission (IJC),

I am asking for a scientifically-based report on high-level nuclear waste and other radioactive nuclides in the in the Great Lakes basin. Also, include radionuclides and nuclear waste / nuclear commerce in all forms as Chemicals of Mutual Concern.

There is now underway a deluge of radioactive waste assaults ongoing in the Great Lakes and beyond. Bruce DGR 1 & 2;10,000 tonnes of UniTech Import – Export; Michigan radioactive waste landfills taking Military Legacy Waste;Dry Cask Storage at several nuclear reactors; Improper and underfunded Decommissioning; Liquid HRLM from Chalk River to Savannah River Site; Chalk River In-Situ Dump on Ottawa River (5X DGR volume); and others.

The Great Lakes are in nuclear peril. In 1997 the IJC directed a Task Force to Inventory Radionuclides report. Certainly we need to revisit / update that report.

Our overall concern is with the problem of routine radioactive nuclear releases from the 30 nuclear power plants along the shores of the Great Lakes. The IJC must consider radionuclides to be a Chemical of Mutual Concern enabling you to test and measure the impact of nuclear reactors and waste on the Great Lakes Basin. Tritium levels are three times higher in Lake Ontario than in Lake Superior. Surely this must be of grave concern. http://www.greenpeace.org/canada/en/campaigns/Energy/end-the-nuclear-threat/Resources/Reports/tritium-hazard-report-pollu/

Thank you.
Angela

Name: Ohio Environmental Council
Date of Submission: April 12, 2017
Location: Columbus, Ohio
Comment:
Please see the uploaded document for our comments on the Draft IJC Triennial Report.

Ohio Environmental Council Comments on the Draft IJC Triennial Review of the GLWQA Implementation by Parties.
The GLWQA requires the IJC's Triennial Report to include "an assessment of the extent to which programs and other measures are achieving the general and specific objectives of the Agreement."

Main finding for Lake Erie:
The water quality of western and central Lake Erie is unsatisfactory and unacceptable. New mandatory protections should supplement voluntary initiatives to reduce phosphorus loadings.

OEC Talking Points for Meeting:
We generally support most of the conclusions and assessments in the Draft Triennial Review,
We especially support the finding that **voluntary incentives are insufficient to reduce agricultural pollution** entering western Lake Erie.
We also strongly agree the Parties have not sufficiently included the public in the implementation of the GLWQA as a whole, and specifically for Annex 2 (Lakewide Management).
Our key recommendations focus on drinking water, recreation and nutrients:

GENERAL OBJECTIVE 1 - Though governments have generally provided safe drinking water, with notable exceptions, the infrastructure need is dire and the IJC report could better reflect the danger from outdated water systems.

GENERAL OBJECTIVE 2 - The conclusion that beaches are open and safe may benefit from reevaluation using different criteria, specifically the number of beach advisories that states issue, the criteria for issuing such advisories to ensure they adequately protect public health, and incorporating the number of beaches in shoreline areas where the state has recreational use impairments under the Clean Water Act.

GENERAL OBJECTIVE 6 - Domestic action plans are unlikely to be sufficient **without specific and mandatory provisions, any plan will likely fall short of achieving General Objective 6.** We **recommend the IJC develop specific policy proposals that local jurisdictions could use to achieve nutrient reductions**, **which could include specific recommendations from its 2014 Lake Erie Ecosystems Priorities report.**
The OEC also offers four main policies that could greatly help reduce agricultural pollution:
Require Plans that Prevent Pollution
Stop Excess Application of Manure & Fertilizer
Improve Compliance and Enforcement
Establish Numeric Nutrient Pollution Limits

Comments from previous IJC Great Lakes Public Forums:

A lack of specifics in the governments' progress report on timeframes, locations for actions, and implementation funding for nutrient management. Recommendations included focusing solutions in proportion to identified nutrient pollution sources, using innovative solutions, and using existing regulations to spur action.
Water quality monitoring in the Great Lakes was found to be data rich but information poor, with major gaps in coordination between local/state monitoring and that completed at the regional, federal and binational scale.

GENERAL OBJECTIVE 1 : *The Waters of the Great Lakes should be a source of safe, high quality drinking water.*
IJC Conclusion: Federal, state, provincial and local governments have done an outstanding job, providing safe drinking water almost all of the time everywhere in the basin. However, infrastructure investments will continue to place considerable demands on public budgets, and planning for future needs is essential.

OEC Comment: The infrastructure need is dire and the IJC report could better reflect the danger from outdated water systems.

From the Columbus Dispatch: It would cost upward of **$26.7 billion over the next 20 years** to bring Ohio's wastewater and drinking water infrastructure into compliance and meet local needs, according to recent **U.S. EPA surveys**.

GENERAL OBJECTIVE 2: *The Waters of the Great Lakes should allow for swimming and other recreational use, unrestricted by environmental quality concerns.*
IJC Conclusion: Beaches are open and safe for recreational use the majority of the time in both countries. However, Great Lakes governments at all levels must strive to further improve safety.

OEC Comments: IJC rightly observes the GLWQA lacks a specific Annex focusing on this objective, which may be an impediment since attaining this goal is currently spread among different Annexes. The IJC Draft Report also notes an inconsistency exists among different jurisdictions regarding beach closings due to variations in beach monitoring and criteria for closures making a trend analysis difficult. Therefore**, beach closings are not as useful an indicator for assessing the success of meeting this goal, and in fact the State of the Great Lake indicator for this goal is beach advisories.** However, due to variability and criteria for issuing breach advisories, in the U.S. the additional criteria of recreational impairment under the Clean Water Act should supplement beach advisories as an indicator for this goal. As such, the final IJC Triennial Review report should includes the number of beaches where the shoreline is on each state's list of impaired waters for recreational uses. It should also emphasize the number of advisories issued for each Great Lake, the cause and if advisory criteria sufficiently protects people from environmental hazards during recreational exposure. For example, the Ohio EPA does not issue beach

closings, rather it relies only on placing advisories to protect public health. In fact, the Ohio EPA only issues the most protective "no contact" advisory when microcystin reaches 20 ppb and the local health department confirms someone became ill due to exposure. We do not believe this adequately protects public health, therefore the conclusion in the Draft Report that beaches are safe may need reevaluation.

GENERAL OBJECTIVE 3: *The Waters of the Great Lakes should allow for human consumption of fish and wildlife unrestricted by concerns due to harmful pollutants.*
IJC Conclusion: Great Lakes fish are safe to eat provided that consumers follow guidelines in state and provincial advisories. However, concern persists about the human health impact of contaminants in fish consumed by subsistence anglers and women of childbearing age. Some contaminants remain at levels of concern and improvements in data collection and reporting would help in discerning trends and communicating risks.

OEC Comment: We generally agree with the assessment and conclusion in this section of the IJC Draft Report, and would urge discussion on the possible threats posed by algal toxins, not only in regards to fish consumption, but also in the recreational exposure of microcystin when fishing in waters with harmful algal blooms. The latter may be a more appropriate consideration for General Objective 2.

GENERAL OBJECTIVE 4: *The Waters of the Great Lakes should be free from pollutants in quantities or concentrations that could be harmful to human health, wildlife, or aquatic organisms, through direct exposure or indirect exposure through the food chain.*
IJC Conclusion: Expediting the process of selecting CMCs and developing binational strategies for their control are among the most important improvements needed to meet GLWQA objectives. Progress in reducing levels of legacy chemicals is encouraging but emerging contaminants are of concern.

OEC Comment: We generally agree with the assessment and conclusion in the IJC Draft Report, and recommend adding toxins from harmful algal blooms as a CMC.

GENERAL OBJECTIVE 6: *The Waters of the Great Lakes should be free from nutrients that directly or indirectly enter the water as a result of human activity, in amounts that promote growth of algae and cyanobacteria that interfere with aquatic ecosystem health, or human use of the ecosystem.*
IJC Conclusion: Excess phosphorus loadings to the western Lake Erie basin remain a critical problem. The Parties are meeting GLWQA deadlines for targets and domestic action plans, but a greater sense of urgency and inclusion of regulatory protections in domestic action plans are needed.

OEC Comment: We strongly agree with the IJC's assessment that voluntary measures are insufficient to meet nutrient reduction goals, and that domestic action plans are unlikely to be sufficient. As evidence, one only need look at Ohio's Collaborative Implementation Framework that outlines actions the state proposes for the US domestic action plan. The Framework relies on existing and new voluntary programs to reduce agricultural pollution, while asserting certification for fertilizer application and some restrictions on the timing of nutrient applications will be sufficient to achieve a 40 percent phosphorus reduction goal. The Framework lacks any supporting analysis demonstrating or quantifying how each component will reduce phosphorus loadings. At a minimum the domestic action plans must address these gaps to demonstrate its potential for success. However, **without specific and mandatory provisions, any plan will likely fall short of achieving General Objective 6.** The OEC also agrees with the IJC's assessment that concentrated animal feeding operations (CAFOs) are a major contributor of nutrient inputs into western Lake Erie. Certainly more research is necessary to support this finding, but models show 23 percent of phosphorus entering the Maumee River comes from manure. We believe the percent could be even higher given the lack of information available to modelers because Ohio does not have an inventory of all the state's CAFOs; it only has information for facilities the state requires obtain a permit, which totals 56 in Ohio's western Lake Erie basin watershed. The Ohio Dept. of Agriculture estimates the state has between 4000-5000 CAFOs, but does not have a system to track the precise number, stocking levels, or even location.

This lack of crucial information would greatly inform modeling and monitoring efforts. Given these shortcomings by the Parties and Ohio **we recommend the IJC develop specific policy proposals that local jurisdictions** could use to achieve nutrient reductions, **which could include specific recommendations from its 2014 Lake Erie Ecosystems Priorities report.** As an appendix to these comments, the OEC recommends four main policies that would greatly reduce agricultural pollution, which we summarize as follows:

Require Plans that Prevent Pollution
Certainly, no farmer intends to pollute our rivers and lakes, and in fact, many work to curb toxic algae. To ensure these efforts are successful, we need more farmers to be part of the solution by developing and following plans that include specific practices tailored to their farms and operations. This levels the playing field and prevents undermining the good work many farmers are already doing to stop pollution.

Stop Excess Application of Manure & Fertilizer
We need reasonable limits on the amount of fertilizer and manure so farmers avoid excess applications above what is necessary for optimal crop growth. Capping application rates will ensure good crop production while reducing pollution risks.

Improve Compliance and Enforcement
Laws are only as good as they can be enforced, and are there for those who need them. Ohio needs to strengthen its ability to hold violators accountable and institute a system of verification and compliance that ensures plans and rules are being appropriately followed.

Establish Numeric Nutrient Pollution Limits
Ohio needs measurable limits on the amount of phosphorus, nitrogen and soil sediments allowed into our rivers and streams in order to effectively protect our water from toxic algae. The resolutions urge Ohio EPA to develop numeric water quality criteria specific to toxic algae.

Name: Ohio Farm Bureau Federation
Date of Submission: April 14, 2017
Location: Columbus, Ohio
Comment:
Attached comments on behalf of the Ohio Agricultural Community pertain to the Assessment of Progress Toward General Objective Number 6 – Nutrients section of the draft Assessment of Progress document.
April 14, 2017
International Joint Commission

Re: Comments on the IJC's draft Triennial Assessment of Progress (TAP) report under the 2012 Great Lakes Water Quality Agreement

Commissioners;

The Ohio Agricultural Community would like to thank you for the opportunity to provide comments on the International Joint Commission's (IJC) draft Triennial Assessment of Progress (TAP) report (dated January 2017) under the 2012 Great Lakes Water Quality Agreement. Our comments will pertain to the Assessment of Progress Toward General Objective Number 6 – Nutrients Beginning on page 44 of the draft document.

In several instances, the draft document references, in the opinion of the authors, voluntary

programs to address nutrient loading to the western Lake Erie basin will not be sufficient to achieve the target 40 percent phosphorus load reduction set by the Parties in 2016.

Our review of the 2016 Nutrients Annex Progress Report of the Parties report found no supporting discussion of falling short of the target loading goals developed under the 2012 Great Lakes Water Quality Agreement. In fact, the report details the actions being taken to control nutrients and meet the reduction targets. The Great Lakes Water Quality Board, whose first duty is to advise the IJC on their progress report, recommended several actions regarding approaches to nutrient management, in an August 2016 report. None of the recommendations contained in the Water Quality Board report call for regulatory (non-voluntary) actions, but cite the need for a consistent watershed-wide, adaptive management approach. For these reasons, we disagree with the position taken by the IJC in the draft TAP report and offer the following additional information regarding voluntary actions that are currently moving the needle toward achieving the nutrient reduction targets.

PRIVATELY FUNDED EFFORTS BY THE OHIO AGRICULTURAL COMMUNITY TO ADDRESS THE WATER QUALITY AND NUTRIENT MANAGEMENT CHALLENGES

For decades, farmers, their organizations, and local, state and federal agencies have collaborated to find workable solutions to environmental challenges. In recent years as threats to Ohio's waters have elevated, the farm community is unmatched in its investment in identifying the causes of those threats and creating solutions. These actions have been driven by the belief that water and food production are equally valuable resources for all Ohioans.

Examples of some of these actions are:
Under Ohio Farm Bureau's Water Quality Action Plan, four priorities have been initiated:
On the ground research;
Education and outreach efforts;
Establishing new management practices; and
Seeking financial resources to address all water issues.

Specific items include:
The creation of the Blanchard River Demonstration Farms Network in collaboration with USDA NRCS. The demonstration farms network is a five-year $1 million project to demonstrate on-farm conservation practices to help improve water and nutrient conservation. The establishment of the demonstration farm network provides a ready-made opportunity to fill the education and outreach needs contained in the draft document;
Funding for Ohio State University Extension specialists to work with farmers in the Western Lake Erie Basin to develop Nutrient Management Plans;

Funding edge-of-field research to help identify practical and cost-effective nutrient management solutions;
Promoting 4-R nutrient stewardship practices;
Supporting new, workable nutrient management laws (SB 1 and SB 150); and
Developing and distributing information and tools to help farmers comply with the new nutrient management laws.

Ohio Farm Bureau invested (2015 – 2017) nearly $500,000 in Water Quality Grants for county Farm Bureau projects aimed at improving water quality in their communities. With additional matching funds from dozens of partners, these projects have generated more than $1 million in total resources. Examples include:
Ohio Nutrient Management Record Keeper (ONMRK) app for smart phones and tablets

Supported the purchase of equipment for farms to plant cover crops
Manure Science Review, an annual event displaying the latest technology to manage manure.
Multiple education and outreach programs for farmers and the general public
Heavy use pad for equine and small livestock farm owners
Pesticide and fertilizer applicator training to support implementation of SB 150.

Through this activity alone, significant education and outreach is taking place directed at both farmers and the general public in Ohio.

Ohio Farm Bureau's leadership to create the Healthy Water Ohio (HwO) coalition has enabled environmental organizations, university leaders, businesses, water providers, farmers and other water stakeholders to work together in an unprecedented way. One of HwO's more significant accomplishments is its work on identifying funding options to address the water challenges on farms and in municipalities. The Healthy Water Ohio Strategy Report (August 2014) and its recommendations including a funding source for Ohio water efforts, the Ohio Water Trust, is located at www.healthywaterohio.org.

