



Telephone Poll Final Report

**A report submitted to the
International Joint Commission
by the Great Lakes Water Quality Board –
Engagement Work Group**

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List of Acronyms

GLWQA	Great Lakes Water Quality Agreement
IJC	International Joint Commission
WQB	Great Lakes Water Quality Board

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1. Methodology and Logistics

1.1 Background and overview

In 2015, Oraclepoll conducted the first baseline Great Lakes basin randomized telephone poll for the International Joint Commission (IJC) Great Lakes Water Quality Board (WQB) among residents of the Great Lakes basin catchment area. The 2018 follow-up survey was modified and tracked several benchmark poll questions. These modifications included question about: perceived threats to the Great Lakes, the importance of protection, awareness of protection efforts, the importance of cross-border solutions to achieving a healthy Great Lakes system, and the role of the individual in protecting the Great Lakes. New questions assessed awareness levels of the IJC, and issues related to communications and sources to receive information.

This 2021 randomized telephone poll of 4,550 respondents is the third data point in the WQB's longitudinal study.¹ The questionnaire was modified in that new indicators were added, and some were dropped but many have remained consistent and comparable to the previous two polls. When and where possible, 2021 poll findings are compared with the 2015 and 2018 poll findings to determine any statistically significant variances or similarities.

1.2 Design

Oraclepoll designed the telephone poll instrument in consultation with the WQB's engagement work group. The questionnaire for the 2021 telephone poll was modified to add new questions and drop others, but many have remained consistent and comparable to the previous two polls.

The 2021 poll was first pilot tested among N=15 respondents prior to full data collection to ensure clarity of question design, length and eliminate technical errors in the computer assisted telephone interviewing programming.

1.3 Survey method

Oraclepoll conducted the poll by telephone using computer-assisted telephone interviewing with live researchers. All the person-to-person calls were made by Oraclepoll research staff. Oraclepoll management monitored 20 percent of all interviews and supervised 100 percent of interviews for quality assurance.

¹ The 2021 online poll results report is available on the Great Lakes Water Quality Board website at: ijc.org/sites/default/files/WQB_GreatLakesRegionalPoll_OnlinePollReport_2021.pdf.

Initial calls to each number were made between the hours of 6:00 p.m. and 9:00 p.m. Subsequent call-backs of no-answers and busy numbers were made up to five times from 10:00 a.m. to 9:00 p.m. over a seven-day period until contact was made. In addition, telephone interview appointments were attempted with those respondents unable to complete the survey at the time of contact. If no contact was made at a number after the fifth attempt, the number was discarded and a new one was used.

1.4 Logistics

Oraclepoll conducted interviews between January 5 and January 30, 2021.

1.5 Sample frame

A randomized dual sample frame telephone database was used that included cellular and landline phone numbers of residents living in the Great Lakes basin (**Figure 1**).



Figure 1: Map of the Great Lakes basin. The telephone poll database used cellular and landline numbers located within the basin area. Source: Great Lakes Information Network.

1.6 Study sample and error rates

In total, 4,550 interviews were completed among residents 18 years of age and older. For comparison, the 2018 poll had 4,250 responses.

Quotas were set to reflect the populations of the nine political jurisdictions (states and the province of Ontario) that comprise the Great Lakes basin catchment area and its approximate 33 million residents.² This involved a base sample of 3,950 respondents.

Additional quotas were set for First Nation, Métis and Tribal Nation member respondents and those residing on islands in the Great Lakes. Oversampling ensured that 500 Indigenous and 100 Island residents completed the poll. This was achieved through geotargeting phone numbers and by asking screening questions at the start of the poll.

The margin of error for the total 4,550 poll sample is ± 1.5 percent, 19 out of 20 times. **Table 1** below outlines the completed number (N) of interviews and margin of error for each jurisdiction and oversampled cohort.

Table 1: Sample size (N) and margin of error for each political jurisdiction (states and province) and oversampled cohort (island resident and self-identifying Indigenous individuals).

JURISDICTIONS	Sample Size (N)	Error Rate (95%)
Ontario	N=1100	$\pm 2.9\%$
Michigan	N=1100	$\pm 2.9\%$
New York	N=450	$\pm 4.6\%$
Ohio	N=350	$\pm 5.2\%$
Illinois	N=350	$\pm 5.2\%$
Wisconsin	N=280	$\pm 5.9\%$
Indiana	N=120	$\pm 8.9\%$
Pennsylvania	N=100	$\pm 9.8\%$
Minnesota	N=100	$\pm 9.8\%$
SUB TOTAL	N=3950	$\pm 1.6\%$
Indigenous Oversample	N=500	$\pm 8.3\%$
Island Resident Oversample	N=100	$\pm 9.8\%$
TOTAL	N=4550	$\pm 1.5\%$

The First Nations, Métis and Tribal Nation member respondent breakdown by area is as follows: Ontario N=226, Michigan N=77, Wisconsin N=38, Minnesota N=36, Indiana N=28, New York N=25, Ohio N=25, Illinois N=25 and Pennsylvania N=20.

² 2020 US Census population results were not available at the time of polling and reporting.

In addition, respondents were asked for the first three digits of their Postal or ZIP codes. These codes were used to further identify respondents by their community of interest as it relates to the catchment basin in which they reside. These areas were used for further insight and analysis.

Table 2 below includes the completed number (N) of interviews for the sample by basin or community of interest and their percentage (%) of the total completed sample. **Figure 2** maps each of the lakes' catchment basin, colors correspond to **Table 2**.

Table 2: Completed number (N) of interviews and percentage (%) of total sample, by lake basin

BASIN	Sample (N)	%
Lake Ontario	1028	23.1
Lake Michigan	1138	25.6
Lake Erie	1689	38.0
Lake Huron	271	6.1
Lake Superior	324	7.3
Total	N=4550	100.0



Figure 2: Map of each lake catchment basin in the Great Lakes; colors correspond to Table 2.

1.7 Reporting notes

This report contains the findings of the poll in the order that questions were asked. Where and when possible, data is referenced and compared over the three survey periods (2015, 2018 and 2021). Oraclepoll also provided the WQB with complete results and crosstabulations.

Variances or statistically significant differences as a function of area and demographics are highlighted. **Only statistically significant effects are referenced**, and these effects are significant at the $p < .05$ level, which means there are less than five chances in 100 that a reported effect does not reflect a true effect.

Some numbers displayed in charts and graphs may not add up to 100 percent as a result of rounding.

2. Opening Questions

2.1 Introductory questions

The first set of introductory questions asked all respondents how long they lived in the Great Lakes region. Most or almost in ten eight surveyed are long term residents living in the area for 10 or more years. **Figure 3** illustrates responses to this first question about residence.

Q1. How long have you lived in the Great Lakes region?

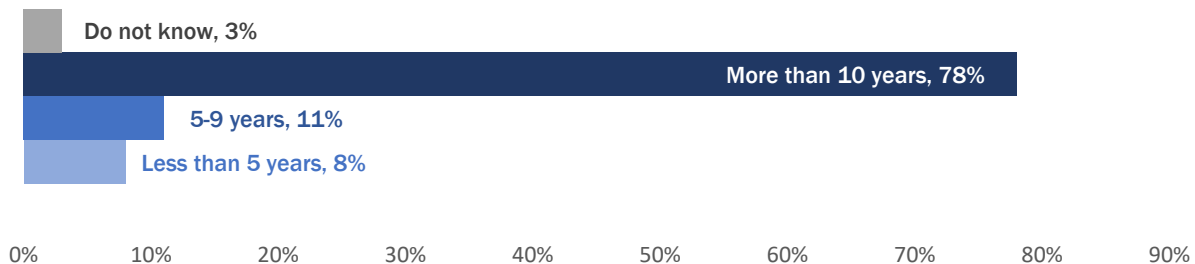


Figure 3: Length of time respondents lived in the Great Lakes region.

Next, all respondents were asked what Great Lake (or body of water) they have the greatest connection with (**Figure 4**). By emphasizing “Great Lake,” results mostly correspond with the population distribution or the basin where respondents reside.

Q2. With which Great Lake (or water body) do you have the greatest connection?

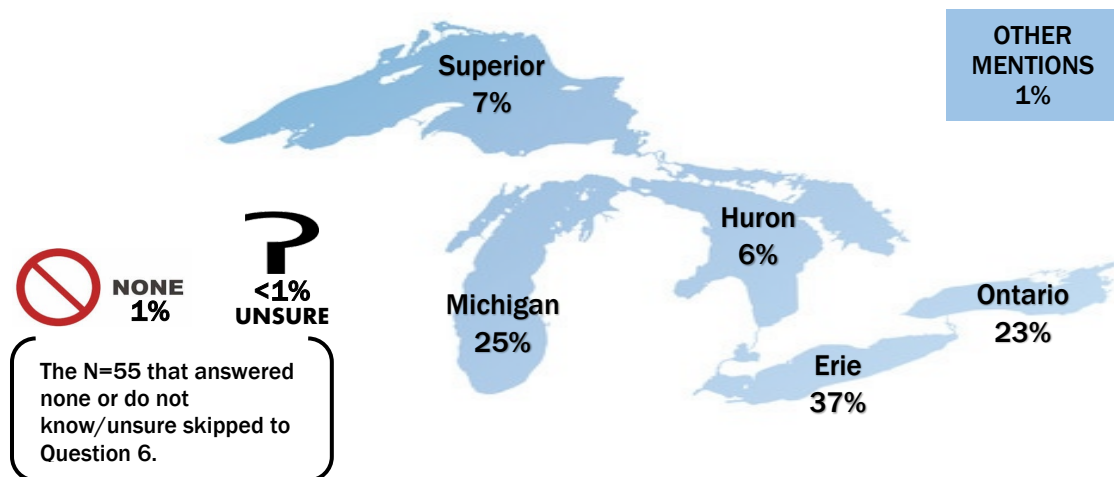


Figure 4: The Great Lake (or body of water) respondents have the greatest connection to.