The Ohio Corn Marketing Program, Ohio Small Grains Marketing Program, Ohio Soybean Council and Ohio Farm Bureau have invested substantial financial resources in research and education that will lead to finding the balance between food production and water quality. Areas of investment include:
Support for edge-of-field monitoring research led by The Ohio State University, in cooperation with the USDA-ARS, to measure nutrients that are leaving the fields in an effort to identify best management practices for mitigating runoff; Support for revising and updating the Tri-State Fertilizer Recommendations.
This Ohio State University tool is meant to serve as an unbiased guideline to farmers on fertilizer application that both minimizes the risk of runoff while also ensuring optimal soil and plant health; and Funding four additional full-time staff to help farmers develop and implement Nutrient Management Plans.

Under the leadership of the Ohio AgriBusiness Association, the agriculture community in Ohio launched the 4R Nutrient Stewardship Certification Program, a concentrated effort to significantly reduce applied nutrients from running off fields and into the water resources in the Western Lake Erie Basin. The independent certification program encourages agricultural retailers, service providers and other certified professionals to adopt proven 4R Nutrient Stewardship best practices, which refers to applying the Right Source of Nutrients, at the Right Rate, at the Right Time and in the Right Place. This approach provides a science-based framework for plant nutrition management and sustained crop production, while considering specific individual farms' needs.

The 4R Nutrient Stewardship Certification Program is a voluntary program providing a consistent, recognized standard for nutrient service providers in the Western Lake Erie Basin that apply or make nutrient recommendations in accordance with the principles of 4R Nutrient Stewardship. The 4R Nutrient Stewardship Certification Program outlines 45 specific criteria to be implemented over a three-year period. Nutrient service providers are evaluated annually by a private, third party auditor.

Approximately 2.8 million acres and over 5,200 grower customers receive services from the 38 facilities in Ohio, Indiana and Michigan that have earned 4R Nutrient Certification to date, with approximately 67 percent of those acres located in the Western Lake Erie Basin. There are commitments from 39 more facilities to become 4R Certified through the program.

The 4R Nutrient Stewardship Certification Program originally focused in the Western Lake Erie Basin. In December 2016, the program expanded statewide. In addition, discussions are currently underway to expand the program to neighboring states and to the Province of Ontario.

The 4R Nutrient Stewardship Certification Program is governed and guided by the Nutrient Stewardship Council, a diverse set of stakeholders from business, government, university and non-governmental sectors with a common goal of maintaining agricultural productivity while also improving the quality of Lake Erie and its contributing watersheds. The program is administered by the Ohio AgriBusiness Association.

The many privately funded efforts by Ohio agriculture will help achieve the state's nutrient reduction goals and must be recognized in the draft Plan.

VOLUNTARY CONSERVATION WORKS

The voluntary adoption of conservation management practices by Ohio agriculture has a proven track record. Meeting land and water conservation challenges from the days of "Dust Bowl", to the Lake Erie phosphorus reduction efforts in the 1980's to today's nutrient management challenges, Ohio agriculture has been in the forefront addressing these issues. During the 1980's, the land management practice changes needed to address sediment and the attached phosphorus were known (conservation tillage, buffers, waterways, etc.). Ohio farmers actively participated in conservation programs to implement these practices leading to Ohio achieving the established long-term Lake Erie phosphorus reduction goal of 11,000 metric tons of total phosphorus per year.

USDA-NRCS recently released (March 2016) a Special Study Report titled "Effects of Conservation Practice Adoption on Cultivated Cropland Acres in Western Lake Erie Basin, 2003-06 and 2012". This study was designed to quantify the environmental benefits that farmers and conservation programs in the Western Lake Erie Basin provide to society. The report, based on farmer survey data in the WLEB, shows that voluntary conservation is making significant headway in reducing nutrient and sediment loss from farms. However, there is opportunity to do more to improve conservation management across the basin and no single conservation solution will meet the needs of each field and each farm.

Key findings of the study include:
99% of the cropland acres are managed with at least one conservation practice
96% of the cropland acres are managed to prevent average annual sediment losses of more than 2 tons per acre
70% of the nitrogen applied is removed by crop harvest
58% of the cropland acres are managed with phosphorus application rates at or below crop removal rates
The cost of putting conservation practices in place represents a significant annual investment. Regardless of funding source (federal, state, local or private) the annual regional investment in conservation is $277 million or $56.98 per acre.
No single conservation solution will meet the needs of each field and each farm. Western Lake Erie Basin croplands are diverse in terms of soils, farm fields, farming operations, and management, which creates differences in conservation needs and potential solutions. Field-scale conservation planning and conservation systems are needed to accommodate different treatment needs within and across farm fields, while maintaining productivity.
Additional progress in nutrient and erosion control will depend on advanced precision technologies directed to unique zones or soils within field boundaries.

Farmer surveys conducted by a team of researchers from The Ohio State University (2013, 2015, and 2017) in the Maumee River watershed show that the agricultural community has a strong conservation ethic, that they are willing to make the necessary management adjustments and they want to know that what they do in terms of making management and conservation changes will have a positive impact.

The question before us today is "What management practices are the most effective in reducing the off-site transport of dissolved phosphorus without sacrificing the gains made in reducing surface runoff of total phosphorus?" The current edge-of-field monitoring efforts, supported by agricultural industry funds, will provide critical information that will once again help Ohio reach the established nutrient reduction goals via the promotion and voluntary adoption of these management practices.

The second item we wish to discuss is the following statement found on the top of page 46 of the draft document – "A major source of nutrient inputs to the western Lake Erie basin is concentrated animal feeding operations." Legislation passed in Ohio in 2015 (SB 1) places restrictions on nutrient application (manure and commercial fertilizer) by farmers in the western Lake Erie basin. This law, meant to reduce run-off of dissolved phosphorus from farm fields, restricts the application of fertilizer and manure on frozen, snow covered, or saturated ground and under certain weather conditions when rainfall is expected by ALL farmers in the basin. Even though SB 1 will not be fully implemented until the fall of 2017, it has already shown a positive impact.

Ohio's permitted Concentrated Animal Feeding Facility (CAFF) rules, under the jurisdiction of the Ohio Department of Agriculture (ODA) have been in place since 2001 and served as a model for the SB1 rules. Livestock facilities with an ODA permit operate under approved manure management plans, are inspected twice a year to ensure compliance, and have a ZERO discharge requirement, unlike municipalities that can legally discharge nutrients, under certain limitations.

Investigation of the data sources in the staff technical appendix used by the IJC to support the statement above revealed reliance on secondary information sources. The Ohio Lake Erie Phosphorus Task Force Final Report (April 2010) indicated that land application of manure was only estimated to contribute approximately 27 percent of the annual fertilizer input in the Lake Erie basin. A Great Lakes watershed assessment conducted by the United States Department of Agriculture Natural Resources Conservation Service in 2011, Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Great Lakes Region, documented of the phosphorus applied to agricultural cropland in the Lake Erie Basin, only 17 percent came from manure. A recent survey (2017) of farmers in the Maumee River watershed conducted by researchers at The Ohio State University indicated that approximately a third utilize manure as a source of fertilizer for some or all of their fields. Because there is no direct relationship to manure utilization as a nutrient source and off site movement, these three information sources contradict the above referenced statement found on page 46 of the draft report.

The Ohio Agricultural Community appreciates the opportunity to review and provide comments on the International Joint Commission's draft Triennial Assessment of Progress (TAP) report under the 2012 Great Lakes Water Quality Agreement. Based on our comments above, the following summarizes several key points regarding the draft Plan:

Ohio agriculture recognized the water quality nutrient management challenge many years ago, has directed millions of private funds to address the challenge and has supported the distribution of millions of dollars in the state by NRCS and others that help farmers establish

conservation practices, many of which require cost-share. While many of the publicly funded actions are recognized in the draft Plan, the privately funded actions taken by Ohio agriculture also should be identified and emphasized in the draft Plan.

Voluntary adoption of conservation practices has a proven track record in Ohio. Results from the agricultural industry supported edge-of-field monitoring program should serve as the basis of the voluntary management practice promotion and adoption.
Recently passed legislation reduces the risk of off-site transport of dissolved phosphorus by placing restrictions on fertilizer and manure applications.
Current permitting programs for concentrated animal feeding facilities and operations should continue as no discharge permits containing approved manure management plans.
Continued funding is crucial for continued research on effectiveness of nutrient management practices and monitoring of concentrations and loads in Lake Erie tributaries.

Once again, thank you for the opportunity to provide comments. Sincerely,

Adam J. Sharp, Executive Vice President
Ohio Farm Bureau Federation

Christopher Henney, President and CEO
Ohio AgriBusiness Association

Elizabeth Harsh, Executive Director
Ohio Cattlemen's Association

Tadd Nicholson, Executive Director
Ohio Corn & Wheat

Scott E. Higgins, CEO
Ohio Dairy Producers Association

Bryan Humphreys, Executive Vice-President
Ohio Pork Council

Jim Chakeres, Executive Vice President
Ohio Poultry Association

Roger A. High, Executive Director
Ohio Sheep Improvement Association Sheep and Wool Program

Kirk B. Merritt, Executive Director
Ohio Soybean Association
Ohio Soybean Council

Name: The Ontario Headwaters Institute
Date of Submission: April 14, 2017
Location: Toronto, Ontario
Comment:
Attached please find our comments as presented at the IJC's public comment session at the Great Lakes Public Forum on October 5, 2016.

The OHI is a Canadian charity and the leading Ontario NGO working to protect headwaters and to implement Integrated Watershed Management across the province.

Our 3 main portfolios are Research, Education,and Best Practices

Research includes: Developing Indicators of Headwater Health

Education includes: OHMapping & Headwater Hikes

Best Practices currently focuses on submissions to government.

We have 5 observations and recommendations regarding the 2016Annual Report and the work of the IJC.

Congratulations on the Report and the work behind it.
Progress and the trend to more progress are clear,particularly in the evolution of much of the science and increased monitoring. We are encouraged by the prospect of pending improvements in AOCs over the next few years,which will deliver substantial momentum to decades of work.

Please stop calling the Lakes variants of "the largest freshwater ecosystem in the world".
It is simply not true.
The OHI lobbied against this term in the first two iterations of Ontario's draft Great Lakes Protection Act,successfully getting it amended in the third bill,which was passed.
Since then,we have had assurances from both Ontario's MNRF and Environment and Climate Change Canada that they will not use the term. Its use by the IJC devalues your overall science credibility.

We urge you to find a better balance between your efforts on the Lakes and their watersheds.
We understand and support the hugely important science and remediation efforts focused on the Lakes,and the need to deal with both municipal and lake-side point-source pollution.
However, too few trees, dried out wetlands,too many nutrients, and increased temperatures from the thousands of tributaries that contribute 48 percent of the annual inflow to the Lakes will cause challenges that cannot be ignored.

We ask you to consider recommending that the Parties commit to protecting the Basin by adopting minimal thresholds to protect natural heritage on a watershed basis.
One set of such targets can be found in an Environment Canada publication called"How Much Habitat is Enough?"which were the basis for the OHI's recent submission of the first set of targets under Ontario's Great Lakes ProtectionAct.
Our suggested targets - and practical remediation goals where necessary - include:
A minimum 50% target for natural cover for each watershed;
Wetlands consisting at a minimum of the greater of
10% of each major watershed and 6% of each sub-watershed,or
40% of the watershed's historic wetlands;and
A minimum 30-metre-wide naturally-vegetated riparian area along both sides of streams.

Livestreaming and O&E
We express our sincere appreciation for the livestreaming, a significant improvement from when the OHI brought a camera to a meeting and posted 8 hours of videos onYouTube. We hope the number of people who participated in the livestreaming justifies further similar efforts. Regardless,we urge the IJC and the Parties to expand their commitments to meaningful and effective O&E as the best way to increase such participation,as well as more direct connections to the Lakes,the Commission, the work of the Parties, and community-based efforts to celebrate,protect,and remediate the Great Lakes and their watersheds.

Name: Partners for Clean Streams
Date of Submission: April 14, 2017
Location: Perrysburg, Ohio
Comment:
Thank you for your time and for coming to the Toledo Area in the western Lake Erie basin. I attended the meeting in Toledo and wanted to provide a few written thoughts on the report on behalf of Partners for

Clean Streams.

Partners for Clean Streams is a regional watershed group, a nonprofit, in Toledo, OH working towards clear, clean, and safe water. (A.K.A fishable, drinkable, and swimmable)

I'd like to thank the IJC for a through, fair assessment of the Parties progress under the GLWQA over the last few years. Having experience working intricately on programs under several Annexes, and in the western Lake Erie basin watershed, I think the report fairly highlights both the momentum and the struggles in the work to improve water quality in this basin in particular. I support the emphasis placed in the TAP report on making forward progress, focusing efforts, and accelerating work under all of the Annexes and Objectives, especially in the Lake Erie basin.
However, I feel that the report falls short in emphasizing how sustained, adequate funding is vitally important to all of this work moving forward to meet the commitments outlined by the Parties. While I recognize that the IJC has no budget authority on either side of the Lake, I respectfully request more emphasis be placed throughout the report to recognize that all of that coordination and work being done in the last three years has taken a considerable investment of funding and resources. Especially from the highest levels of government and the smallest local communities.

Throughout the report, it should be stressed that this level of investment, or even more, is necessary to continue to meet the objectives outlined in the agreement. I implore the IJC to advise the governments to maintain their financial investments in programs and agencies moving forward this great work under all the Annexes. In order to continue this momentum, and to "up our game" in the US, we need to better address the shortcomings outlined in the TAP report and continued, sustained funding is critical. As you know, in the US, one of the most significant funding mechanisms is the Great Lakes Restoration Initiative, which has been critically important to the work under Annex 1, 4, 7, and others. Specifically, I respectfully submit to you: on page 55, under Objective 9 the discussion of AOC programs, the report could be revised to include a more robust discussion of the significance of the GLRI funding to the acceleration of work in the US AOCs. This sustained investment could be strongly encouraged by the IJC, which is similar statement is already included in the report regarding increased investment by the Canadian governments. Thank you for your time and attention.

Respectfully,
Kris Patterson, Executive Director for Partners for Clean Streams

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Name: Sarnia Environmental Advisory Committee
Date of Submission: March 26, 2017
Location: Sarnia, Ontario
Comment:
COPY OF COMMENTS MADE AT IJC HEARING SARNIA MAR22-2017- DEEP GEOLOGIC REPOSITORY
To The International Joint Commission Hearings – Sarnia, Ontario, Canada - March 22, 2017.

Concerning the Proposed "Deep Geologic Repository Project" at the Bruce Nuclear Facility on the Eastern Shore of Lake Huron.
****

David H. Johnston
Sarnia Environmental Advisory Committee, Emeritus Member
1080 Braemar Lane
Sarnia, Ontario
Canada, N7V 3B5

****

Subject: For the DGR - "**A simple concept - and hopefully a simple solution?"**

A simple concept to remember in handling the nuclear waste from the DGR is that:-

"Distance is Time and Distance is Safety."

If, for whatever reason there is leakage from the DGR site, the further the site is from the shores of the Great Lakes, the more time we will have to detect the leak, and the more time we will have for remediation.

We know that the site will be continuously monitored for radioactive leakage.
And we also know that, Deep Ground is "deep," and also that, limestone bedrock is "stable," but we also know from the Walkerton *E. coli* Water Experience that water is a liquid and can flow anywhere, and it can carry with it whatever it will.

"**Therefore distance is time"**. Time for leak detection to kick-in, and time to deal with a leak.

If we agree with this concept, then the next question becomes where to put the nuclear waste.

Then, of course the "Not-In-My-Backyard" reply must be addressed.
We already have nuclear reactors on the shores of the Great Lakes.

Therefore, why should we further tempt fate with this proposed Bruce nuclear location that will empty directly into Lake Huron if and when we have a catastrophic event?

We have already seen what happened in Japan at the *Fukushima Daiichi* Reactor built directly on the shores of the Pacific where a huge plume of radioactive water was released into the ocean.

In the large volume of the Pacific Ocean the radioactivity was dispersed over a huge area.

In Lake Huron it would also be dispersed, but flow downstream through the remainder of the Great Lakes-St Lawrence system.

I am not suggesting such a catastrophe as *Fukushima* can happen here, but why further tempt fate by placing the DGR directly next to the shore of the Great Lakes.

"Distance is Time and Distance is Safety."
****

I wish you Good Luck in your recommendations – but please give this idea some further consideration.
Sincerely,
David H. Johnston
Sarnia Environmental Advisory Committee, Emeritus Member

Name: Save Our Shores Great Lakes
Date of Submission: November 18, 2016
Location: N/A
Comment:

I am contacting the IJC on behalf of SOS Great Lakes. Three of our members presented their concerns to the IJC at the Great Lakes Public Forum on October 5, 2016. I have attached their presentations along with an infographic that explores why radionuclides should be added as a Chemical of Mutual Concern under Annex 3 of the GLWQA. This can also be found on our website: http://www.sosgreatlakes.org/facts-and-infographics/. Attached you will find submissions by Jill Taylor (President, SOS Great Lakes), Ellen Dailey (Director, SOS Great Lakes), and Eugene Bourgeois (SOS Great Lakes).

Please confirm receipt of our submissions. Thank you for your consideration.

SOS GREAT LAKES

Great Lakes Public Forum--Ellen Dailey, Director, SOS Great Lakes

Good afternoon Mr. Goffin, Mr.Davis, and fellow panelists.

Thank you for the opportunity to present my comments to the International Joint Commission (IJC) and to aid in the efforts to meet the goals of the Great Lakes Water Quality Agreement.

A number of challenges threaten the sustainability of the Great Lakes. These include toxic chemicals, such as legacy contaminants and substances of emerging concern.

The websites of both the Environmental Protection Agency (EPA) and Environment Canada state that Chemicals of Mutual Concern are those that originate from anthropogenic sources and that are potentially harmful to human health or the environment.

According to the IJC, hundreds of chemicals have been identified in the Great Lakes ecosystem. As of 1994, 362 contaminants had been confirmed as being present in measurable concentrations in the water, sediments and/or in the tissues of fish, wildlife or humans. At the time of the 1994 report, 126 of these substances had been linked to toxic effects on various life processes.

Some of these chemicals have been labeled “critical” and “priority contaminants” based on factors such as presence and ambient concentration, degree of toxicity, persistence in the environment, bioavailabilty, and the potential to bioconcentrate and bioaccumulate in the Great Lakes environment.

Yesterday I brought to your attention two reports that were prepared for the IJC in the 1990s about radionuclides in the Great Lakes. Today I would like to elaborate on this topic and why it is imperative that radionuclides be included in Annex 3 of the Great Lakes Water Quality Agreement as a Chemical of Mutual Concern.

The “Inventory of Radionuclides in the Great Lakes” (1997) study concluded that radionuclides were present in the lakes and that the majority were from anthropogenic sources. The study also indicated that the radionuclides are bioavailable, toxic, persistent in the environment, and have the potential to bioconcentrate and bioaccumulate.

The IJC’s Nuclear Task Force noted that the bioaccumulation, biomagnification, and transfer factors used to describe the cycling of radionuclides and their transfer along exposure pathways to biota, including

humans, came from the long history of work done in oceans, estuarine, and river environments. Comparable studies for the Great Lakes freshwater environment were virtually nonexistent. Yet for the Great Lakes, the need for transfer factors that describe lake environments is critical.

Toxicity of radionuclides

The Canadian Nuclear Safety Commission (CNSC), World Health Organization (WHO), and the American Cancer Society websites point out that exposure to ionizing radiation carries health risks. The review also states that some populations are more sensitive to the effects of radiation exposure such as women, children and, of course, the fetus.

The health risks include cancer, hereditary effects, cataracts, cardiovascular disease and stroke, immune effects, premature aging, radiation sickness, and death. Cancers associated with high dose exposure include leukemia, multiple myeloma, breast, bladder, colon, liver, lung, esophageal, ovarian, stomach, and thyroid cancers.
Literature from the U.S. Department of Health and Human Services also suggests a possible association between radiation exposure and skin, prostatic, sinus, laryngeal, and pancreatic cancers.

Leukemia, a type of cancer that arises in the bone marrow, and thyroid cancer are among the most common radiation-induced cancers. The reason for this may be sensitivity of the cell line or the cell's propensity for uptake of a given radioactive element. The thyroid gland normally takes up iodine and bone takes up strontium. Each of these elements has a radioactive isotope produced by nuclear fission and is found in the Great Lakes.

Thyroid cancer is known to be prevalent in the Great Lakes basin population. According to the Canadian Cancer Statistics 2013 report, the incidence rate for thyroid cancer is increasing. Furthermore, the increased incidence observed is more than the increase being seen with other major cancers. There was a 6.8 percent per year increase in males since 1998 and a 7 percent per year increase in females since 2002.

Less known are the potential hereditary effects of ionizing radiation. Potential hereditary effects include congenital malformation, cognitive impairment, microcephaly, growth restriction of the fetus, prematurity, infertility and pregnancy loss, including miscarriage, fetal death, neonatal death and infant death. In addition, ionizing radiation may increase the risk of cancers and other health problems in future generations due to the subtle ongoing biological impacts that may become pronounced and irreversible over time through genetic mutations. The insidiousness of radiation injury is seen in its propensity to present only after irreversible genetic damage has already occurred over an unknown period of time.

The BEIR VII report on health effects of ionizing radiation concludes that current scientific evidence is consistent with the hypothesis that there is a linear dose response relationship between exposure to ionizing radiation and the development of radiation induced solid cancers in humans.

Human activities, both historic and current, have altered and will continue to impact the Great Lakes ecosystem and the biological diversity it sustains. Ontario Power Generation (OPG)'s proposed Deep Geological Repository (DGR) has the potential to leak radionuclides into the Great Lakes, and will likely leak, as no other DGR in the world has been successful in containing the toxic wastes it stores. The radioactivity and long-term toxicity of these lethal wastes could threaten present and future generations.

The Commissioner of Environment and Sustainable Development issued a report yesterday citing the CNSC for not providing appropriate inspections to ensure that nuclear facilities are meeting the regulatory requirements. It is imperative that a binational group be able to look at the data to determine what is truly happening with radionuclides in the Great Lakes.

We look to the continued comity between our two countries to motivate Canada and the United States to add Radionuclides to the list of Chemicals of Mutual Concern under Annex 3 of the Great Lakes Water Quality Agreement.

Great Lakes Forum—Eugene Bourgeois, SOS Great Lakes
Good afternoon,

My name is Eugene Bourgeois and I am a retired sheep farmer living in Inverhuron, home to both a nuclear power plant and the proposed Deep Geologic Repository for low- and intermediate-level nuclear wastes, right here beside and below Lake Huron.

It is surprising to me that radionuclides are not already Chemicals of Mutual Concern in the Great Lakes Water Quality Agreement under Annex 3, as recommended by your own Nuclear Task Force 20 years ago.

We learned in the late 1880s that when we use our rivers as sewers innocent people die. We were reminded of this recently in Ontario when Walkerton's water was contaminated by farm sewage and a number of people died. In each case, the solution to pollution was believed to be dilution.

The National Academy of Sciences has established that there are no known safe concentrations of exposure to radionuclides and so, has adopted a Linear No Threshold standard. The recent KiKK study in Europe demonstrated the strong statistical correlation between exposure to chronic low doses of ionising radiation and childhood leukemia, effects that increase the closer one lives to a nuclear power station, even when these are operating as permitted. Even without this, we still manage to be exposed to the harmful effects of chronic, low doses of radiation from both cosmic and solar sources, each of which can cause sickness and death.

During the Hearings for DGR, we learned that OPG's long-term plans for this radioactivity is for it to be discharged into the groundwater and from there to Lake Huron. It claims this won't happen for more than a million years, similar to WIPP. WIPP failed catastrophically after only 15 years.

In the 1950's, expectant mothers were X-rayed to determine the relative health of their babies. It was only after Alice Stewart organised the Oxford Survey in England and analysed these data that she showed X-raying foetuses itself led to early childhood death. Buster Brown shoes offered to X-ray your feet when I was a child and many of those adolescent boys who did so are sterile today.

The Great Lakes are the source of drinking water for more than 40 million Canadians and Americans. Water is something each of us needs every day of our lives. Mothers need it to mix baby food for their children. It was a mere 75 years ago that we first split the atom, setting the stage for nuclear power production. In every case our initial concerns about the impacts of exposure to ionising radiation have been far too liberal to safeguard people.

Radionuclides must be included and listed as Chemicals of Mutual Concern in Annex 3.
Without having a clearly identified understanding of them and their inventories we will not be able to research their potential adverse health effects on the populations who live near and rely on the Great

Lakes for water.

Thank you.

Great Lakes Forum – Jill Taylor, President, SOS Great Lakes

Introduction

SOS Great Lakes, is an organization of Canadian and American Citizens dedicated to keeping the burial of radioactive nuclear waste out of the Great Lakes Basin. We are not anti- nuclear, but are deeply opposed to the reckless plan of the Ontario Power Generation Inc. (OPG) to construct a deep geological repository for up to 400,000 cubic meters of Low and Intermediate Level nuclear waste on the shore of Lake Huron at the Bruce Nuclear Plant. This project, if approved, could begin before 2020. I will refer to this as "the plan".

The burial of this vast quantity of radioactive nuclear waste would result in a continuous risk of radiotoxic poisoning of Lake Huron, the Great Lakes and the St. Lawrence River System. The OPG Plan should concern this Forum for at least 3 reasons:

These Radionuclides Are Persistently Destructive: the extremely destructive character of this waste, the persistence, likely migration, and the long residence of its contaminant properties, (stated by OPG to last over 100,000 years);

The Plan Violated the Canadian Environmental Assessment Act (CEAA): OPG and the Federal Joint Review Panel (JRP) failed to follow the governing legislation in multiple ways on several occasions; to date, the Minister responsible for CEAA has failed to take appropriate action in response to these violations;

Deeply Flawed Science: both OPG and the JRP failed to rely on evidence- based science. What they did use was demonstrably unreliable.

Persistently Destructive:
You have said in your Progress Report that you are interested in chemicals that are persistent: no substance is more persistent than the radioactive intermediate and high level waste, in combination with our waters. "Over 100,000 years", exceeds the definition of 'persistence,' and cannot be ignored.

Since the DGR idea was hatched in the 1990s, international experts have consistently derided the science and lack of common sense of a DGR on the Great Lakes, saying that the DGR will NOT be able to contain nuclear waste and prevent the contamination of the ecosystem, including the Lakes and the people around it. Yet, the Ontario and Canadian Governments continue to allow consideration of this plan long past its best before date, if it ever had one.

Multiple Violations of the Canadian Environmental Assessment Act (CEAA)
In a direct affront to the Canadian Environmental Assessment Act, OPG refused to consider alternate sites in addition to the sedimentary geology of the nearshore environment of the Bruce. The Minister asked OPG for further and better information about alternate sites. OPG rephrased the Minister's question and

said it would provide a response to its rephrasing by December 2016.

Citizens' groups such as ours have advised the Minister of multiple other violations of CEAA. To our knowledge, the "alternate site violation" is the only one to which the Minister has responded publically.

OPG has stated that not only will the DGR leak, but that their stormwater management system to protect the groundwater and Lake Huron in an unplanned event is totally insufficient to handle extreme weather events.

In another affront to logic, OPG refused to consider that climate change, including already dramatic patterns of Great Lakes weather and precipitation, would increase the risks to public safety or the environment as they might act on the DGR, or have an effect on plans for emergency management of accidents and malfunctions during the 300 years of institutional control.

During the Joint Review Panel hearings in the fall of 2013, thousands of pages of testimony were read into the record by citizens, politicians from Canada and the US, scientists of all stripe, including nuclear specialists and former OPG employees, economists, geologists, conservation advocates, sociologists, doctors and indigenous people that refuted the logic and safety of the proposal for the deep underground dump on the shore of Lake Huron in sedimentary rock.

Evidence of improper adjudication and presentation of evidence, financial coercion by the proponent and the denial of international obligations were rampant.

We have filed an application for Judicial Review (JR) against the Canadian Government, CNSC and OPG, to challenge JRP's acceptance of the OPG Nuclear Waste Dump Plan based primarily on these multiple violations. CEAA requires the Minister to either reject or accept the plan. If she rejects it, a Judicial Review Application is moot. If she accepts, the JR is converted automatically to a JR of her decision.

We believe there are ample environmental protection public policy reasons why this matter should never have to go to court.

Deeply Flawed Science

Every day, new evidence emerges exposing even more faults in the OPG DGR plan, and its woefully inadequate 'science.' OPG has acknowledged that the physical structure and storage vaults of the planned repository will disintegrate after construction, and that radionuclides will eventually leak into the water and environment. They say it is not if, but when the repository will leak.

The gravity of this and similar statements in their EIS persists despite tragic failures elsewhere. This year, there was a collapse of a tunnel during an underground scientific pre- test of a similar DGR in sedimentary geology in France during which a worker was killed and others injured. In 2014, in Carlsbad, New Mexico the DGR that was the design model for the DGR 1 here at the Bruce Plan was closed following radioactive releases into the environment and underground fires that threatened the lives of workers and the public.

Internationally, the concept of DGRs is in trouble! Multiple other accidents and closures of DGRs challenge the idea that a DGR will ever be built that is successful.

Conclusion

The regulator, CNSC, has demonstrated bias and protection of industry in its monitoring and categorization of radionuclide emissions into the environment, including into the water of the Great Lakes. Relying on reductive methods they are not diligent in reporting of contamination that in other jurisdictions would be unacceptable. It is imperative that an un-biased party acknowledge the danger of radionuclide contamination and list radionuclides as a Chemical of Mutual Concern. This action must have an effect on

the CNSC and the nuclear industry to provide transparent monitoring and emergency planning. It must influence the development review of nuclear projects as a binational concern, and provide sustainable and precautionary protective measures for all sites on the Great Lakes.
We also ask the Canadian and U.S. Governments to work together to stop the OPG plan, - a plan that was, and is, ill-conceived and does not follow the obligations of binational environmental protection about which you so proudly speak in this Forum.