2.2 Status and direction of environmental health

In a new question, respondents were asked to rate the health and quality of the lake they said they were most connected with in Question 2 (**Figure 5**). Results reveal an overall split of opinion with 29 percent answering good or very good and 33 percent poor or very poor, while 18 percent were neutral (neither poor nor good) and two in ten did not know. Those most connected with Michigan, Erie and Ontario rated them poorest, while Superior and Huron scored the best.

Q3. How would you rate the current status of the environmental health and water quality of the lake you have the greatest connection with using a scale from one very poor to five very good?

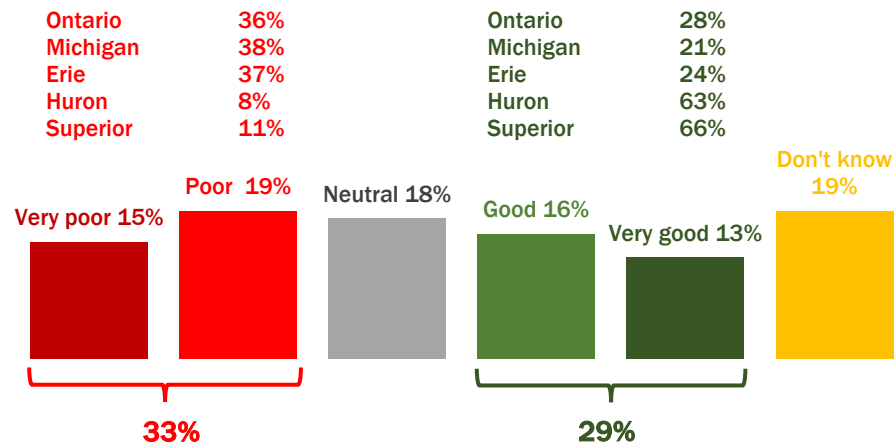


Figure 5: Combined rating of the status of the environmental health and water quality of the lake respondents identified in Question 2, and rating by lake.

Residents that named a lake in Question 2 were asked (in a tracking question) about the trend of the environmental health and water quality of that lake (**Figure 6**).

Q4. In your opinion, is the environmental health and water quality of this lake improving, deteriorating or staying about the same?

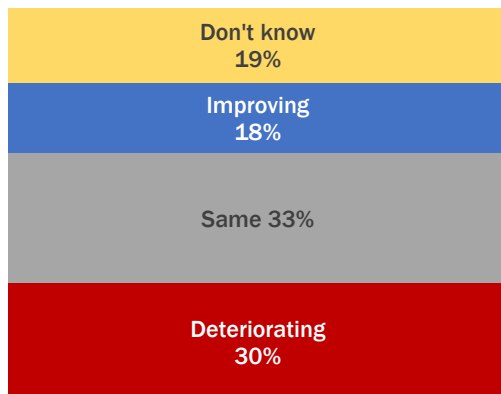


Figure 6: Combined rating of the trend of the environmental health and water quality of the lake respondents identified in Question 2.

The wording of this question changed from the prior two phone polls in 2015 and 2018 that asked respondents about the trend of the environmental health and water quality of the Great Lakes (overall) (**Figure 7**). While the 2021 phone poll combines responses about respondents rating of ‘their lake,’ and is a different question, results appear relatively consistent over time.

(2015 and 2018 poll Q4.) In your opinion, is the environmental health and water quality of the Great Lakes improving, deteriorating or staying about the same?

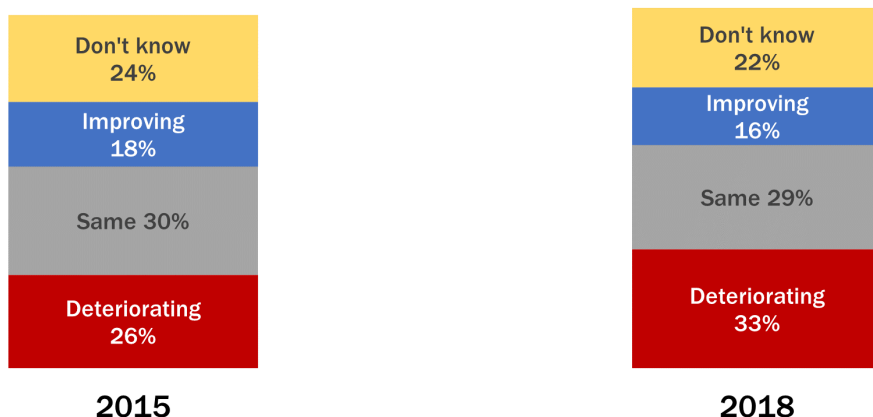


Figure 7: 2015 and 2018 poll respondents’ ratings of the trend of the environmental health and water quality of the Great Lakes.

Respondents that named a lake in Question 2 were next asked in an open or unaided question to identify what they believed was the most significant problem facing that lake (**Table 3**). This question was amended from the previous polls.

Table 3: Most significant problem or challenge facing the lake respondents previously identified.

Q5. When thinking about the environmental health and water quality of this lake, what in your opinion is its most significant problem or challenge?

TOPIC NAMED	%
Invasive species (plants, fish, mussels)	18%
Do not know	17%
Industrial pollution	11%
Pollution (in general)	11%
Algae/green algae/blooms	8%
Drainage/municipal runoff	7%
Water levels/fluctuations	6%
Agricultural pollution/waste/runoff	4%
Waste being dumped into the lakes	4%
Climate change/extreme weather	3%
Petroleum industry/spills/oil pipelines	3%
Development (housing)	2%
Endangered species/fishing depleted in the lakes	2%
Plastics	1%
Lack of regulations	1%
Fracking	1%
Shipping	<1%
Acid rain/air pollutants from industry/emissions	<1%
Government policy	<1%
Mercury levels	<1%
Dams/hydroelectric plants	<1%

When grouping together responses, pollution was referenced by 41 percent of respondents, including industrial pollution, pollution (general), municipal runoff, agricultural runoff, waste dumped, petroleum spills and plastics.

The top single mention by 18 percent related to invasive species. Industrial pollution followed at 11 percent with results higher among those with a connection to Lake Ontario (13 percent), Michigan (12 percent) and Erie (11 percent) and then the general theme of pollution by 11 percent with findings elevated among Lake Superior (17 percent) and Huron (15 percent) residents.

Eight percent referenced algae (Lake Erie: 16 percent), next by municipal runoff at 7 percent (Lake Ontario: 10 percent and Michigan: 10 percent), water levels 6 percent (Lake Ontario: 10 percent and Erie: 7 percent) and agricultural runoffs by 4 percent (Lake Erie: 9 percent). Other notable mentions included climate change, the petroleum industry encompassing pipelines and fracking, housing development, endangered species, plastics and lack of regulations.

3. Water Quality Concerns and Issues

3.1 Safety of the water

In a new set of questions, respondents rated how safe it is to swim, drink water and eat fish from the Great Lake that is closest to them (**Figure 8**).

Using a scale from one not safe at all to five very safe, please rate how safe you think it is to do each of the following in the Great Lake that is nearest or physically closest to you?

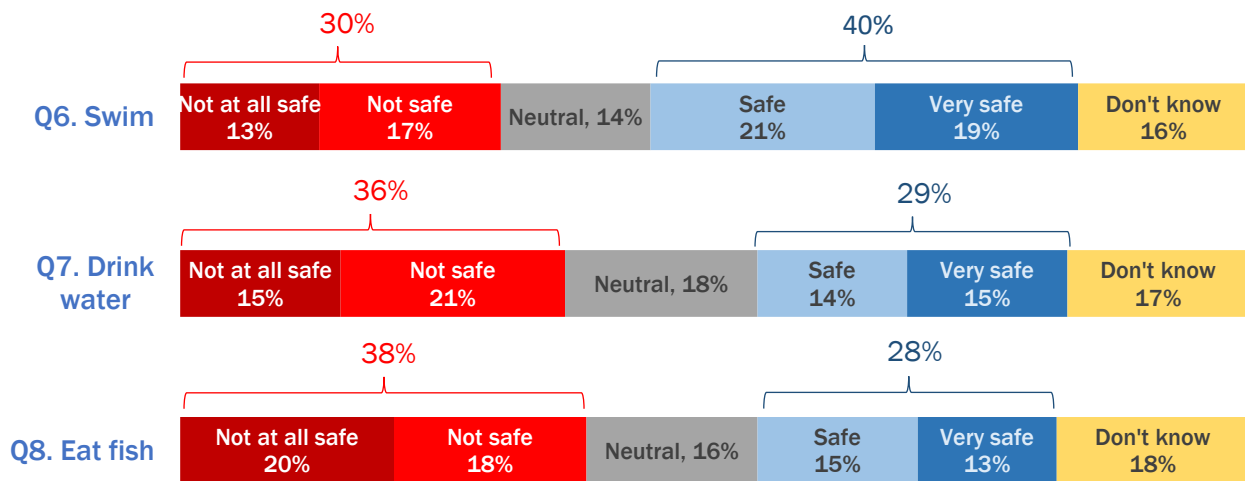


Figure 8: Combined ratings for the lake nearest or physically closest to the respondent, of the perceived safety to swim in the lake, drink (treated) water sourced from the lake and eat fish from the lake.