By doing so, you will join:

More than 154 municipalities that have signed petitions against the plan,
The Great Lakes and St. Lawrence Mayors who have thrice passed resolutions opposing the plan, and 98 percent of all Canadians and Americans who responded to a letter writing campaign initiated by the Canadian Government in Sept 2015 to express their views about the decision to build this deeply flawed nuclear waste repository.

We urge the Executive Committee of the Great Lakes Forum to list radionuclides as a chemical of mutual concern and immediately act to oppose the OPG's plan for a Nuclear Waste Dump at Kincardine.

Name: Sierra Club Niagara Group
Date of Submission: April 1, 2017
Location: N/A
Comment:

SIERRA CLUB
FOUNDED 1892
Niagara Group

April 1, 2017

"Your Voice: Buffalo"
International Joint Commission
234 Laurier Avenue West, 22n Floor Ottawa,
ON K1P 6K6
Commission@washington.ijc.org

Dear Commission Members,

Thank you for coming to Buffalo to listen to our concerns regarding the Great Lakes and for visiting communities across the region to hear what people believe are key actions that can be taken to protect water quality on the amazing Great Lakes.

We appreciated the opportunity to make public comment at the Buffalo meeting and said that the Sierra Club Niagara Group would submit comments in writing. We want to focus our comments on nuclear issues today. The intention of this list of situations/proposed projects (that feel a bit like a list of 'horrors') is to insure that we do NOT have a major water quality issues around nuclear radiation. If there were an accident or weather event or terrorist act, there is no way to clean up any discharge of radioactivity in the waters. And hence, we must take every precaution to prevent any mishap.

We would also like to build on the crucial importance of the proposed Climate Vulnerability Assessment discussed in the January 2017 Draft Report that you've prepared. There are two significant climate change characteristics that will impact our nuclear production, transport and waste storage: increase intensification of storms and the continued release of greenhouse gas emissions.

We start with the waste and move to transport and production. We will then summarize the ways in which all phases are vulnerable to climate change and offer some thoughts on what we might think about at the Great Lakes.

WASTE

Let's begin with the fact that nuclear waste never goes away, at least in relationship to human life span and institutions. Much of the waste we have produced in the last 75 years will be with us thousands, if not millions of years from now. Put this timeframe in the context of the geological newness of the Great Lakes themselves which have been in this physical structure for only 12,000 years. Further, we know we must do something with the existing waste even if we stopped producing it tomorrow. So what is our strategy? Let's start near Buffalo at the **West Valley Nuclear Waste Facility**, 30 miles south of Buffalo on the Cattaraugus Creek that flows into Lake Erie. This project started because scientists and engineers and politicians thought we could reprocess some of the most highly radioactive materials from atomic power and weapons - but only proved that this could not be done.

The Department of Energy and NYSERDA are responsible for the "cleanup" and have been working on this for over 40 years and the final decision on what to do won't even to be made until 2020. In the meantime, there have been effort to contain some of the most hazardous material through vitrification and they will begin to demolish the main radioactive building during this next year. There is a strontium leak coming from under this building that has been advancing to the creek for years. And closer to the creek there are barrels and boxes of material disintegrating and water oozing in and out of trenches and holes for years. All of this is very dangerous. HOWEVER, the main concern now relates to climate change and the potential for intensive storms and erosion along the creek shoreline and into the creek bed. The West Valley Citizen's Coalition has been watchdog on this process for years and have argued that this material cannot be safely contained in the glacial till and should be dug up and safely stored.

Sections of this creek were washed away in recent years during an intense storm only a few miles upstream from the West Valley site. If that had happened at West Valley, it would have released radioactive material into the creek and then into the water systems of Buffalo, Niagara Falls, Niagara on the Lake and into Lake Ontario. This cannot be allowed to happen. At this point, it is critical that we dig all of the material up and securely store.

We are also currently deeply concerned about the proposed **Deep Geological Repository (DGR) at Kincardine, Ontario**, for the purpose of interring, and abandoning all of the Low-Level and Intermediate Level Radioactive Waste (LILRW) from OPG's fleet of twenty nuclear power reactors. This site ultimately involves abandoning all of this nuclear waste and is located within 1.5 km of Lake Huron. Yes, of course, something has to be done with the waste but not this as clearly stated by US legislators below. In what way can the IJC influence this and future decisions regarding waste on the Great Lakes in the time of climate change uncertainity?

OPPOSE NUCLEAR WASTE REPOSITION LESS THAN A MILE FROM LAKE HURON IN ONTARIO U.S. Senators Debbie Stabenow (D-MI), Gary Peters (D-MI) and Congressman Dan Kildee (MI-05) today introduced resolutions, in both the House and Senate, expressing opposition to construction of a nuclear waste repository less than a mile from Lake Huron in Ontario.

"Canada is facing a critical decision that will impact generations in both our countries," **said Senator**

Stabenow. "A nuclear waste spill near the Great Lakes could have a devastating impact on our health and environment and threaten our Michigan way of life. Given what is at stake, I urge our Canadian neighbors to make the right choice and shelve plans for this site once and for all."

"The Canadian proposal to build a permanent nuclear waste repository less than a mile from Lake Huron could cause significant, lasting damage to the Great Lakes and undermine the progress we have made cleaning up the water quality in the Great Lakes Basin," **said Senator Peters.**

TRANSPORTATION

Over two dozen NGOs from Canada and the US just lost a U.S. court case that would require the DOE in the US and Canadian counterpart do an Environmental Impact Statement on the **shipment of high level LIQUID radioactive waste from Chalk River, Ontario to Savannah River**, **South Carolina**. Shipping highly radioactive waste in liquid form has never been done, and the casks proposed to carry the material have not been tested for liquids. These shipments will travel near and across Great Lakes, and rivers, wetlands and other bodies of water. If there were an accident or terrorist action, there is no way to clean up this material, and even on land, the seepage into the groundwater could not be contained. This is an unnecessary risk as this matter can be solidified or 'concretized' at Chalk River as was done with similar waste recently in Indonesia. Shipments have probably begun.
http://www.beyondnuclear.org/radioactive-waste-whatsnew/2017/2/3/federal-judge-greenlights-unprecedented-high-risk-highly-rad.html

PROPOSAL TO MOVE 10,000 TONS OF WASTE FROM CANADA TO THE US FOR PROCESSING AND SOMEOF IT RETURNED. This one can still be stopped.

An American radwaste management firm, Unitech, has contracted to bring 10,000 metric tons of solid radioactive waste, including uniforms, tools, construction debris and other stuff from various Canadian nuclear power reactors to Oak Ridge, Tennessee. According to the Unitech application for an NRC permit, a couple dozen isotopes, including Plutonium-238 and Cesium-137, will permeate the wastes.

The waste would be categorized and separated. We believe - it's hard to tell because the application to the NRC contains very sparse information - that some of the material will be reclassified as "beneficial use", meaning it can be used as landfill capping or construction fill. Some of the mild to moderately- irradiated metal may be released to be recycled as scrap metal and - yes - mixed in with nonradioactive stuff for new consumer products or construction supports or other metal uses. Some of it is likely to be scrubbed and the resulting washwater in the thousands of gallons will be pretty seriously radioactive and have to be permanently stored somewhere.

What we know is that there will be hundreds of shipments of this low-radioactivity waste and junk into the United States, and a significant number of truckloads of material shipped back north from the US into Canada after it has been separated. These cargoes will cross the Canada/US border at any of half a dozen bridges or border crossings, from Michigan to Maine.

There has been no environmental assessment or environmental impact statement which sets out environmental, public health and policy considerations posed by the import and export of the wastes. We are going to try to challenge several aspects of the scheme. Much more careful analysis and public and expert review of this proposal should be demanded.

GREAT LAKES NUCLEAR POWER PLANTS

https://watershedsentinel.ca/articles/new-binational-great-lakes-nuclear-map-identifies-nuclear-hot- spots/

Nuclear power is water intensive and the Great Lakes have been a prime location for building them. There are 38 operating nuclear plants with 12 closed plants and new plants proposed. Many of these are old and due to be retired, and have records of violations. Nevertheless, Governor Cuomo has recently proposed to keep three upstate plants, Fitzpatrick, Nine Mile and Ginna, operating by subsidizing Exelon with $7.6 billion of ratepayer funds. New York is a leader in climate change and the actions of this state will set an unfortunate precedent if this is approved.

Further, subsidizing nuclear is exactly the opposite of the way we should be moving because (1) we should not generate anymore waste as we don't have any idea what to do with it and (2) Nuclear Power worsens climate change.

In spite of the narrative of the nuclear power companies, nuclear power has a big carbon footprint. At the front end, carbon energy is used for uranium mining, milling, processing, conversation and enrichment, transportation and formation of rods and construction of the power plants. At the back end, there is the work of isolating highly radioactive nuclear waste for millennia. This is not a carbon free enterprise.

Add to the greenhouse gas emissions, the matter of waste, inflexibility, the length of time to deploy and the cost, it makes no sense. The Institute for Energy and Environment at Vermont Law School averaged the high and low estimates of carbon pollution from nuclear power and did indeed show that nuclear carbon emissions are below scrubbed coal plants, natural gas fired plants and oil. Yet, nuclear emits twice as much carbon as solar photovoltaic and six times as much as onshore wind farms. And renewable energy efficiency beats nuclear six fold.

The price of renewables is quickly dropping; nuclear is very expensive to build and as we know, nearly impossible to unbuild.

WHAT'S TO DO? The IJC is not a regulatory body; its power lies in 'directing attention' and doing research. This is our request to the Commission. Either through the Climate Vulnerability Assessment or as a stand-alone, please begin to seriously address the danger of nuclear production, transport and waste on the precious body of water.

Even if we stop nuclear power production right away, it will take years to decommission the power plants but at least within human life spans. Nuclear waste? We have no idea how long ,but we do know that moving waste around makes no sense as every trip has the potential for disaster – we must find a better solution. Gordon Edwards of the Canadian Coalition for Nuclear Responsibility has a proposal for "Rolling Stewardship" as a way to begin securing and containing nuclear waste. <http://www.ccnr.org/Rolling_Stewardship.pdf> Perhaps it is time to extend the conversation on waste that doesn't ask us to find a repository for 10,000 years (geologically nearly impossible) but begin today.

Thanks for your attention,

Lynda Schneekloth
Sierra Club Niagara Group

Name: Sierra Club Nuclear Free Michigan
Date of Submission: April 15, 2017
Location: Jackson, Michigan
Comment:
The Great Lakes comprise twenty percent of the potable freshwater on Earth. As such, these waters and the millions of residents of Canada and the United States who depend upon them, must be protected from the most toxic chemicals; radionuclides. Some radionuclides are produced by nuclear power plants, as many as sixty plants affect the Great Lakes Basin and will remain lethal for tens or even hundreds of thousands of years. Radionuclides are, and should, be referred to in Canadian and U.S. rules and regulations as Chemicals of Mutual Concern.
Thank you,
Mark Muhich, Chairman
Sierra Club Nuclear Free Michigan

Name: St. Clair River BPAC
Date of Submission: October 13, 2016
Location: Port Huron, Michigan
Comment:
Thank you for the opportunity to comment. I'd like to see a greater emphasis in the report and plans for improving drinking water and wastewater infrastructure. In the US, major wastewater upgrades were made in the 1970s. It is time to reinvest in this aging and vitally important infrastructure. The Flint drinking water crisis has brought attention to the need for improvements to the infrastructure, especially in older cities. Please support increased funding for infrastructure to ensure safe and effective treatment and distribution of drinking and wastewater.

Letters sent by municipalities and other governments via email or mail as of April 15, 2017

Name: Township of Bingham, Michigan
Date of Submission: April 15, 2017
Location: Ubly, Michigan
Comment:

Minutes of a regular meeting of the Township of Bingham, held on April 12, 2017 at Bingham Township Hall, 2241 Pierce St. in Ubly, Ml at 7:30 p.m.:

PRESENT: Joseph J Trepkoski-Clerk, Laura Tyll-Treasurer, Charlie Briolat-Trustee and Kevin Grifka-Trustee.

ABSENT: Donald Wright-Supervisor,

The following preamble and resolution were offered by Charlie Briolat and supported by Kevin Grifka to approve the following resolution:

Resolution Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

WHEREAS Ontario Power Generation {OPG) is proposing to construct a deep geologic repository (DGR) which is an underground long-term burial facility for all of Ontario's low and intermediate level radioactive nuclear waste at the Bruce Nuclear Generating Station, some of which is highly radioactive and **will** remain toxic for over 100,000 years. This site is approximately one kilometer inland from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS water is the nation's and Canada's most important natural resource and should be protected and managed prudently;

WHEREAS the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' fresh-water vital to human and environmental health;

WHEREAS the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America;

WHEREAS Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada, and First Nations;

WHEREAS concern has been expressed over the proposed OPG DGR by individuals, citizen and environmental groups, and municipalities and counties in both Canada and the United States;

WHEREAS under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality,* the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive

nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic well-being of the entire region, should not be placed at risk by storing radioactive nuclear waste underground so close to the shoreline;

WHEREAS Michigan has significant experience with the concerns for siting a radioactive waste disposal facility as the state went through an exhaustive siting process over twenty years ago and concluded there was no viable location for constructing such a facility.

WHEREAS the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory Board.

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside of the Great Lakes basin; and

WHEREAS, As of September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Indiana, Minnesota, Wisconsin, Pennsylvania, New York, and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes basin; and

NOW THEREFORE BE IT RESOLVED, that the Bingham Township Board/Council, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating Station nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, the United States, or any First Nation property.

BE IT FURTHER RESOLVED, that the Bingham Township, Michigan, urges the Government of Canada and the Government of Ontario to reject and seek alte1natives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SR 151 of 2014, the Bingham Township Board/Council also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution be provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine McKenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes states, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield, as well as the Joint Review Panel Deep Geological Repository for Low and Intermediate Level Radioactive Waste (case reference #17520) Co-Manager Ms. Debra Myles. THEREFORE BE IT FURTHER RESOLVED, the Township of Bingham approves the resolution as presented. Motion carried.

AYES: 4
NAYS 0
ABSENT: 1

RESOLUTION DECLARED ADOPTED.

I hereby certify that the foregoing constitutes a true and complete copy of a resolution adopted by the Township of Bingham, County of Huron, Michigan, as a regular meeting held on April 12, 2017.