Concerns over safety, as evidenced by responses of not safe and not at all safe, were highest for eating fish from the Great Lake closest to them at 38 percent, compared to only 28 percent that answered safe or very safe. Results are consistent or similar when it comes to drinking water from the Lake with 36 percent feeling this is unsafe and 29 percent safe. There were sizable numbers of people that were unsure or were neutral (neither safe nor unsafe) about these actions.

More residents, or four in ten, feel it is safe or very safe to swim, while three in ten do not. There were 16 percent unsure and 14 percent that are on the fence or neutral answering neither safe nor unsafe. There are significant variances as a function the lake respondents are connected with as safety scores were highest among those nearest to Lakes Superior (89 percent) and Huron (87 percent), lower with Lakes Michigan (39 percent) and Ontario (37 percent) and lowest with those near Lake Erie (25 percent).

3.2 Impact on health and quality of the Great Lakes

Respondents then rated the impact that each of 12 issues may have on the environmental, health and water quality of the Great Lakes (**Table 4**). They were asked to rate each issue using a five-point Likert scale from 1-no negative impact at all to 5-very negative impact. The chart below combines the no negative impact at all and no negative impact responses (1 and 2) and the negative impact and very negative impact (4 and 5). Also displayed are the percentage increases for each category tracked from 2018. Three new categories (Q9j, Q9k and Q9l) were added and Q9e was significantly modified or reworded, making tracking unreliable.

Table 4: Respondents' ratings of the impact of 12 issues on the environmental health and water quality of the Great Lakes, and comparison of negative responses to 2018 poll results.

Q9. How much of an impact do you feel that each of the following have on the environmental health and water quality of the Great Lakes? Please use a scale from one, no negative impact at all to five, a very negative impact.

	Do not know	1-No negative impact at all; and 2-No negative impact	3-Neutral	4-Negative impact; and 5-Very negative impact	Percentage increase in negative responses (4 and 5) over 2018 results
A. Climate change/global warming	1%	14%	9%	76%	+4%
B. Flooding/water levels	1%	11%	8%	80%	+10
C. Nuclear waste	4%	16%	12%	68%	N/C
D. Loss of wetlands	4%	14%	13%	69%	+1%
E. Farm runoff including manure, animal waste and fertilizers	2%	11%	9%	78%	N/A
F. Municipal wastewater, runoff, sewage or stormwater runoff	1%	8%	8%	83%	+7%
G. Algae blooms	2%	7%	5%	86%	+10
H. Invasive species such as zebra and quagga mussels, Asian carp	1%	9%	7%	83%	+3%
I. The petroleum industry such as pipelines, drilling, fracking	2%	13%	11%	74%	+1%
J. Plastics/microplastics	2%	12%	7%	79%	N/A
K. Offshore wind turbines (in the lakes)	4%	16%	12%	68%	N/A
L. The impact of heavy rainstorms on infrastructure	16%	10%	13%	61%	N/A

All issues were rated by a majority of respondents as having a negative impact, and those issues tracked also saw increases over 2018.

Highest rated in terms of a negative impact were algae blooms at 86 percent, an increase of 10 percent in relation to 2018, followed by invasive species at 83 percent (+3 percent), municipal runoff at 83 percent (+7 percent) and water levels or flooding at eight in ten, up 10 percent.

The new indicator of plastics was next highest at 79 percent, closely followed by farm runoff at 78 percent, climate change at 76 percent (+4 percent), and the petroleum industry at 74 percent. Lower scored was the loss of wetlands, nuclear waste, offshore wind turbines and the impact of heavy rainstorms rated lowest of all.

4. Watershed Protection, Governance and Action

Prior to asking questions in this section, respondents were read the following preamble.

“The Great Lakes basin consists of the Great Lakes and the area of land and water that surrounds the lakes, and feeds into them from Indigenous territories, the states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin in the United States, and the province of Ontario in Canada.”

4.1 Importance

In a question first tracked in 2015, respondents were asked to rate the importance of protecting the health and water quality of the Great Lakes basin (**Figure 9**).

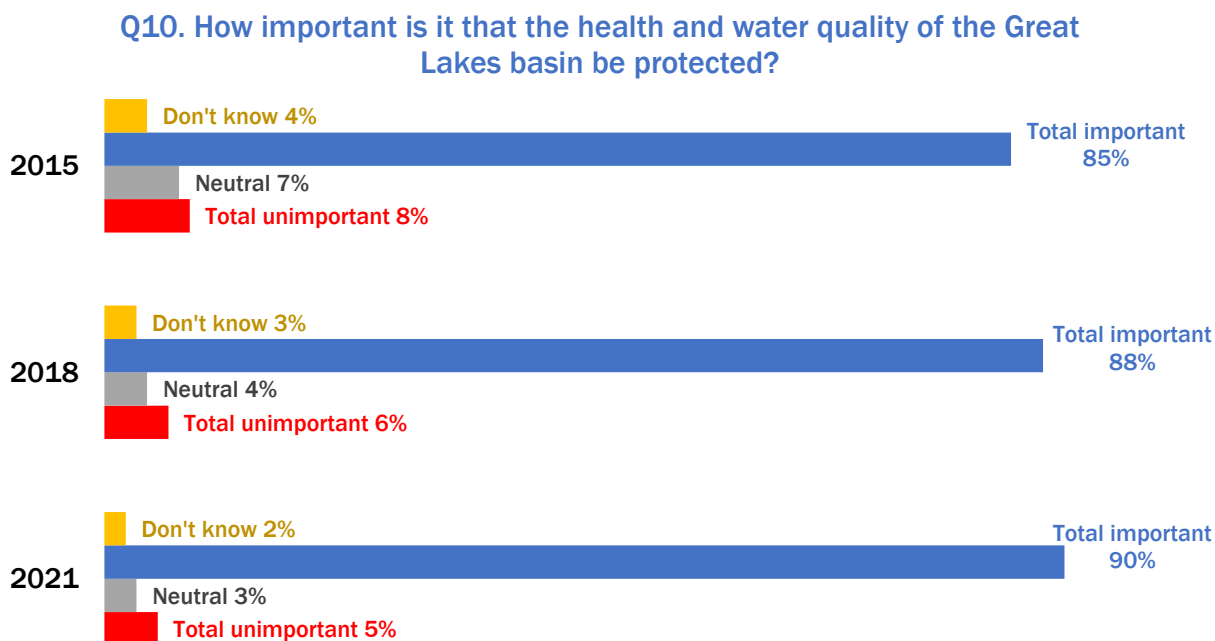


Figure 9: Respondents’ rating of the importance of protecting the health and water quality of the Great Lakes basin, comparing results for the 2015, 2018 and 2021 phone polls.

There is continued upward increase (+2 percent over 2018) in the percentage of residents that feel it is important or very important that the health and water quality of the Great Lakes basin be

protected. Results were strong across all Lake areas but were elevated among First Nations, Métis and Tribal Nation member respondents (99 percent compared to the nonindigenous sample at 89 percent), among those 18-34 (92 percent), 35-44 (93 percent) as well as liberal/progressives (95 percent) and moderates (91 percent) in relation to conservatives (84 percent).

4.2 Threats: top of mind

In an open ended or unaided question, residents were asked to name anything they felt would pose a threat to the waters that feed into the Great Lakes (**Table 5**). Up to three responses were allowed from respondents and 5,924 total responses were provided. Results below also indicate the percentage change for each response in relation to the previous 2018 poll.

Table 5: Topics respondents identified as posing a threat to the Great Lakes or tributaries.

Q11. Can you name anything you feel may pose a threat to the lakes or waters that feed into the Great Lakes?

TOPIC NAMED	%	% change from 2018
Invasive species (Zebra mussels, Asian carp)	15%	-11%
Industrial pollution/waste	11%	+4%
Pollution (in general)	13%	+1%
Do not know	8%	-9%
Algae/green algae	8%	+3%
Garbage/waste	6%	No change
Municipal runoff/waste runoff	6%	+4%
Water levels (from runoff, heavy rains, etc.)/fluctuations	5%	+3%
Population growth/urban sprawl/housing developments	4%	No change
Agricultural pollution/waste/runoff	4%	+2%
Climate change/extreme weather	3%	+2%
Pesticides	2%	No change
Chemical pollution	2%	-1%
Oil industry/spills/pipelines	2%	No change
Plastics	2%	+2%
Not enough conservation of water	1%	-1%
Fracking	1%	± <1% each
Commercial vessels/shipping	1%	
Water being removed from the watershed	1%	
Traffic on the water (boating)	1%	
Lack of regulations/laws	1%	
People/human populations (in general)	1%	
Overfishing/illegal fishing/sport fishing	1%	
Mercury levels	1%	
Tourism/recreational activities (other)	<1%	
Acid rain	<1%	
Winter road salt	<1%	

Issues related to pollution increased in relation to 2018, now near totaling half of responses which also include the 10 percent that referenced runoffs from agriculture and municipalities. While invasive species is still the single most named threat, the number dropped to 11 percent. There were increases for algae, water level fluctuations, climate change and plastics.