Name: Township of Burtchville, Michigan
Date of Submission: April 15, 2017
Location: Burtchville, Michigan
Comment:

Resolution 2017-04-17Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, Michigan has significant experience with the concerns for locating a radioactive waste disposal facility as the state went through an exhaustive process over twenty years ago and concluded there was no viable location for constructing such a facility;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Burtchville Township Board/Council, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Burtchville Township, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the Burtchville Township Board/Council also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

MOTION by Appel, supported by Bailey, to adopt the forgoing resolution. Upon roll call vote, the following voted:

AYE: Appel, Bailey, Janks, Briolat, Minnie

NAY: None

ABSENT: None

The Supervisor declared the **Motion carried and the Resolution # 2017-04-17 adopted** on the 17th day of April 2017.

Signature Michael D Appel, Supervisor

Signature Robert C. Bailey, Clerk

Name: City of Brown City, Michigan
Date of Submission: April 15, 2017
Location: Brown City, Michigan
Comment:

CITY OF BROWN CITY

A Progressive Industrial and Agricultural Community

4205 Main Street, Post Office Box 99, Brown City, Michigan 48416-0099
Phone: (810) 346-2325 Fax: (810) 346-3802 email: browncty@greatlakes.net

April 11, 2017

International Joint Commission
Post Office Box 32869
Detroit, Michigan 48232

Dear Sir or Madam,

During their regular meeting on April 10, 2017, the City Council of the City of Brown City, Michigan, adopted the attached Resolution 17-09: Resolution Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin.

The Resolution was passed at the recommendation of Michigan State Senator Pavlov.

The Resolution is forwarded to you for your consideration and action.

Sincerely,

Clinton K. Holmes
City Manager

CITY OF BROWN CITY

A Progressive Industrial and Agricultural Community
Sanilac County...Opportunity Awaits
4205 Main Street, Post Office Box 99, Brown City, Michigan 48416-0099 Phone (810) 346-2325 Fax (810) 346-3802

City of Brown City

Resolution No: 17-09

Resolution Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and

managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, Michigan has significant experience with the concerns for locating a radioactive waste disposal facility as the state went through an exhaustive process over twenty years ago and concluded there was no viable location for constructing such a facility;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the City Council for the City of Brown City, Michigan, in order

to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating Station nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States, or any First Nation property; and

BE IT FURTHER RESOLVED, that the City Council for the City of Brown City Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the City Council of the City of Brown City also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

The foregoing resolution was offered on April 10, 2017, by Councilmember Alecia Parks, and seconded by Councilmember Patricia Jacobson. In a Roll Call Vote, with the City Council consisting of five (5) members:

CM Jacobson-yes, CM Kosal-yes, CM Lee-yes, CM McIvor-yes, CM Parks-yes, CM Walters-absent.

Yeas: 5 Abstaining: 0

Nays: 0 Absent: 1

A QUORUM BEING PRESENT – MOTION DECLARED CARRIED.

I, Juanita M. Smith, City Clerk of the City of Brown City, hereby certify that the foregoing is a true and complete copy of a resolution adopted by the City Council of the government of the City of Brown City, County of Sanilac, State of Michigan at a regular meeting held on April 10, 2017 and that said meeting was conducted and public notice of said meeting was given pursuant to and in fall compliance with the Open Meetings Act, being Act 267, Public Acts of Michigan, 1976, and that the minutes of said meeting were kept and will be or have been made available as required by said Act.

Juanita M. Smith
City Clerk
City of Brown City
Sanilac County, Michigan

Name: City of Croswell, Michigan
Date of Submission: April 15, 2017
Location: Croswell, Michigan
Comment:

City of Croswell

Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, Michigan has significant experience with the concerns for locating a radioactive waste disposal facility as the state went through an exhaustive process over twenty years ago and concluded there was no viable location for constructing such a facility;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the City of Croswell, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the City of Croswell, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the City of Croswell also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

CERTIFICATION

I, SUZANNE DOBSON, City Clerk of Croswell, do hereby certify that Resolution #04-17-2017 was adopted by the City of Croswell at a regular meeting of the City of Croswell Council held at the Croswell Community Center on the 17th day of April, 2017.

Vote on this Resolution, 5 members being present was as follows:

AYES: Geiger, Fockler, Butler, McClellan, McMillan

NAYS: _____

Suzanne Dobson, CMMC
Croswell City Clerk

Michael McMillan, Mayor

Name: City of Holland, Michigan
Date of Submission: January 19, 2017
Location: Croswell, Michigan
Comment:

Please include huge attention to the absolute prevention of Asian carp into the Great Lakes!!! That would be paramount. Thank you for your laudable efforts, Nancy DeBoer, City of Holland, Michigan

Name: Township of Clay, County of St. Clair, Michigan
Date of Submission: April 15, 2017
Location: Clay Township, Michigan
Comment:
Resolution 2017-09
Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

At a regular meeting of the Township Board of Trustees of the Township of Clay, County of St. Clair, State of Michigan, in the Clay Township Meeting Hall 4710 Pte. Tremble Rd, Clay Township, MI on Monday April 17, 2017 at 7:00 pm with the following in attendance:

PRESENT: J. Arthur Bryson, Supervisor; Cynthia Valentine, Clerk; Kristi Hiltunen, Treasurer; Trustee Mark Borchardt, Trustee Chris O'Regan, Trustee Joanne Shirkey, Trustee Sandee Kuhfeldt

ABSENT: None

The following preamble and resolution was offered by Clerk Cindy Valentine and supported by Trustee Sandee Kuhfeldt:

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Clay Township Board/Council, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Clay Township Board/Council, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the Bingham Township Board/Council also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

UPON ROLL CALL VOTE ON THE ADOPTION OF THE RESOLUTION, THE FOLLOWING VOTED:

AYES: J. Arthur Bryson, Supervisor; Cynthia Valentine, Clerk; Kristi Hiltunen, Treasurer; Trustee Mark Borchardt, Trustee Sandee Kuhfeldt, Trustee Chris O'Regan, Trustee Joanne Shirkey
NAYS: None ABSENT: None

This Resolution adopted by the Clay Township Board of Trustees on April 17, 2017.

Cynthia Valentine, Clay Township Clerk

CERTIFICATION

The undersigned Clerk of the Township p of Clay hereby certifies that the foregoing constitutes a true and complete copy of a Resolution adopted by the Clay Township Board of Trustees of the Township of Clay, County of St. Clair, Michigan at a meeting held on April 17, 2017 at which seven (7) members of the Township Board were present and voted as indicated, that said meeting was held in accordance with the Open Meetings Act of the State of Michigan, being Act 267, Public Acts of Michigan, 1976, and that the minutes of said meeting were kept and will be or have been made available as required by said Act.

Cynthia Valentine, Clay Township Clerk

Name: Township of Clyde, Michigan
Date of Submission: April 15, 2017
Location: Clyde Township, Michigan
Comment:

Clyde Township
St. Clair County
Est. 1836
3350 Vincent Road North Street, Michigan 48049
Phone: (810) 985-7258 Fax: (810) 985-3065

I.J.C.
R.O. WINDSOR
MAY 8 2017

April 15, 2017

To Whom It May Concern:

Two years ago, a resolution opposing the deposit of nuclear waste into the Great Lakes Basin was mailed to you. As of today, no action on this resolution has occurred.

I have resided in Michigan my entire life, and I have enjoyed the natural beauty and resources that our state has to offer. That is why I am so concerned about this issue.

My question is the following: What must happen before irreparable damage has been done to the Great Lakes Basin? Not only will our present population be affected but future generations as well! Action needs to be taken immediately. Not 2 years, 5 years or 10 years from now but today. Instead of over analyzing the situation, there is a simple solution. Find another location to dump the nuclear waste that will not impact the Great Lakes.

Enclosed is a similar resolution for your consideration. I would urge you to protect the Great Lakes Basin with your elected position!

Thank you for the privilege of your time.

Kathleen Turner

Kathleen Turner, Clerk Clyde Township

Resolution 17-3 Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long-term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Clyde Township Board of Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Clyde Township Board of Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the Clyde Township Board also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

CERTIFICATION

Kathleen Turner

I, Kathleen Turner, Clerk of Clyde Township do hereby certify that the foregoing is a true and complete copy of a resolution adopted by the Township Board of Clyde, County of St. Clair, State of Michigan, at a regular meeting held on the 18th day of April 2017 and that said meeting was given pursuant to and in full compliance with the Open Meetings Act being Act 267, Public Acts of Michigan, 1976, as amended and that the minutes of said meeting were kept and will be or have been made available as required by said Act.

Kathleen Turner, Clerk

Township of Clyde

Name: Township of Columbus, Michigan
Date of Submission: April 12, 2017
Location: Columbus Township, Michigan
Comment:

Columbus Township Resolution
4-2-17

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, Michigan has significant experience with the concerns for locating a radioactive waste disposal facility as the state went through an exhaustive process over twenty years ago and concluded there was no viable location for constructing such a facility;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Columbus Township Board/Council, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Columbus Township, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the Columbus Township Board/Council also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

Name: The Regional Municipality of York, Environmental Services
Date of Submission: April 13, 2017
Location: Newmarket, Ontario
Comment:
Good afternoon,
On behalf of Erin Mahoney, Commissioner of Environmental Services at York Region, please find attached the above-mentioned letter with two associated attachments included. The original signed letter with attachments will be sent by regular mail on Tuesday, April 18, 2017 due to the Easter holiday.
Mary Manson on behalf of Erin Mahoney
Erin Mahoney | Commissioner, Environmental Services

York Region

April 13, 2017

International Joint Commission - Canadian Section
234 Laurier Ave. W.
Ottawa, Ontario, K1P 6K6

Submitted via email to: ParticipatelJC@ottawa.ijc.org
To Whom It May Concern:
RE: York Region Response - International Joint Commission Triennial

Assessment on Great Lakes Water Quality - April 2017

York Region staff thanks the International Joint Commission (IJC) for the opportunity to comment on the *Triennial Assessment on Great Lakes Water Quality* (the Report) and appreciate the work of the IJC in assessing water quality in the Great Lakes. York Region staff provides a number of comments on the Report below, along with suggested actions to improve water quality.

In addition to this response, attached is a copy of York Region - Environmental Services Commissioner Mahoney's remarks to the IJC from the session in Toronto in Fall 2016, which were not able to be completed within the allotted time. Also attached is a copy of York Region Council-endorsed comments on the *Draft Phosphorus Reduction Plan for Lake Erie* as submitted to the Ontario Ministry of the Environment and Climate Change in November 2016.

Section 1 - Drinking Water

IJC recommendation for U.S. states to develop sourcewater protection plans has potential to improve water quality in Great Lakes

York Region is located directly to the north of the City of Toronto and has a population of nearly 1.2 million people. York Region provides drinking water to its residents primarily using water from Lake Ontario along with services in some areas from Lake Simcoe and groundwater sources within the Lake Huron basin.

York Region is a strong advocate for source water protection having been the first to appoint municipal source water Risk Management Official in the Province of Ontario. Region staff have also been heavily involved in developing and implementing source water protection plans in the Huron and Ontario Great Lakes watersheds. Based on this experience, staff strongly support source water protection plans as a tool to help improve water quality. Protecting water at its source helps to ensure clean, safe and sustainable drinking water for all those who rely on it. Source water protection plans could be a valuable tool to help jurisdictions manage phosphorus/nutrient inputs to the Great Lakes, which has been identified as a key concern under Section 6 of the Report.

IJC should consider supporting One Water philosophy, which treats water as a resource in all its forms

York Region has considerable experience using a multi-barrier approach in managing risks related to drinking water quality and can attest to benefits of this approach. The Region's 2016 Water and Wastewater Master Plan Update expands on this approach by adopting a One Water philosophy. One Water strives to realize the value of water whether it is in a lake, river, aquifer or municipal system. Its goal is to reduce the burden on both water resources and built infrastructure by managing water in a more integrated way. This includes such measures as expanding on current efforts to conserve water, relying more on natural processes to enhance or replace built infrastructure, and capturing the value of reusing water. A One Water approach may also be beneficial for the IJC to drive toward common goals for the Great Lakes.

Section 4 - Pollutants

EPR has strong potential to help manage materials that impact the Great Lakes

Region staff were pleased to see the principle of Extended Producer Responsibility (EPR) supported in the Report. York Region has long advocated for EPR for solid waste materials, such as recyclables and electronic waste. EPR programs ensure that manufacturers have full responsibility for end-of-life management of their products, which help to incentivize "design-for-the-environment" products. Adopting these principles for chemicals of mutual concern, as identified in the Report, would advance a

prevention-first approach to managing chemicals that impact source water. In addition, this may incentivize manufacturers to investigate and substitute less toxic alternatives.

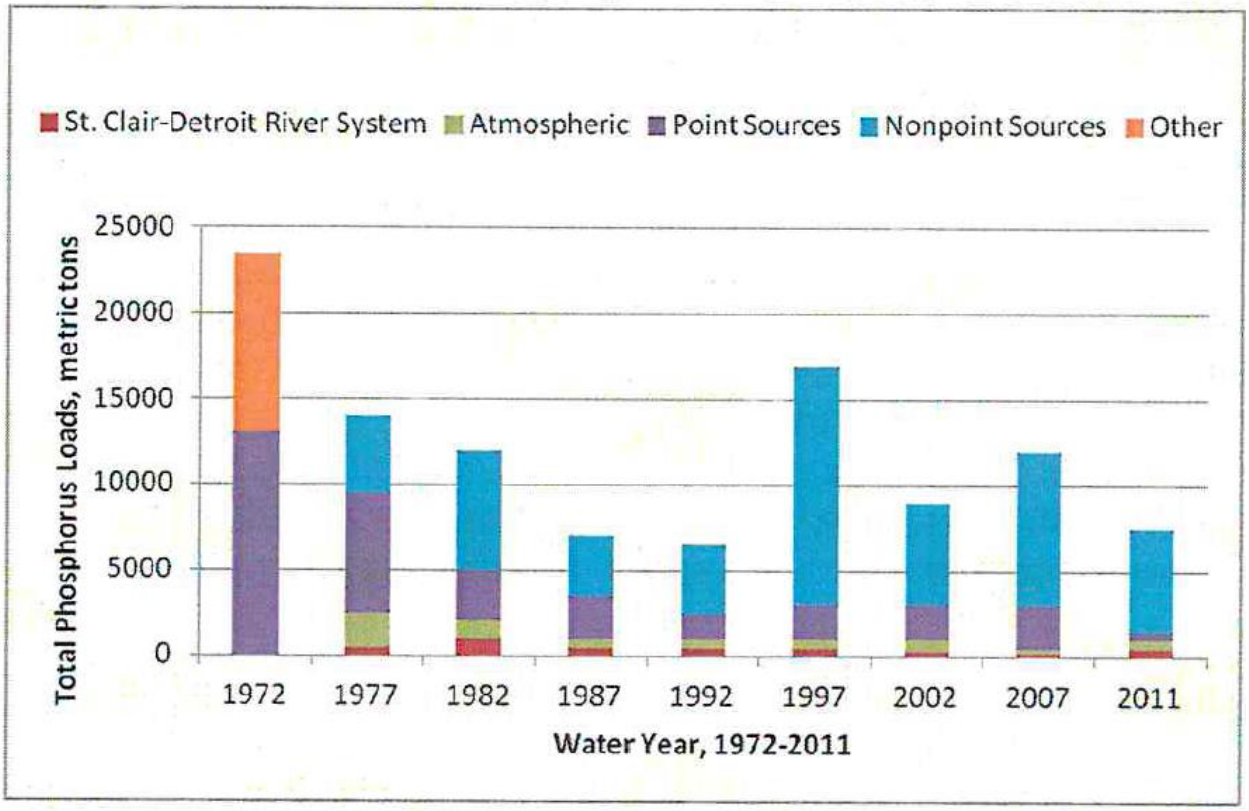
Section 6 - Nutrients

Region staffs strongly support enforceable standards for nonpoint sources of phosphorus to supplement voluntary stewardship initiatives

Region staff agree with the IJC that it will be critical to take strong action to address nonpoint sources to meet nutrient/phosphorus reduction targets. The Ontario Ministry of the Environment and Climate Change released a plan to address phosphorus loading in Lake Erie in the Fall of 2016. This plan identified that approximately 75percent of phosphorus loading to the Lake originates from the agricultural sector, 5-10percent from urban runoff, and the remaining 10-15 percent from point sources such as wastewater treatment plants. While nonpoint sources are the key contributor to phosphorus loading, we were quite disappointed to learn that the only sector proposed to be regulated is wastewater treatment plants.