4.3 Responsibility

Respondents were asked two semi-open questions where they were first asked for a top-of-mind response, and if they were unsure were read a list of potential options. The first (Question 12) was about who they felt is currently responsible for protecting the health of the Great Lakes Basin (**Table 6**) and the second (Question 13) who they believe should be responsible for protecting their health and water quality (**Table 7**). One response was accepted from respondents for each question.

Table 6: Respondents' opinions on who is currently responsible for protecting the health and water quality of the Great Lakes basin, comparing results for the 2015, 2018 and 2021 phone polls.

Q12. Who in your opinion is currently responsible for protecting the health and water quality of the Great Lakes basin? READ LIST IF NEEDED TO PROMPT

CURRENTLY RESPONSIBLE	2015	2018	2021
Everyone/all	42%	39%	37%
Federal governments	18%	23%	29%
State/Provincial governments	17%	18%	16%
Don't know	11%	9%	8%
Residents/individuals	4%	4%	4%
All levels of government	2%	2%	3%
City/local government	2%	2%	2%
Industry	1%	1%	1%
OTHER (EPA, Great Lakes Commission)	2%	2%	<1%

Results reveal there is growing awareness of the role of federal governments in protecting the health of the basin and half named some level of government.

Table 7: Respondents' opinions on who should be responsible for protecting the health and water quality of the Great Lakes basin, comparing results for the 2015, 2018 and 2021 phone polls.

Q13. Who in your opinion should be responsible for protecting the health and water quality of the Great Lakes basin? READ LIST IF NEEDED TO PROMPT

SHOULD BE RESPONSIBLE	2015	2018	2021
Federal governments	23%	28%	35%
Everyone/all	35%	32%	29%
State/Provincial governments	20%	21%	17%
Residents/individuals	6%	5%	5%
Don't know	7%	5%	5%
City/local government	4%	4%	3%
All levels of government	2%	2%	3%
OTHER (EPA, Great Lakes Commission)	2%	1%	1%
Industry	1%	1%	1%

There was an increase of 7 percent for federal governments, which is now the top mention for who should be responsible. Federal government results were highest among First Nations, Métis and Tribal Nation member respondents (62 percent), liberals/progressives (52 percent), 35- to 44-year-olds (40 percent) and 18- to 34-year-olds (38 percent), Ontarians (47 percent), and island residents (39 percent). In total, 58 percent referenced some level of government, while 34 percent felt it is everyone's responsibility (29 percent and next highest single mention) and that of the individual (5 percent). Industry was only referenced by 1 percent (4 percent by conservatives).

4.4 Role of the individual

Next, the questioning moved specifically to the role of the individual or household in protecting the health and water quality of the Great Lakes. It began with a scaled question (1-5) in the perceived importance or role of the individual in this process. **Figure 10** below combines the results of very important (5) and important (4) as well as not at all important (1) and not important (2).

Q14. How important is the role of the individual or individual household in protecting the health and water quality of the Great Lakes basin? Please respond using a scale from one to five with one being not at all important and five being very important.

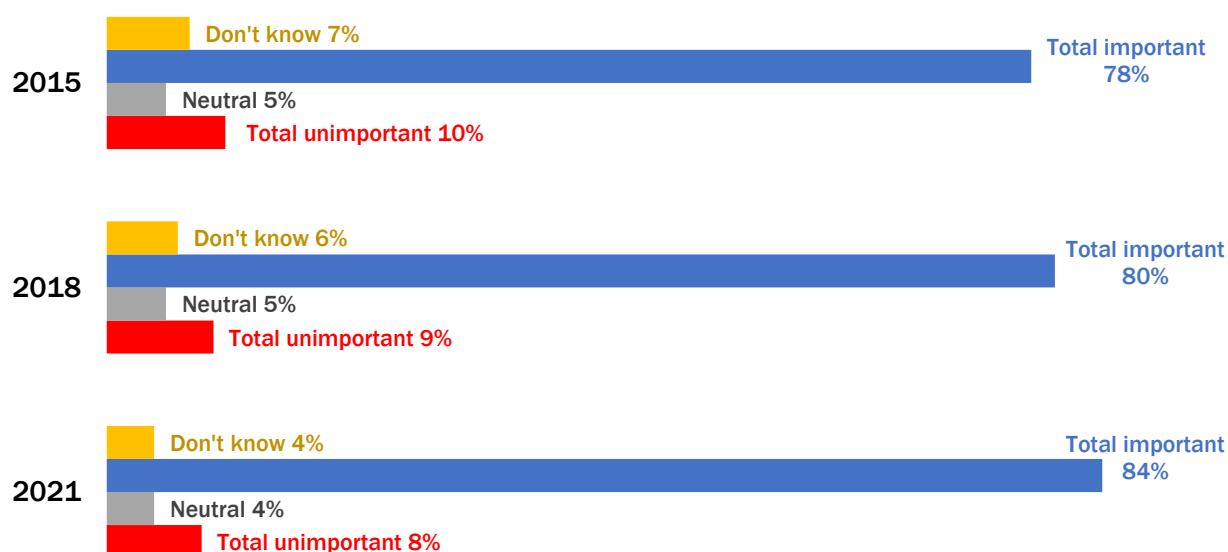


Figure 10: Respondents' rating of the importance of the role of the individual or individual household in protecting the health and water quality of the Great Lakes basin, comparing results for the 2015, 2018 and 2021 polls.

A strong majority (84 percent), 4 percent higher than 2018, feel the role of the individual is important or very important in protecting the health of the Great Lakes basin. Ninety-seven percent of First Nations, Métis and Tribal Nation member respondents answered important or very important, as did a very high number of 18- to 34-year-olds (89 percent) and liberal/progressives (91 percent).

Respondents were read a list of 10 actions and were asked if they would take part in each of them to help protect Great Lakes water quality (**Table 8**). Questions Q15A to Q15E were asked in 2018, while Q15F to Q15J are new to the 2021 poll.

Table 8: Percent of respondents that said they would be likely to take part in certain actions to help protect the water quality of the Great Lakes, and comparison to 2018 results.

Q15. Which of the following actions would you be likely to take part in to help protect the water quality of the Great Lakes? READ LIST: ACCEPT YES/NO

ACTIONS LIKELY TO TAKE PART IN	YES	% change from 2018
A. Attend a public meeting organized by government or nongovernment organizations	20%	-9%
B. Engage in an online forum or group	42%	+5%
C. Contact a local elected representative or government official	37%	+5%
D. Conserve water at home by using less or installing water efficient fixtures	78%	+4%
E. Be aware of or be more careful about what you are disposing down household drains	86%	+3%
F. Reduce use/disposal of plastics and waste	76%	
G. Purchase products that reduce my household water use	64%	
H. Join a local watershed group, volunteer your time or donate money	26%	
I. Engage in local water quality sampling	49%	
J. Sign a petition	45%	

Residents of the Great Lakes are most likely to be careful of what they are disposing down the drain, followed by conserving water at home, reducing their use of plastics and waste, and then purchasing products that reduce their water use.

Results were lower for water sampling, signing a petition, engaging in an online forum, contacting a local elected representative and government official or joining a local group by volunteering or donating.

All tracking areas saw an increase, with the exception of attending a public meeting, which saw a 9 percent drop and in the current Covid-19 environment only two in 10 respondents said they would go to such a gathering.

4.5 Government regulations

Respondents were then asked a series of indicators about awareness of policies, regulations, and cross border efforts to protect the Great Lakes (**Figure 11**).

Almost six in ten or 59 percent feel there are too few regulations, an increase of 6 percent over the previous 2018 survey wave. This includes 94 percent of First Nations, Métis and Tribal Nation member respondents, and eight in ten residents living on Great Lake islands. While responses were for the most part consistent across the Great Lake most identified with, results were stronger among those that named Superior (65 percent), then by Huron (61 percent), Erie (59 percent), Michigan (58 percent) and Ontario (56 percent).

In a new open ended follow-up question (Question 16b), respondents that said there are too few regulations were probed about what areas are inadequate. Most references related to regulations for pollution, emissions or effluents, stopping the spread of invasive species, and preventing runoff that contributes to algae growth.

Q16. Thinking about the policies, regulations, programs, and actions in place to protect the Great Lakes, do you feel there are too many, too few or just the right amount?