Back in the 1970s, regulating wastewater treatment plants and other point sources was a logical first step to address phosphorus and algae issues as they offered the highest measurable area for phosphorus reduction. More than $7.5 billion in phosphorus related infrastructure investments were made from 1972 to 1985 to Great Lakes wastewater treatment plants (Makarewicz, 1991). As Figure 1 demonstrates, phosphorous inputs from nonpoint sources have significantly increased over the same period that wastewater treatment plants significantly reduced their phosphorus outputs making these treatment plants a surprising target for greater regulation.

Figure 1: Annual Phosphorus Loading for Lake Erie (LENT Joint Action Plan)



Source: LENT, 2015: Annual loading of Total Phosphorus to Lake Erie by major sources. Excerpted and modified from Ohio Lake Erie Task Force II Final Report; original data provided by Dr. David Dolan, University of Wisconsin, Green Bay. May 2013.

Most of the phosphorus reduction 'low-hanging fruit' has already been addressed at wastewater treatment plants, which are now responsible for a relatively small proportion of the total phosphorus loading. **A 40 percent reduction in phosphorus loading for Lake Erie cannot be achieved without addressing non-point sources.** It is anticipated that this will be the case for other Great Lakes experiencing nutrient loading issues.

York Region's experience with best-in-class facilities emphasizes the need to shift action to more practical and meaningful phosphorus reductions for the Great Lakes

There has been consistent government inaction to address phosphorus from non-point sources. Governments have instead chosen to continue to focus on point sources across the Great Lakes. For example, York Region and Durham Region co-own the Duffin Creek treatment plant and filed an Environmental Assessment in 2013 for outfall modifications to increase capacity to service our growing communities. Despite having an average phosphorus effluent concentration of 0.42mg/L, which is well below levels from most large wastewater treatment plants on Lake Ontario, opponents to the project attribute near-shore algae issues to this wastewater treatment plant. Further, a body of scientific evidence indicates that this wastewater treatment plant is not the cause of algae issues in the area.

Ineffective government policy on non-point source phosphorus has delayed facility upgrades and created a community issue focused on the most controllable, yet least contributing, source of phosphorus in the sub-watershed. It would be beneficial for the IJC to strengthen its recommendation that all Great Lakes states and provinces consider taking a results-based regulatory approach to address non-point sources of phosphorus.

Cost to reduce phosphorus is much higher for wastewater treatment plants than for non-point sources

Non-point source phosphorus reduction initiatives offer far greater phosphorus reduction per dollar spent as compared to wastewater treatment facility upgrades. The Lake Simcoe Region Conservation Authority (LSRCA) commissioned XCG Consulting to develop a framework for phosphorus trading in the Lake Simcoe watershed to determine the best options to reduce phosphorus levels for Lake Simcoe. The study highlights that actions to address agricultural and stormwater runoff offer significantly higher phosphorus reductions per dollar spent. Results are summarized in the Table 1.

Table 1: Cost per kg of Phosphorus Removal for Lake Simcoe

Project	Cost per kg of Phosphorus
Agriculture	
Field management BMPs	3.45-31.33
Streambank and Gully BMPs	7.90-1993
Manure management BMPs	145.11-
Stormwater	
Stormwater retrofits	1,700
Sewage Treatment	

Upgrade Sunderland WPCP from lagoon system to mechanical plant with Tertiary	8,033
Upgrade Cannington WPCP from lagoon system to mechanical plant with Tertiary	6,014
Upgrade Holland Landing WPCP from lagoon system to mechanical plant with	5,281

Source: Lake Simcoe Phosphorus Offsetting Program Report Appendices, August, 2014, XCG

In contrast to the range of costs listed above, tertiary wastewater treatment upgrades recently completed at York Region's Keswick Water Resource Recovery resulted in an estimated phosphorus removal cost of $45,000 per kilogram removed. To make the most effective use of limited available resources, it is strongly recommended that a similar quantification of costs to reduce phosphorus be performed to determine optimum watershed-specific actions for the Great Lakes.

Phosphorus offsetting or trading programs offer a win-win solution for all parties and maximizes phosphorus reductions per dollar spent

As identified, costs to reduce a kilogram of phosphorus at wastewater treatment plants are much higher than non-point source projects. Under a phosphorus trading program, governments may be able to support non-point source reductions, potentially within the agricultural sector.

Municipalities could benefit by unlocking lower cost phosphorous reduction alternatives in comparison to being required to complete expensive and less efficient capital upgrades. It could also provide the agricultural community with an economic incentive to reduce their phosphorus impact. This provides a unique opportunity for these groups to build stronger and more collaborative relationships, which can help drive a more holistic approach to phosphorus management and Great Lakes water quality.

Phosphorus offsetting/trading is an implementable option that is being pursued by a number of government agencies

Meeting phosphorus reduction targets of 40 percent will require consideration of innovative approaches, such as phosphorus trading. York has proposed phosphorus offsetting programs for the Upper York Sewage Solutions project as a tool to address phosphorus loading in Lake Simcoe. Similarly, the State of Iowa legislature has proposed a nutrient exchange program under House Study Bill 135. In an interview, Representative Chip Baltimore indicated the proposal is "about sparking collaboration rather than confrontation to clean up the state's surface water." York Region staff are of the opinion that phosphorous trading is an approach that could benefit all Great Lakes watersheds.

IJC endorsement of phosphorus trading has the potential to help unlock innovation and more timely action

There has been a significant amount of research performed on phosphorus trading programs in jurisdictions worldwide. For example, Amelia Letnes of the U.S. Environmental Protection Agency (USEPA) recently published a paper that outlines how to establish a baseline for phosphorus and the USEPA has also published proposed guidelines for a phosphorus trading program (Letnes, 2016). While phosphorus offsetting/ trading has been identified as a potential tool to manage phosphorus under the recently released Canada-Ontario Action Plan for Lake Erie, there is only a suggestion that this could be a potential tool in the future. Given that the majority of loading to Lake Erie is from non-point sources, phosphorus offsetting or trading programs must be considered now as they have the potential to drive the greatest reductions in loading. IJC endorsement of these innovative approaches can be very helpful for those jurisdictions attempting to make phosphorus trading initiatives a realistic and implementable option within Great Lakes watersheds.

Section 7 - Invasive Species

Devoting additional resources to management of established aquatic invasive species has the potential to help mitigate phosphorus issues

Region staff are in agreement with the IJC position that preventing the spread of invasive species is key to reducing long-term impacts on the Great Lakes and suggest that greater consideration be given to controlling already established invasive species. It would be beneficial for the Report to include recommendations for additional research on how to reduce the impact of already established invasive species as an important measure to help improve water quality. IJC published a story in the March edition of *Great Lakes Connection* newsletter of research being performed on how cyanobacteria can inhibit the spawning ability of Quagga (dreissenid) mussels. More research like this is recommended to support management of the impact of invasive species.

Innovative options such as water reuse provides opportunities to support multiple Great Lakes priorities and should be supported by regulatory frameworks

While the Report did not have a specific section related to innovative practices, Region staff wanted to raise the benefits of these approaches that have the potential to meet multiple IJC goals for the Great Lakes. As identified, innovative actions such as phosphorous trading provide an opportunity for Great Lakes jurisdictions to reach their goals in a manner that provides the best value to all stakeholders.

Another example of a solution that benefits a wide array of stakeholders is water reuse, which diverts a portion of a wastewater plant's treated effluent toward a beneficial use. Also known as reclaimed water, reused water can be used for a number of different purposes. However, reclaimed water use is greatly restricted under existing regulatory structures as there is no comprehensive regulatory framework that recognizes reclaimed water as a resource in Ontario and many other jurisdictions. In most cases, water reuse is not contemplated in a jurisdiction until supply becomes severely constrained, such as the current situation in the southwestern United States. While there are significant benefits to these approaches, many of these innovative solutions that have the potential to support Great Lakes water quality and quantity are not being considered by Great Lakes Provinces and States.

As identified in Section 1: Drinking Water, York Region has adopted a One Water philosophy, which is also supported by multi-national industry groups such as the Water Environment Federation. By recognizing the value of water in all its forms, One Water helps to provide an incentive to manage water more effectively whether it be drinking water, source water, runoff, or effluent. This philosophy is also supportive of water reuse initiatives. By treating all forms of water as a resource, One Water acknowledges beneficial use and helps establish value for reclaimed water, even in areas such as the Great Lakes, which can help to ensure the long-term sustainability of water supplies. It is recommended that IJC consider supporting water reuse and a One Water philosophy and encourage Provinces and States to be more supportive of water reuse initiatives in their permitting structures. Creative and logical solutions like this would likely be supported by a wider array of stakeholders and should be capitalized on whenever possible.

Region staff thank IJC for the opportunity to comment on the Report

Once again, Regional staff would like to thank the IJC for considering these comments and for engaging municipalities on the *Triennial Assessment on Great Lakes Water Quality*. Addressing the health of the Great Lakes will require strong action using innovative solutions. Region staff would be happy to discuss any of the items included in this response with IJC staff.

If you have any questions regarding this response, please contact Brent Marissen, Policy and Advocacy Senior Program Analyst at brent.marissen@york.ca.

Yours truly,

Erin Mahoney M. Eng
Commissioner Environmental Services
The Regional Municipality of York

cc: Madhu Malhotra, Manager, Land and Water Policy Branch, MOECC
Ling Mark, Director, Land and Water Policy Branch, MOECC
Robert Fleming, Assistant Deputy Minister, Climate Change and Environmental Policy Division, MOECC
Dianne Saxe, Environmental Commissioner of Ontario
Fred Jahn, Chair of Regional Public Works Commissioners of Ontario
Andrew Graham, Executive Director of Ontario Soil and Crop Improvement Association

Attachments :
1: Erin Mahoney - Prepared Remarks to IJC Session - Fall 2016
2: YORK-#7065280 -York Region Response - Reducing Phosphorus to Minimize Algal Blooms in Lake Erie – EBR Number 012-8760

#7395378

Remarks to the International Joint Commission - Erin Mahoney, Commissioner of Environmental Services, York Region

Oct 5, 2016

Good afternoon. My name is Erin Mahoney and I am the Commissioner of Environmental Services at York Region. I appreciate the opportunity to provide comments to the International Joint Commission this afternoon, which I hope will inform your advice to the governments of our two nations of the Great Lakes.

As a provider of water and wastewater services to 12 million residents and 50,000 businesses and growing to 1.8 million by 2041, York Region has a vested interested in protecting the health of the Great Lakes both now and into the future. We have invested more than $3.7 billion over the last decade in water and wastewater infrastructure.

Our communities in the Region are serviced by both Lake Ontario as well as Lake Simcoe water, which is part of the Lake Huron watershed. We are unique in the sense that we are the only regional municipality in the Greater Toronto Area that does not have direct access to Lake Ontario so we maintain service agreements with our partners – the Region of Peel, Durham Region and the City of Toronto for various aspects of our water and wastewater service needs.

Across the Great Lakes Basin, water services continue to face greater regulatory complexity. This is especially true for York Region, which is subject to both province-wide regulatory regimes and additional requirements that reflect its unique geography at the headwater of rivers and streams draining to both Lake Simcoe and Lake Ontario. The regulatory landscape and associated requirements are very important considerations for the region in planning our future water and wastewater services.

York Region recognizes that water is a resource in all of its forms and has adopted a "One Water" approach to providing sustainable water and wastewater services through integration and innovation. While the municipal water system has traditionally been thought of as several isolated fields, the "One Water" concept looks at the water system holistically and emphasizes the value of more integrated thinking about water management and the water cycle to improve decision making. I hope the IJC will encourage both Federal governments to accelerate policy and regulatory frameworks based on One Water thinking.

A Watershed Approach to Managing Phosphorus

In reviewing the 2016 Progress Report of the Parties, it is clear that a significant binational effort has been made to increase understanding of the algae problem is Lake Erie through extensive studies.

Understanding and quantifying all sources of phosphorus and nutrients of concern in our Great Lakes and evaluating corresponding source and non-point source management options - whether from municipal, industrial, agricultural sources, or stormwater runoff, is key to an integrated watershed approach to managing phosphorus. A 2011 paper in the Journal of Great Lakes Research estimates that all Lake Ontario- based wastewater treatment plants in Canada and the United States combines contribute only a minor percentage of the total phosphorus loading to Lake Ontario.

The major sources of nutrient loading originate from unregulated sources including rivers, streams, storm outfalls and airborne sources. Developing management strategies that are proportionate to the magnitude of the sources and setting targets across all sectors is the only viable path to achieve success. This evidence-based approach will require the collaborative effort of all parties involves, and an openness to innovative solutions.

Lessons learned from Lake Simcoe have also taught us that reducing phosphorus load from wastewater treatment plants alone is not sustainable approach to managing nutrients – non- point sources such as stormwater and agricultural runoff must be tackled as part of the overall solution to managing nutrients in our watersheds.

For example, urban stormwater has been recognized as a major non-point source contributor of phosphorus loads to Lake Simcoe. Working closely with the Lake Simcoe Region Conservation Authority, the Region has put forward a Lake Simcoe watershed phosphorus offsetting strategy to mitigate phosphorus from our proposed Water Reclamation Centre, which is a 40 megalitre per day wastewater treatment facility to service growth in northern York Region. This innovative offsetting program consists of retrofitting local stormwater quantity management ponds to provide stormwater

treatment and installing low impact development technologies within an existing stormwater catchment area. The program will improve the water quality and supplement baseflows in the downstream watercourses that ultimately flow into Lake Simcoe.

Offsetting increased phosphorus loads through investing in non-point sources provides overall ecosystem benefits and a cost effective approach to control nutrient loading. It is this kind of an innovative solution driven through a collaborative approach that can help us drive meaningful change on the Great Lakes.

Science as the Foundation for Action

A deeper and shared understanding of the science is needed to help guide future actions that will restore and protect our Great Lakes. Continued progress to establish and maintain science based indicators to assess the state of the Great Lakes will be great importance moving forward.