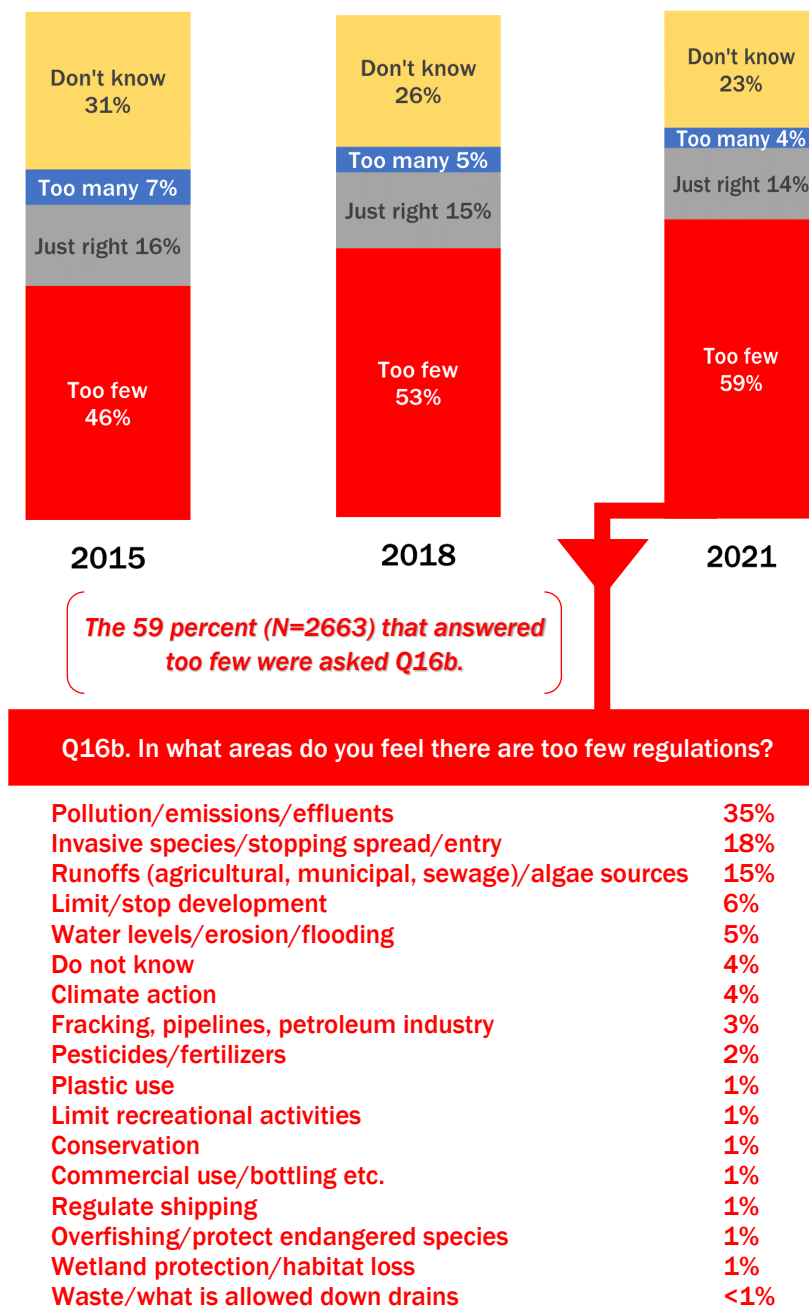


Figure 11: Respondents' opinions on the amount of policies, regulations, programs and actions protecting the Great Lakes, comparing 2015, 2018 and 2021 results, and for those that answered too few, respondents identified specific areas they feel there are too few regulations.

The next indicator asked respondents whether they would be willing to have increased regulations and enforcement to protect the Great Lakes even if it resulted in higher costs of consumer items (**Figure 12**).

Q17. Would you be willing to have greater protection of the Great Lakes through regulations and their enforcement even if it means that it may increase the cost of certain consumer products?

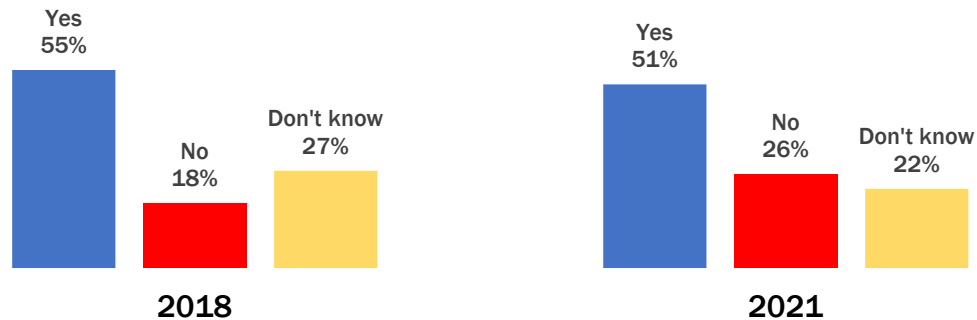


Figure 12: Respondents' willingness to increase regulations and enforcement to protect the Great Lakes that may consequently increase the cost of certain consumer products, comparing 2018 and 2021 poll results.

In total, 51 percent said that they would be willing to have greater protection of the Great Lakes through regulations and their enforcement even if it meant an increase in the cost of some consumer products, down 4 percent compared to 2018. The number of those unsure dropped 5 percent while 8 percent more stated they would not. Resistance to increased costs were elevated among the lowest earners making under \$50,000 (45 percent), the oldest 65+ (43 percent), conservative (40 percent) and those apolitical (41 percent) as well as among more males (49 percent) in comparison to females (54 percent).

Respondents were asked their opinion on having greater protection and its perceived impact on jobs and the economy (**Table 9**).

Table 9: Respondents' opinions the impact of greater protection, through regulations and their enforcement, on jobs and the economy, comparing 2018 and 2021 poll results.

Q18. In your opinion, would having greater protection through regulations and their enforcement have a positive impact, negative impact or no impact on jobs and the economy?

RESPONSE	2018	2021
Positive	23%	21%
Negative	27%	29%
No Impact	30%	32%
Don't know	20%	17%

Results are consistent but with 2 percent fewer saying greater protection would have a positive impact, 2 percent more said regulations would have a negative impact, and a similar shift upwards for no impact, while the number of undecided respondents dropped. More respondents answering positively were First Nations, Métis and Tribal Nation members (47 percent), 18- to 34-year-olds (29 percent), liberal/progressives (54 percent), residents from the Lake Superior basin (34 percent) and females (26 percent). Negative responses were highest among conservatives (80 percent), those earning \$100,000+ (48 percent) and males (35 percent).

In a question first asked in 2015, survey participants were asked if they were aware of any specific policies or regulations to protect the Great Lakes (**Figure 13**).

Q19. Are you aware of any specific policies, regulations, programs, or actions to protect the Great Lakes?

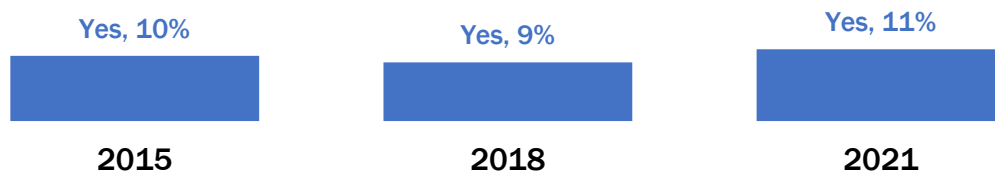


Figure 13: Respondents that are aware of specific policies, regulations, programs or actions to protect the Great Lakes, comparing 2015, 2018 and 2021 poll results.

As in the 2015 survey and 2018 poll, awareness about specific policies or regulations to protect the Great Lakes remains consistently low at only 11 percent.

5. Sources of Water and Drinking Water

5.1 Sources

In a series of reworded and new questions, respondents were asked about their drinking water, starting with an unaided probe about the source (**Figure 14**).

In a close three-way split, municipal water, lakes or rivers and the Great Lakes were most named. The 12 percent naming groundwater sources such as wells and springs were then asked two questions about the quality of their water.

When asked Question 21, 42 percent rated the quality of their groundwater as good or very good and 31 percent rated its quality as poor or very poor, with more than a quarter being neutral or unsure.

In the final question to those with wells or groundwater (Question 22), findings reveal a split between those testing their water regularly (annually, monthly or weekly) and those that do so less frequently every other year, rarely never or are unsure.

Q20. Can you tell me the source of where your tap water comes from?

Municipal water	29%
Local lakes or rivers	24%
Great Lakes	22%
Do not know	12%
Groundwater wells/springs	12%
Bottled water/water companies	1%

The 12 percent (N=555) that said groundwater wells/springs were asked Q21 and Q22.

Q21. Using a scale from one to five with one being very poor to five being very good, how would you rate the quality of your well or groundwater?

Very poor	19%
Poor	12%
Neither poor nor good	20%
Good	20%
Very good	22%
Don't know	7%

Q22. How often, if at all, do you get your water tested?

Annually	46%
Every other year/not annually	21%
Don't know	13%
Never/not often/infrequent	13%
Monthly	4%
Weekly	3%

Figure 14: Respondents identified what they think is the source of their tap water, and respondents that identified groundwater as their source were asked about its quality and the frequency that they test its quality.

The next question, new to this survey, asked respondents about their drinking water (**Table 10**) with most or 46 percent using a filtration system, 36 percent unfiltered tap water, while the bottled or commercial water delivery segment is 17 percent.

Table 10: Respondents identified where they get most of their water for drinking.

Q23. Where do you get most of your water for drinking?

RESPONSE	%
Tap with a filter/a filtration system	46%
Tap unfiltered	36%
Bottled water/commercial water delivery/cooler system	17%
Don't know	1%

5.2 Community drinking water

Respondents were asked to rate their level of agreement with three statements related to their community's drinking water. A five-point rating scale was used, and **Table 11** combines the total disagree (1-strongly disagree and 2-disagree) as well as the total agree (4-agree and 5-strongly agree) responses. Question Q24a was asked in the 2018 poll, while Q24b and Q24c are new.

Table 11: Respondents' level of agreement with statements related to drinking water quality in their community.

Q24. Please rate your level of agreement with the following statements related to drinking water in your community using a scale from one strongly disagree to five strongly agree.

	Total Disagree (1 and 2)	3-Neither agree nor disagree	Total Agree (4 and 5)	Do not know
A. I have access to clean, safe drinking water in my community	24%	17%	54%	6%
B. All members of my community have affordable, equitable access to drinking water	23%	20%	50%	7%
C. My community effectively manages, and treats used wastewater or sewage	20%	21%	47%	12%

In total, 54 percent of residents agreed (31 percent) or strongly agreed (23 percent) that they have access to clean, safe drinking water in their community, compared to 58 percent in 2018. Only 31 percent of First Nations, Métis and Tribal Nation member respondents agreed, and results were also lowest among Michigan residents (37 percent) and those in the Lake Erie (42 percent) and Lake Michigan (49 percent) basins. Results were lower with half agreeing that all members of their community have affordable, equitable access to drinking water and lowest at 47 percent agreement for their community effectively managing and treating used wastewater or sewage.

5.3 Water removal

The following new set of questions asked respondents to rate their level of concern with water removal from the Great Lakes by four methods (**Table 12**). They rated each area using a five-point Likert scale from 1-not at all concerned to 5-very concerned. The chart below combines not at all concerned and not concerned (1 and 2) and concerned and very concerned (4 and 5).

Table 12: Respondents' concern with water removal from the Great Lakes and their impact on water quality and water quantity.

Q25. How concerned are you with the removal of water by each of the following four methods and their impact on the quantity and quality of water in the Great Lakes?

	Total unconcerned (1 and 2)	3-Neutral	Total concerned (4 and 5)	Do not know
A. Private wells	26%	11%	60%	3%
B. Agriculture	14%	9%	75%	1%
C. Industry	9%	7%	83%	1%
D. Commercial bottled water extraction	21%	8%	69%	2%

The greatest concern was with respect to industry with more than eight in ten saying they were concerned (27 percent) or very concerned (56 percent), follow by three-quarters that were concerned (26 percent) or very concerned (49 percent) with agriculture. Commercial bottled water extraction is of next most concern (32 percent concerned and 37 percent very concerned), while of least concern were private wells by six in ten (25 percent concerned and 35 percent very concerned).

5.4 Wastewater

Next, in another open-ended probe respondents were asked to name where they thought the sewage or used water from their home usage goes or ends up (**Table 13**). The percentage change in relation to the previous 2018 poll are also highlighted.

Table 13: Locations named by respondents that they think are the destination for their homes' wastewater effluent, and percent change in responses to 2018 poll.

Q26. Can you tell me where the sewage or used water that goes down the drain from your home ultimately ends up?

Wastewater treatment facilities/sewage plant	28%	(+5)
Do not know	26%	(-2%)
Septic systems	13%	(-3%)
Great Lakes	12%	(+2%)
Local lakes, rivers etc.	9%	(+1%)
Into the ground	5%	(n/c)
Sewers (unspecified)	4%	(-4%)
Run off (to fields)	2%	(n/c)
Holding tanks/reservoirs	1%	(n/c)

No single response dominated, but wastewater or sewage treatment plants were most named. More than a quarter were also unsure or did not know.

5.5 Billing

In a new question, respondents were asked how much more they would be willing to pay on their monthly water bill to support initiatives to continue to improve water quality and undertake community efforts to work towards swimmable, fishable, drinkable waters in the Great Lakes (Figure 15).

They were read a list of options starting with the highest price point (\$20) and if they said no were read the next (\$10) and if no, finally the third (\$5). Result indicate that 56 percent are willing to pay an amount, with \$20 being most named, three in ten are not willing to pay anything and 14 percent are undecided.

Q27. In order to support initiatives to continue to improve water quality and undertake community efforts to work towards swimmable, fishable, drinkable waters in the Great Lakes, would you be willing to pay <\$> a month on your water bill?

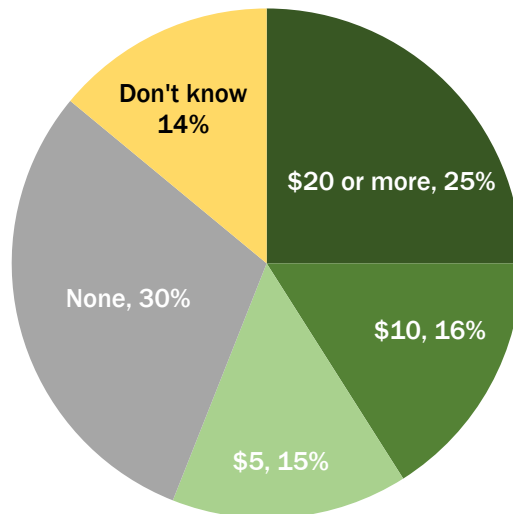


Figure 15: Respondents' willingness to pay particular dollar amounts a month on their water bill to support initiatives that continue to improve water quality.

6. Recreational Water Activities

The next section and series of questions dealt with usage of the Great Lakes for recreational purposes including their importance for these activities. Respondents were first asked if they or a member of their household use the lakes for activities related to leisure or recreation (**Figure 16**).

Q28. Do you or any members of your household use the Great Lakes for leisure or recreational purposes?

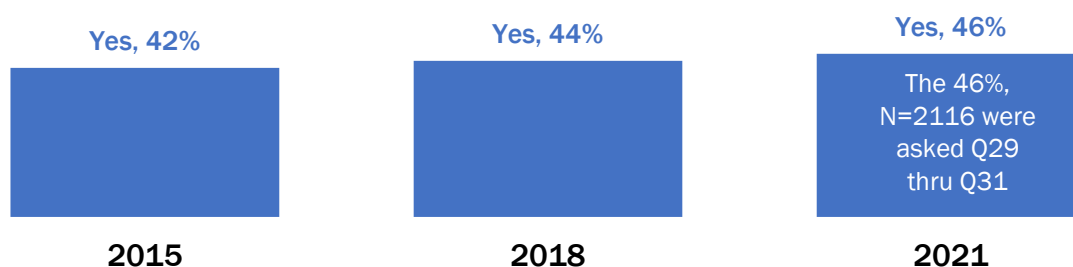


Figure 16: Respondents who personally, or whose household member, comparing use the Great Lakes for leisure or recreational purposes, comparing 2015, 2018 and 2021 responses.

Results are consistent over the three survey touch points with a total of 46 percent in this wave saying they, or a member of their residence, use the Great Lakes for recreational purposes, up slightly from 2018. The highest usage was among island inhabitants (71 percent), First Nations, Métis and Tribal Nation member respondents (66 percent), those aged 18 to 34 (52 percent), 35 to 44 (50 percent) and 45 to 54 (51 percent), \$100,000+ earners (52 percent) and residents of the Lake Superior (56 percent) and Huron (52 percent) basins.

The 46 percent (2,116) that have used a Great Lake for recreational purposes were asked three follow-up probes, starting with a frequency of use question (**Table 14**). Results indicate that the majority of users, or more than seven in 10, visit seasonally or a few times a year.

Table 14: Frequency that the 46 percent of respondents that have used a Great Lake for recreational purposes visit the lakes.

Q29. How frequently do you or any members of your household visit the lakes?

Seasonally	56%
Few times a year	15%
Never/rarely/infrequently	14%
Monthly	5%
Do not know	5%
Daily	3%
Weekly	3%

The 46 percent (2,116 respondents) that have used a Great Lake for recreational purposes were asked in an open probe allowing for multiple responses to name activities they engage or participate in (**Table 15**).

Table 15: Activities identified by for the 46 percent of respondents that have used a Great Lake for recreational purposes.

**Q30. What types of activities do you engage in? OPEN; DO NOT PROMPT
ACCEPT MULTIPLE RESPONSES**

Swimming/beach visits	30%
Boating	23%
Fishing/ice fishing	21%
Canoeing/kayaking/wind surfing/paddleboarding	12%
Winter activities (skiing, skating, snow shoeing, sleds)	5%
Birdwatching/scenic viewing	3%
Walking/hiking	3%
Camping/picnicking	1%
Hunting	1%
Do not know	1%

When combining the total 3,953 responses, 30 percent related to swimming/beach visits, 23 percent to boating, 21 percent fishing, 12 percent canoeing, kayaking, paddle boarding or wind surfing and five percent winter activities including skating, cross country skiing and snowshoeing. Birdwatching or scenic viewing followed (3 percent), next by walking/hiking (3 percent) and then camping and hunting (1 percent each).

Leisure visitors to the Great Lakes (46 percent, 2,116 respondents) then rated the importance to them of having the Lakes available for recreational uses (**Figure 17**). A 5-point importance rating scale was used, with the graph below combining the total unimportant (1-not at all important and 2-not important) as well as the total important (4-important and 5-very important) responses.