Conclusion

Thank you, again, for the opportunity to comment today. Public feedback is an important component of the Great Lakes Water Quality Agreement as we all have a role to play in ensuring successful implementation. Municipalities, like York Region, are key to realize meaningful environmental change on the Great Lakes and need the IJC to advise federal governments that the ability to implement innovative solutions like phosphorus offset programs and water reclamation is vital if we are to help achieve our nations' joint objectives for the lakes in an environmentally and financially sustainable way.

We look forward to collaborating with the Parties and other sectors to find workable innovative solutions to protect our Great Lakes.

Name: Township of Greenwood, Michigan
Date of Submission: April 11, 2017
Location: Greenwood, Michigan
Comment:

Greenwood Township
9025 Yale Road
Greenwood, MI 48006
810-387-4044

Attached please find the Resolution passed at our Regular Meeting in Greenwood Township Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

Greenwood Township Board

Resolution Opposing Construction of a Nuclear Waste Repository in the Great Lakes Basin

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, Michigan has significant experience with the concerns for locating a radioactive waste disposal facility as the state went through an exhaustive process over twenty years ago and concluded there was no viable location for constructing such a facility;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Greenwood Township Board/Council, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Greenwood Township, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the Greenwood Township Board/Council also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

OFFERED BY: Doug Nowicki

SUPPORTED BY: Rebecca Ramsey

AYES: Rebecca Ramsey, Doug Nowicki, Marvin Roberts, Sonya O'Brien

Absent: ~~NAYS:~~

Eric Krikorian

I, Sonya O'Brien, the Clerk of the Township of Greenwood, in the County of St. Clair, State of Michigan, hereby certify that the foregoing is a true and complete copy of a resolution adopted by the Township Board of the Township of Greenwood, County of St. Clair, Michigan at a regular meeting held on April 11, 2017 and that said meeting was conducted and public notice was given in full compliance with the Open Meetings Act, being Act 268, Public Acts of Michigan 1976, and that the minutes were kept and will be or have been made available as required by said Act.

Sonya O'Brien
Sonya O'Brien
Greenwood Township Clerk

Dated: 04/11/2017

Name: County of Huron, Michigan
Date of Submission: April 11, 2017
Location: Huron County, Michigan
Comment:
No. 17- 56C

RESOLUTION

To: The Honorable Board of Commissioners
Huron County, Michigan

WE, the SAFETY COMMITTEE, respectfully beg leave to submit the following resolution for your consideration:

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geologic repository (DOR) which is an underground long-term burial facility for all of Ontario's low and intermediate level radioactive nuclear waste at the Bruce Nuclear Generating Station, some of which is highly radioactive and will remain toxic for over 100,000 years. Tills site is approximately one kilometer inland from the shore of Lake Huron and about 400 meters below the lake level; and

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' fresh-water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada, and the First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DOR by individuals, citizen and environmental groups, and municipalities and counties in both Canada and the United States; and

WHEREAS, under the 2012 *Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality,* the governments of the United States and Canada acknowledge the importance of anticipating, preventing, and responding to threats of the waters of the Great Lakes; and

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from and underground nuclear repository; and

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and

economic well-being of the entire region, should not be placed at risk by storing radioactive nuclear waste underground so close to the shoreline; and

WHEREAS, Michigan has significant experience with the concerns for siting a radioactive waste disposal facility as the state went through an exhaustive siting process over twenty years ago and concluded there was no viable location for constructing such a facility; and

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the **International Joint Commission, and a special legislatively created advisory Board; and**

WHEREAS, on December 28, 2016, OPG submitted a report outlining generic information about **two alternative geologic regions, but failed to provide any information on specific sites or consider any** areas located outside of the Great Lakes basin; and

WHEREAS, as of September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Indiana, Minnesota, Wisconsin, Pennsylvania, New York, and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the **vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great lakes basin; now**

THEREFORE, BE IT RESOLVED that the Huron County Board of Commissioners, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste **repository at the Bruce Nuclear Generating Station nor any other underground nuclear waste repository be** constructed in the Great Lakes basin in Canada, the United States, or any First Nation property; and

BE IT FURTHER RESOLVED that the Huron County Board of Commissioners, Michigan, urges the Government of Canada and the Government of Ontario to reject and seek alternatives to Ontario **Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes basin. In addition,** pursuant to SCR 16 of 2014 and SR 151 of 2014, the Huron County Board of Commissioners also urges President Trump to take all necessary steps to engage the International Joint Commission; and

BE IT FURTHER RESOLVED that copies of this resolution be provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine McKenna, the Great Lakes Commission, the International Joint Commission, Michigan Governor Rick Snyder and the Governors and legislative leaders of the remaining seven Great Lakes states, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and State Representative Ed Canfield, as well as the Joint Review Panel Deep Geological Repository for Low and Intermediate Level Radioactive Waste (case reference #17520) Co-Manager Mr. Debra Myles.

Respectfully submitted,

SAFE COMMITTEE

John L. Bodis, Chairman

Ron Wruble, Vice Chairman

Todd Talaski, Member

Dated: April 25, 2017

VOICE ~~/ ROLL CALL~~ VOTE:

COMMISSIONER	YES	NO	ABSENT	COMMISSIONER	YES	NO	ABSENT
SAMI KHOURY	☑	☐	☐	JOHN L. BODIS	☑	☐	☐
DAVID G. PERUSKI	☑	☐	☐	RON WRUBLE	☑	☐	☐
TODD TALASKI	☑	☐	☐	JOHN A. NUGENT	☑	☐	☐
STEVE VAUGHAN	☑	☐	☐				

RESOLUTION: ☑ ADOPTED ☐ DEFEATED ☐ TABLED

Name: Niagara Peninsula Conservation Authority
Date of Submission: April 10, 2017
Location: Welland, Ontario
Comment:
Dear Sir/Madam;
Please find attached the Niagara Peninsula Conservation Authority's comments regarding the IJC's draft 'Triennial Assessment of Progress Report' as approved by the Board of Directors on March 29, 2017. Do not hesitate to contact this office should you have any questions.

Kind regards;
Steve Miller, P.Eng.

NIAGARA PENINSULA
CONSERVATION
AUTHORITY

Report To: Board of Directors
Subject: Great Lakes Water Quality Agreement – IJC Draft Triennial Assessment of Progress Report
Report No: 29-17
Date: March 29, 2017

RECOMMENDATION:
That Report No. 29-17 regarding the Great Lakes Water Quality Agreement Draft Triennial Assessment of Progress Report be approved and forwarded to the International Joint Commission for their consideration.

PURPOSE:
To provide the Board with:
1) An overview of the International Joint Commission (IJC) and its involvement in Watershed Management of Nutrients in Lake Erie
2) A summary of the draft Triennial Assessment of Progress report and its public consultation process;
3) A summary of the draft Triennial Assessment of Progress report's conclusions and recommendations;
4) Draft NPCA comments regarding the draft Triennial Assessment of Progress report.

BACKGROUND:
IJC and Watershed Management of Nutrients in Lake Erie
Canada and the United States created the International Joint Commission (IJC), because they recognized that each country is affected by the other's actions in lake and river systems along the border. The IJC is typically comprised of six (6) members; 3 appointed by the President of the United States and 3 appointed by the Prime Minister of Canada. The two countries cooperate to

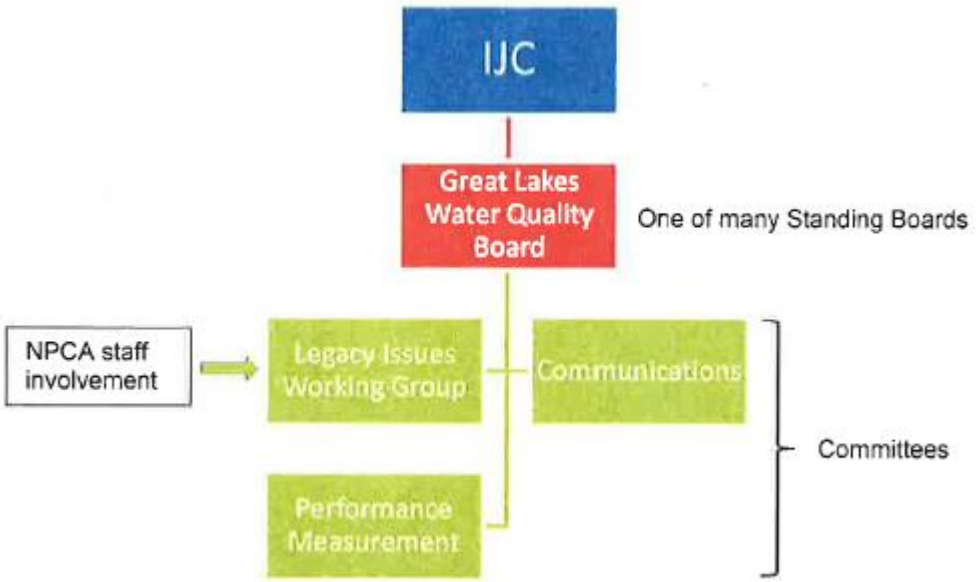
manage these waters wisely and to protect them for the benefit of today's citizens and future generations. As part of its role under the renewed Great Lakes Water Quality Agreement, the IJC prevents and resolves disputes over boundary waters of the United States and Canada, including the Great Lakes, and is served in an advisory capacity by the Great Lakes Water Quality Board (WQB).

Created by the Great Lakes Water Quality Agreement, the Great Lakes Water Quality Board has broad responsibilities for assisting the International Joint Commission with the exercise of the functions, powers and responsibilities assigned to it in the Agreement.

In 2015 the WQB formed the Legacy Issues Working Group (LIWG), which undertook a project to assess the state of watershed management plans for nutrient management in the Lake Erie basin. Figure 1 below illustrates the basic organizational structure of the IJC which includes about 20 standing boards.

In August 2016, the Great Lakes Water Quality Board released a report *"Evaluating Watershed Management Plans-Nutrient Management Approaches in the Lake Erie Basin and Key Locations Outside of the Lake Erie Basin"* that includes recommendations on how watershed management plans should be used to manage nutrient pollution in Lake Erie and identifies key success factors necessary for watershed management plans to achieve meaningful nutrient load reductions.

Figure1-Basic Organizational Structure of IJC



On February 1[51] and 2nd 2017, the LIWG convened a binational workshop that brought together approximately 30 experts (including NPCA staff), to build support for the findings of the working group report and by defining and developing standard components that should be part of watershed management plans, including key factors critical to the successful development and

implementation of watershed management plans.

Draft Triennial Assessment of Progress Report and Public Consultation

Under the 2012 Great Lakes Water Quality Agreement, Canada and the United States have been working together to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes. Under this Agreement, the International Joint Commission (IJC) is charged with submitting a triennial assessment of progress to the governments of Canada and the United States regarding Great Lakes water quality.

The IJC recently released its draft Triennial Assessment of Progress (TAP) report. The IJC is currently soliciting comments from the public regarding the draft TAP report's conclusions and recommendations. These public comments will be used to help write the final report and its associated recommendations.

Comments on the IJC's draft TAP report are welcome until April 15, 2017 via email to ParticipateIJC@ottawa.ijc.org and online at ParticipateIJC.org. Public meetings which focus on local topics of concern have been held in various locations with the last session scheduled in Niagara Region as follows:

March 29, 2017: St. Catharines, Ontario - Alumni Hall, St. Catharines Rowing Club, Henley Island (1:30 – 4:30pm)

Key local topics for discussion are: sustainable agriculture, harmful algal blooms, Great Lakes nutrient reduction, Chemicals of Mutual Concern and human health, and the status of the Areas of Concern.

The feedback obtained from these public meetings and written comments will be used as a guide in revising the draft Triennial Assessment of Progress report before it is submitted to the governments of Canada and the United States later in 2017.

Draft Triennial Assessment of Progress Report Conclusions and Recommendations

Some findings in the draft report that the IJC seeks the public's comment include:

- The conclusion that there has not been sufficient progress toward the achievement of human heath objectives. Greater focus is needed to improve the ability to swim, fish, and drink the water of the Great Lakes.

- Significant new government investment has accelerated work to restore the 43 contaminated Areas of Concern (see Figure 3). Prior to 2016, 14 of these Areas of Concern have been remediated and are now being monitored. By 2019, an additional 13 Areas of Concern are anticipated to be delisted (including the Niagara River Area of Concern).

Figure 3 – Canadian and U.S. Great Lakes Areas of Concern.

- An initial list of Chemicals of Mutual Concern has been created. The following eight (8) chemicals are the first set to be so designated:
  1) Mercury;
  2) Polychlorinated biphenyls (PCBs);
  3) Perfluorooctanoic acid (PFOA);
  4) Perfluorooctanoic sulfonate (PFOS);
  5) Long-chain perfluorinated carboxylic acids (LC-PFCAs);
  6) Polybrominated diphenyl ethers (PBDEs);
  7) Hexabromocyclododecane (HBCD); and,
  8) Short-chain chlorinated paraffin's (SCCPs).

It is recommended that control strategies be immediately developed by both governments to address these toxic and long-lasting chemicals.

- Water quality in western and central Lake Erie is unacceptable. The commitment to reduce nutrient inputs by 40 percent is laudable but mandatory controls (with respect to the application fertilizers and manure for example) may be required to meet this target.
- Stopping the introduction of aquatic invasive species through ballast water controls and prevention programs has had excellent results. At the same time, existing aquatic invasives and terrestrial invasives such as *Phragmites*, Asian longhorned beetle, and garlic mustard continue to challenge the entire ecosystem.
- Recognizing that climate change (i.e. warming temperatures, changing precipitation patterns, decreased ice coverage, changing water levels) has an impact on the quality of waters of the Great Lakes, Canada and the United States; hence, the creation of a new Annex in the 2012 Great Lakes Water Quality Agreement to address the issue. Through this new Annex, both governments have committed to coordinate efforts to identify, quantify , understand, and predict climate change impacts on the water quality of the Great Lakes.

NPCA Comments Regarding the Triennial Assessment of Progress Report Findings

NPCA staff recommend that the Board consider the following comments to be forwarded to the IJC:

- With respect to the quality of water within the Great Lakes, the NPCA strongly agrees that greater focus is needed to improve the ability to swim, fish, and drink the water of the Great Lakes. At the June 2016 NPCA Board meeting the Board considered the 2016 Annual Water Quality Report (Report 67-16) which noted that there is no direct funding currently available at the NPCA to meaningfully address the significant water quality problems. As such, the NPCA recommends that additional funding and partnerships be undertaken to expand existing water quality monitoring networks within the Great Lakes basin. This would include:

    - Obtaining additional water samples to better understand the scope and nature of nutrients discharging into the Great Lakes via their tributaries,
    - Implementing additional sampling sites to identify and track-down the origin of large phosphorus and nutrient discharges, and
    - Undertaking the monitoring of the Great Lake's nearshore region to better understand the scope, nature, and origin of algal blooms.

The NPCA further recommends that the Government of Canada (through the Province of Ontario) directly leverage the data and information available in the existing Conservation Authority Water Quality Monitoring Networks to help deliver this initiative.