Q31. How important is it to you that the Great Lakes are available for leisure or recreational purposes? Please respond using a scale from one not at all important to five very important.

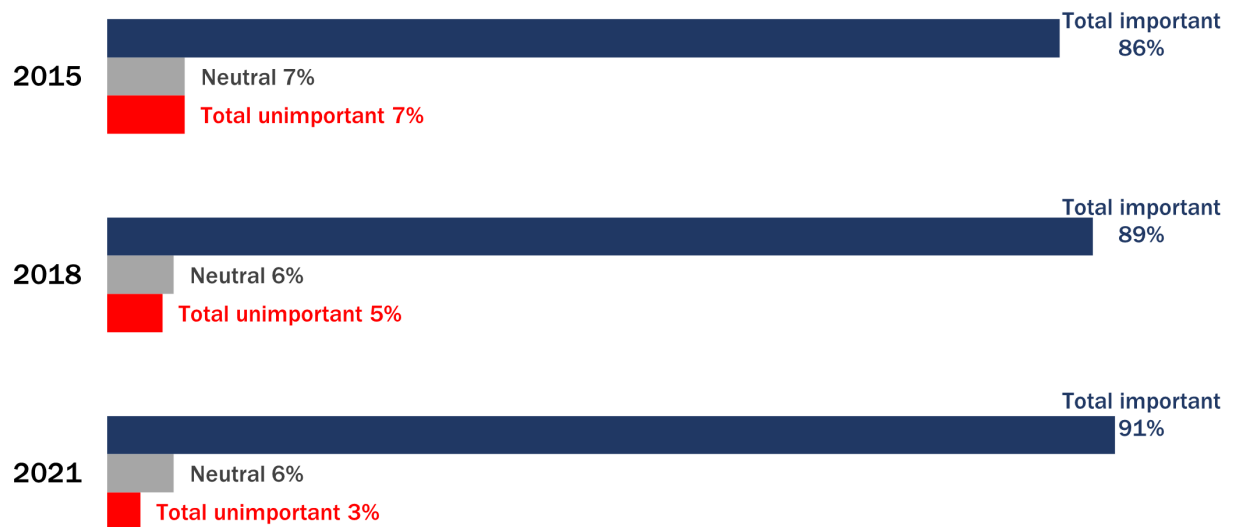


Figure 17: Respondents' rating of the importance of the Great Lakes availability for leisure or recreational purposes, comparing 2015, 2018 and 2021 poll results.

More than nine in 10 or 91 percent said that it is very important (82 percent) or important (9 percent) to them to have the Great Lakes available for recreational purposes, 2 percent higher than in 2018.

7. Information Sources

The following section is about the sources that respondents currently use and would prefer to access to obtain information. In the first open-probe question allowing multiple responses, all 4,550 respondents were asked what sources they use to obtain information about safety, warnings and advisories (**Table 16**). Results below contain the combined results from the total 4,901 mentions.

Table 16: Sources respondents identified where they obtain local information about water, beaches and the safety of the fish they eat.

Q32. From what sources do you obtain local information about water, beaches, and the safety of the fish you eat, including warnings or pollutant advisories?

Websites (IJC, other government)	18%
Do not	17%
Social media	16%
Do not know	16%
Media releases/advisories	9%
Internet/websites (unspecified in general)	8%
Newspapers online or print	7%
Television	5%
Word of mouth/from others	2%
Radio	2%
Public notices	1%

Government websites were most referenced especially by 18- to 34-year-olds (24 percent), 35- to 44-year-olds (27 percent) and 45- to 54-year-olds (19 percent), followed by social media also by younger 18- to 34-year-olds (31 percent), 35- to 44-year-olds (17 percent) and 45- to 54-year-olds (14 percent). Media releases were next (55- to 64-year-olds, 13 percent, and 65 or older, 15 percent), websites in general, newspapers (55- to 64-year-olds, 16 percent, and 65 or older, 24 percent) and then television (65 or older, 21 percent).

The following scaled question was asked to all respondents about their interest in news and other information about issues affecting the Great Lakes (**Figure 18**). Results in this graph combine the results of very interested (5) and interested (4) as well as not at all interested (1) and not interested (2).

Q33. How interested are you in news and other information related to issues affecting the Great Lakes? Please use a scale from one, not at all interested to five, very interested.

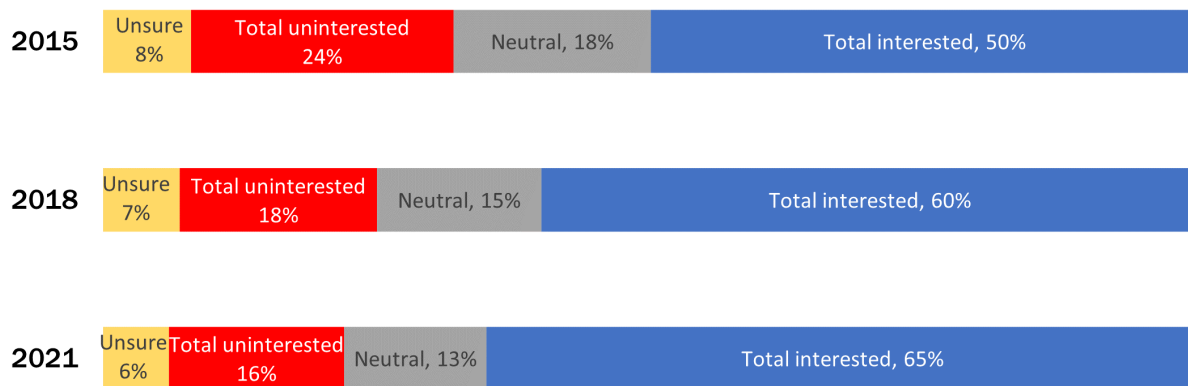


Figure 18: Respondents' interest in news and other information related to issues affecting the Great Lakes.

Interest in news or other information about the Great Lakes increased 5 percent in the 2021 poll compared to the previous polls. Interest levels were highest among island residents (97 percent), First Nations, Métis and Tribal Nation member respondents (93 percent), 18- to 34-year-olds (72 percent), liberal/progressives (71 percent) and those in the Lake Huron basin (73 percent).

An open probe that allowed for multiple responses asked the 4,550 respondents about their preferred sources to get information about the Great Lakes as well as related environmental issues (**Table 17**). Results below contain the combined results from the 6,924 mentions.

Table 17: Respondents' trusted sources for information about the Great Lakes and related environmental issues.

Q34. What are your preferred sources to get information you trust about the Great Lakes and related environmental issues? MULTIPLE RESPONSES ACCEPTED

Internet (in general)	24%
Social media	21%
Newspapers (online or print)	19%
Websites (government, state, provincial, federal)	11%
Television	10%
Radio	7%
Do not know	4%
Word of mouth/from others	3%
Environmental organizations	1%
IJC website	<1%
Magazines	<1%

In total, 36 percent named the internet in general (24 percent) or government websites (11 percent), while social media followed at 21 percent and then newspapers (online or print) at 19 percent. Lesser referenced were television and radio, while few (N=16) specifically recalled the IJC website.

In the final question of this section, another open probe asked respondents to name the main source where they get information about the Great Lakes and related issues (**Table 18**). One response was accepted, and the results are as follows with websites, social media and newspapers being most referenced, but with 21 percent being unsure (don't know) or not having a source (do not).

Table 18: Main source that respondents' get their information about the Great Lakes and related environmental issues.

Q35. From what main source do you get information about the Great Lakes and related environmental issues?

Internet (in general)	24%
Social media	22%
Do not know	13%
Newspapers (online or print)	12%
Websites (government, state, provincial, federal)	9%
Do not	8%
Television	5%
Word of mouth	3%
Radio	1%
Environmental organizations	1%
IJC website	<1%
Magazines	<1%

8. International Joint Commission and the Great Lakes Water Quality Agreement

Questioning moved onto the topic of the International Joint Commission (IJC), awareness of it, its importance and perceived role. A total of 23 percent (N=1045) of respondents have heard of or were aware of the International Joint Commission, an increase of two percent over 2018 (Figure 19).

Q36. Have you heard of, or are you aware of, the International Joint Commission or IJC?

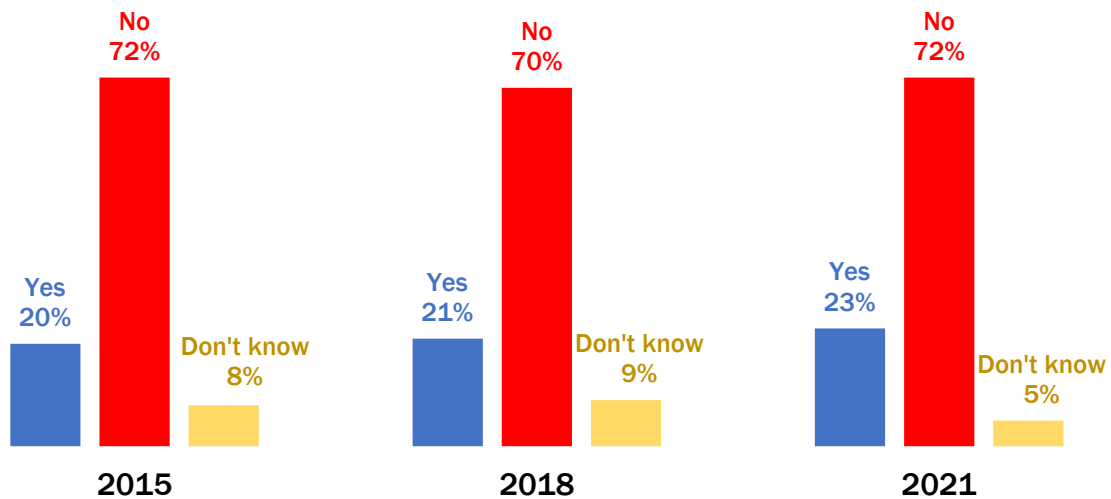


Figure 19: Respondents' awareness of the International Joint Commission.