- The NPCA strongly supports the creation of a list of Chemicals of Mutual Concern. The NPCA would urge the IJC to recommend that both governments adopt aggressive control strategies to deal effectively with these specific contaminants.
- In order to meet the phosphorus targets anticipated to be proposed in the 2018 Lake Erie Lakewide Management Plan (LAMP), the NPCA recommends that the Government of Canada (through the Province of Ontario) directly leverage the existing Conservation Authority Stewardship Programs to deliver direct localized actions to reduce non-point phosphorus sources entering the Great Lakes.
- Additional funding be made available to update local sub-watershed plans to identify specific opportunities and actions which would focus on reducing the discharge of phosphorus and nutrients into the Great Lakes. These plans would allow for a more complete understanding of the economic and recreational impacts (of Lake Erie algae blooms, for example) and could help to better quantify the local benefits of addressing these issues.

The NPCA is well positioned to support the management, research, and monitoring goals for Lake Ontario and Lake Erie. The NPCA looks forward to continuing to be a contributing partner in working toward improving the state of the Great Lakes.

RELATED REPORTS AND APPENDICES:

1. Staff Report 67-16 NPCA 2016 Water Quality Report (referenced only) https://npca.ca/sites/default/files/june2016.pdf)
2. 2016 NPCA Water Quality Report (referenced only) https://npca.ca/sites/defaultlfiles/june2016.pdf

NIAGARA PENINSULA CONSERVATION AUTHORITY

Prepared by:

Steve Miller, P.Eng.
Manager, Water Resources & Restoration

Reviewed by:

Suzanne McInnes, MCIP, RPP
Acting Director, Watershed Management

Submitted by:

Peter Graham, P.Eng. MBA
Acting Chief Administrative Officer /
Secretary Treasurer

This report was prepared with consultative input from Josh Diamond, NPCA Water Quality Specialist.
Report 29-17 "/JC Great Lakes Agreement "

Resolution No. FA - 80 - 17

FULL AUTHORITY MEETING

The 29th day of March, 2017
Moved by: B. Baty
Seconded by: S. Beattie

THAT Report No. 29-17 regarding the Great Lakes Water Quality Agreement Draft Triennial Assessment of Progress Report be approved and forwarded to the International Joint Commission for their consideration.

NPCA Chair, Annunziata

☑ MOTION CARRIED ☐ CARRIED AS AMENDED ☐ RECORDED VOTE

Name: Township of Paris, Michigan
Date of Submission: April 10, 2017
Location: Paris, Michigan
Comment:
Resolution Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

WHEREAS Ontario Power Generation (OPG) is proposing to construct a deep geologic repository (DGR) which is an underground long-term burial facility for all of Ontario's low and intermediate level radioactive nuclear waste at the Bruce Nuclear Generating Station, some of which is highly radioactive and will remain toxic for over 100,000 years. This site is approximately one kilometre inland from the shore of Lake Huron and about 400 metres below the lake level;

WHEREAS water is the nation's and Canada's most important natural resource and should be protected and managed prudently;

WHEREAS the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' freshwater vital to human and environmental health;

WHEREAS the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America;

WHEREAS Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada, and First Nations;

WHEREAS concern has been expressed over the proposed OPG DGR by individuals, citizen and environmental groups, and municipalities and counties in both Canada and the United States;

WHEREAS under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality,* the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic well-being of the entire region, should not be placed at risk by storing radioactive nuclear waste underground so close to the shoreline;

WHEREAS Michigan has significant experience with the concerns for siting a radioactive waste disposal facility as the state went through an exhaustive siting process over twenty years ago and concluded there was no viable location for constructing such a facility.

WHEREAS the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory Board.

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside of the Great Lakes basin; and

WHEREAS, As of September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Indiana, Minnesota, Wisconsin, Pennsylvania, New York, and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes basin; and

NOW THEREFORE BE IT RESOLVED, that the Paris Township Board, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating Station nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, the United States, or any First Nation property.

BE IT FURTHER RESOLVED, that the Paris Township Board, Michigan, urges the Government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SR 151 of 2014, the Paris Township Board also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution be provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine McKenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes states, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

Sincerely yours,

Ronald Smalley

Ronald Smalley
Paris Township Board Supervisor

Name: The Saginaw Chippewa Indian Tribe of Michigan
Date of Submission: April 10, 2017
Location: Mt. Pleasant, Michigan
Comment:

The Saginaw Chippewa Indian Tribe
Of Michigan

7070 EAST BROADWAY MT. PLEASANT, MICHIGAN 48858 (989) 775-4000
FAX (989) 772-3508

International Joint Commission
Sarah Lobrichon
International Joint Commission
234 Laurier Avenue West, 22nd Floor Ottawa,
Ontario KI P 6K6

RE: IJC's Draft Triennial Assessment of Progress Report under the 2012 Great Lakes
Water Quality Agreement

International Joint Commission:

In this letter, the Saginaw Chippewa Indian Tribe of Michigan (SCIT) is submitting comments regarding the International Joint Commission's(IJC) draft *First Triennial Assessment of Progress on Great Lakes Water Quality* under the 2012 Great Lakes Water Quality Agreement. Specifically, the SCIT is requesting the IJC to finalize the draft after considering our comments. The SCIT has reviewed the document in its entirety and we are supportive of IJC's efforts to: 1) determine progress made to protect and restore the Great Lakes, 2) respect vulnerable communities, specifically

Tribal Communities, and our unique perspectives and circumstances as they relate to the environment, and 3) consult and coordinate with Indian Tribes in both the draft document language and approach to consultation to which we are responding. Please consider our following comments prior to finalizing this draft:

Progress Towards Protection and Restoration of the Great Lakes

The IJC has made a thoughtful effort to determine progress that has been made towards the protection and restoration of our Great Lakes. Specifically, the IJC appropriately identified areas of significant progress and areas where information is weak. The Report identifies public engagement as an area where future resources and progress should be focused. This is extremely important to ensuring all other aspects of the protection and restoration can be achieved. Additionally, more public education and outreach is crucial for public support for these types of projects and to shift the public's behavior to align with the goals of clean water.

Respect for and Consideration of Tribal Perspectives and Circumstances

In this draft document, we found numerous instances where the DC adequately considered Tribal perspectives and circumstances as they relate to the assessment of human exposure. It is our professional opinion that this document provides appropriate guidelines for gathering data from and communicating results to Tribal communities.

The IJC has made a thoughtful effort to engage the SCIT in providing input on this report as well as other Great Lakes efforts including the Great Lakes Public Forums and the Lakewide Action Management Plan. Additionally, many valuable partnerships have emerged during the journey to achieve this common goal of clean water in our Great Lakes.

Please consider these comments as you finalize the draft *First Triennial Assessment of Progress On Great Lakes Water Quality*. We appreciate the opportunity to work collaboratively with your agency, and we thank you for this opportunity to provide meaningful comment.

Sincerely,

Frank J. Cloutier, Tribal Chief or
Brent D. Jackson, Sub Chief
Saginaw Chippewa Indian Tribe

Name: The County of Sanilac, Michigan
Date of Submission: April 14, 2017
Location: Sanilac, Michigan
Comment:

Resolution Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, Michigan has significant experience with the concerns for locating a radioactive waste disposal facility as the state went through an exhaustive process over twenty years ago and concluded there was no viable location for constructing such a facility;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

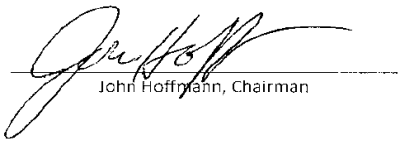
WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Sanilac County Board of Commissioners, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Sanilac County Board of Commissioners, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury

radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the Sanilac County Board of Commissioners also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.



Name: The Township of Sherman, the County of Huron, Michigan
Date of Submission: April 14, 2017
Location: Huron County, Michigan
Comment:
Resolution Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin – 2014-0411

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable

beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, Michigan has significant experience with the concerns for locating a radioactive waste disposal facility as the state went through an exhaustive process over twenty years ago and concluded there was no viable location for constructing such a facility;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Sherman Township Board/Council, Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Sherman Township, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the Sherman Township Board/Council also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

Adopted at a Regular Meeting of the Sherman Township Board, 4599 S Ruth Rd, Ruth MI 48470, on Tuesday, April 11, 2017.

All members voting YES.

Kathi N Tabb, Clerk
SHERMAN TOWNSHIP
HURON COUNTY
MICHIGAN
4-11-2017

Name: Village of Kinde, County of Huron, Michigan
Date of Submission: April 10, 2017
Location: Kinde, Michigan
Comment:

VILLAGE OF KINDE
405 MAIN STREET
KINDE MICHIGAN, 48445
989-874-4655
FAX# 989-874-4026

I.J.C
R.O. Wn,, _
8 2017

VILLAGE OF KINDE, HURON COUNTY, MICHIGAN Resolution Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin

On motion by HAGLE, seconded by CLANCY the following Resolution was adopted:

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Village of KINDE , Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Village of KINDE, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, Village of KINDE also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

Vote on Resolution:

Ayes 5

Nays: 0, Absent 2

PASSED and ADOPTED on the 10 Day of April. 2017

CLERK'S CETIFICATION

STATE OF MICHIGAN
COUNTY OF HURON

I Jerry Toner, Clerk of the Village of Kinde, Huron County, Michigan does hereby certify that the above and foregoing is a full, true and correct copy of a Resolution of the Village of Kinde Board/Council, duly and regularly passed and adopted at a regular meeting of said Village of Kinde Board/Council which was duly and regularly called and held in all respects as required by law on April, 10, 2017, at which meeting a majority of the members of The Village of Kinde Board/Council were present and voted in favor of such resolution.

IN WITNESS WHEREOF, I have set my hand as such Clerk on this 11th day of April, 2017.

JERRY TONER, CLERK

Name: Village of Sebewaing, Michigan
Date of Submission: April 10, 2017
Location: Sebewaing, Michigan
Comment:

SEBEWAING

Village of Sebewaing
222 North Center Street
Sebewaing MI 48759
Phone: 989-883-2150 Fax: 989-883-9367
Email: office@SebewaingMI.gov
www.SebewaingMI.gov

This institution is an equal opportunity provider

Resolution Opposing the Construction of a Nuclear Waste Repository in the Great Lakes Basin
Village of Sebekaing, Michigan

WHEREAS, Ontario Power Generation (OPG) is proposing to construct a deep geological repository (DGR) which is an underground long—term burial facility for all of Ontario's low and intermediate level ,remain toxic for over 100,000 years. This site is approximately 1 km from the shore of Lake Huron and about 400 meters below the lake level;

WHEREAS, water is the nation's and Canada's most important natural resource and should be protected and managed prudently; and

WHEREAS, the Great Lakes are an irreplaceable natural resource, containing twenty percent of the world's and ninety-five percent of the United States' water vital to human and environmental health; and

WHEREAS, the Great Lakes are vital to the economic and agricultural well-being of both Canada and the United States of America; and

WHEREAS, Lake Huron and the connecting waters, including Lake St. Clair, are a source of drinking water

for millions of people downstream in the United States of America, Canada and First Nations; and

WHEREAS, concern has been expressed over the proposed OPG DGR by individuals, citizens and environmental groups, and municipalities and counties both in Canada and the United States; and

WHEREAS, under the *2012 Protocol Amending the Agreement Between Canada and the United States of America on Great Lakes Water Quality*, the governments of the United States and Canada acknowledge the importance of anticipating, preventing and responding to threats to the waters of the Great Lakes;

WHEREAS, the Governments of Canada and of the United States share a responsibility and an obligation to protect the Great Lakes from contamination from various sources of pollution, including the potential leakage of radioactivity from an underground nuclear waste repository;

WHEREAS, placing a permanent nuclear waste burial facility so close to the Great Lakes is ill-advised. The potential damage to the Great Lakes from any leak or breach of radioactivity far outweighs any suggested economic benefit that might be derived from burying radioactive nuclear waste at this site. The ecology of the Great Lakes, valuable beyond measure to the health and economic wellbeing of the entire region, should not be placed at risk by storing radioactive waste underground so close to the shoreline; and

WHEREAS, the Michigan Senate has expressed serious concerns for the failure of the siting process in Ontario for the proposed OPG DGR to fully account for all potential impacts of the proposed facility by passing a legislative package urging intervention by the Great Lakes Commission, the International Joint Commission and a special legislatively created advisory board;

WHEREAS, On December 28, 2016, OPG submitted a report outlining generic information about two alternative geologic regions, but failed to provide any information on specific sites or consider any areas located outside the Great Lakes basin; and

WHEREAS, On September 12, 2016, entities representing over 23 million citizens have passed 187 resolutions in the states of Michigan, Illinois, Minnesota, Wisconsin, Pennsylvania, New York and Ohio and in the province of Ontario opposing the proposed nuclear waste repository, with the vast majority of the resolutions opposing any permanent underground nuclear waste repository anywhere in the Great Lakes Basin;

NOW THEREFORE BE IT RESOLVED, that the Village of Sebewaing , Michigan, in order to protect the Great Lakes and its tributaries, urges that neither this proposed nuclear waste repository at the Bruce Nuclear Generating nor any other underground nuclear waste repository be constructed in the Great Lakes Basin in Canada, United States , or any First Nation property; and

BE IT FURTHER RESOLVED, that the Village of Sebewaing, Michigan, urges the government of Canada and the Government of Ontario to reject and seek alternatives to Ontario Power Generation's proposal to bury radioactive nuclear waste in the Great Lakes Basin. In addition, pursuant to SCR 16 of 2014 and SCR 151 of 2014, the Village of Sebewaing also urges President Trump to take all necessary steps to engage the International Joint Commission.

BE IT FURTHER RESOLVED, that copies of this resolution by provided to Canadian Prime Minister Justin Trudeau, Ontario Premier Kathleen Wynne, Canadian Federal Minister of the Environment and Climate Change Catherine Mckenna, the Great Lakes Commission, the International Joint Commission, Governors and legislative leaders of the eight Great Lakes States, Michigan Governor Rick Snyder, U.S. Senators Debbie Stabenow and Gary Peters, U.S. Representative Paul Mitchell, Senator Phil Pavlov, and Michigan State Representative Edward Canfield (case reference #17520) Co-Manager Ms. Debra Myles.

Respectfully submitted,

Sebewaing Village Council

Alexander Khoury, Village President

ROLL CALL VOTE:

VILLAGE TRUSTEE	YEAS	NAYS	ABSENT	VILLAGE TRUSTEE	YEAS	NAYS	ABSENT
MATTHEW CUMMINGS	☒	☐	☐	BRANDY SLOCUM	☒	☐	☐
MARCUS DEERING	☒	☐	☐	MARCUS STING	☒	☐	☐
LARRY HEIDER	☒	☐	☐	ALEXANDER KHOURY	☒	☐	☐
KATHY MANARY	☒	☐	☐				

RESOLUTION: ☒ ADOPTED ☐ DEFEATED ☐ TABLED

Adopted this 17th day of April, 2017.

Lois Kroll, Village Clerk