The 23 percent or 1,045 respondents aware of the IJC were asked a series of follow up questions starting with what they perceive to be the IJC's role (**Table 19**). Protecting the Lakes, ensuring water quality, facilitating cooperation, and resolving disputes were roles referenced by those aware.

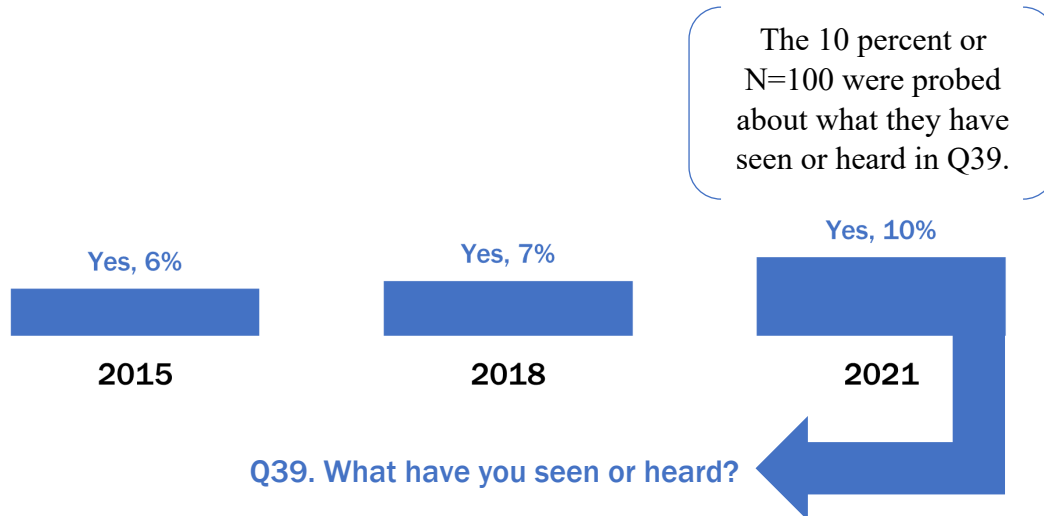
Table 19: Opinions of the role of the International Joint Commission, of the 23 percent of respondents that are aware of the International Joint Commission.

Q37. What in your opinion is the role of the IJC?

Protect the lakes/ensure water quality	32%
Ensure cooperation in protecting the lakes	26%
Do not know	17%
Help clean up the Great Lakes	10%
Regulate/oversee water levels	7%
To ensure regulations/laws to protect the lakes	5%
Resolve (transborder) issues	3%

Next, the 23 percent or N=1045 aware of the IJC were asked if they have seen or heard anything in the media about the IJC's work in the Great Lakes of which 10 percent said they have. Something about water levels or fluctuations was single most referenced.

Q38. Have you seen or heard anything in the media about the IJC's work in the Great Lakes?



Q39. What have you seen or heard?

Water levels/fluctuations (high or low water events)	28%
Do not know	11%
State of the Lakes/water quality report or update	10%
They are trying to protect the lakes	9%
Board news/Commissioners/IJC news or updates	9%
Consultations/hearings	8%
Something in the media	7%
Water protection/safe drinking water/wastewater	7%
General information/updates	6%
Warnings or advisories	3%
Shoreline erosion	1%
Invasive species	1%

Figure 20: Of the 23 percent of respondents that are aware of the International Joint Commission, 10 percent reported seeing or hearing about the IJC's work in the Great Lakes, and listed specific topics seen or heard.

In another question allowing for multiple responses, the 100 respondents that had seen or heard something were asked about the sources of this information. Results from the combined 126 responses are provided below.

Table 20: Sources of information about International Joint Commission in the media from the 10 percent of respondents that have seen or heard about the IJC’s work in the Great Lakes, of the 23 percent of respondents that are aware of the IJC.

Q40. From what sources have you seen or heard this information? MULTIPLE RESPONSES ACCEPTED

Internet websites	33%
Newspapers (online or print)	23%
Social media	17%
Television	13%
Radio news	8%
IJC website	3%
Word of mouth	1%

In the final question in this section, all N=4550 survey respondents were asked if they have heard of or were aware of the Great Lakes Water Quality Agreement. In total, 17 percent said that they were aware of the agreement, up 2 percent over 2018.

Q41. Have you heard of, or are you aware of, the Great Lakes Water Quality Agreement?



Figure 21: Respondents’ awareness of the Great Lakes Water Quality Agreement, compared to the 2018 poll results.

9. Value Statements

All 4,550 respondents were asked to rate their level of agreement on a scale from one strongly disagree to five strongly agree with eight value statements related to the Great Lakes. Results in this table combine the total agree results of strongly agree (5) and agree (4) as well as the total disagree results of strongly disagree (1) disagree (2).

Table 21: Respondents' level of agreement with nine value statements about the Great Lakes, comparing 2015, 2018 and 2021 phone poll results.

I am now going to read a short list of statements. After each one, please rate your level of agreement with them using a scale from 1-strongly disagree to 5-strongly agree.

Statement	2015	2018	2021
Q42. Actions should be taken now to ensure the health and water quality of the Great Lakes for future generations	73%	77%	80%
Q43. It is important to protect the Great Lakes water quality for the personal benefits that I receive	60%	65%	64%
Q44. The Great Lakes water quality should be protected for the benefit of people living in the Great Lakes Basin	68%	72%	76%
Q45. The Great Lakes water quality should be protected for the benefit of fish and wildlife who depend on the Lakes	76%	79%	83%
Q46. The economy of the region will suffer if the Great Lakes are not healthy	76%	78%	78%
Q47. The health of residents in the region will suffer without healthy Great Lakes	72%	74%	77%
Q48. I am concerned about the health and water quality of the Great Lakes as a whole	53%	60%	70%
Q49. I am most concerned about the health and water quality of the Lake that is closest to me	74%	76%	81%
Q50. I am concerned about the impacts of climate change on the health and water quality of the Great Lakes	N/A	N/A	75%

The strongest level of agreement at 83 percent related to the need to protect the Great Lakes for the benefit of fish and wildlife, and that actions need to be taken to ensure the health and water quality of the lakes for future generations at eight in 10—an increase of 4 percent and 3 percent, respectively, over 2018.

More than eight in 10 agreed they are most concerned with the lake closest to them, while seven in 10 agreed they are concerned with the lakes as a whole. While the pattern of more concern about a nearby lake is consistent over the three polls, there were increases in both indicators, and especially for concern with the Great Lakes as a whole (+10 percent).

Similar to the 2018 poll results, 78 percent agreed the economy will suffer without healthy Great Lakes, while an almost equal number now feel the health of residents will suffer and that water quality should be protected for the benefit of residents. Three-quarters of residents are concerned with the impact of climate change on the health and quality of the Great Lakes, consistent with other findings on climate change.

The area of least agreement, at 64 percent, is the importance of protecting the Great Lakes water quality for the personal benefits received, with residents appearing to take on more concern with the greater common good. Significantly, among those that use the Great Lakes for recreational purposes, 72 percent agreed with the importance of protecting the lakes' water quality for personal benefits, compared to 58percent among those that do not use the lakes recreationally.

10. First Nations, Métis and Tribal Nation Member Responses

First Nations, Métis and Tribal Nation member respondent breakdown by Canadian and US respondents are highlighted in **Table 22** below.

Table 22: Responses to screening question asking interviewees whether they self-identify as Indigenous.

Q51. Do you identify as Indigenous (Canada: First Nations or Métis; United States: Tribal Nation/Native American)?

RESPONSE	N	%	
No	4050	89.0%	Skipped section
Yes, US Tribal Nation	266	5.8%	Asked Q53a
Yes, Canadian First Nations	195	4.3%	Asked Q52a
Yes Métis	39	.9%	Skipped to Q54

10.1 Canadian First Nations member respondent additional questions

The 195 (4.3 percent) Canadian First Nations respondents were asked the following questions, first about the First Nations or community they identify with (**Table 23**) and then if they live on or off reserve (**Table 24**).

Table 23: First Nations or community affiliation of the 4.3 percent of respondents who self-identified as Canadian First Nations.

Q52a. Please indicate which First Nations or community you are affiliated with?

Mohawks of the Bay of Quinte	N=66	Martin Falls	N=2
Refused	N=33	Michipicoten	N=1
Wikwemikong	N=24	Saugeen	N=1
Six Nations	N=26	Wahnipitae	N=1
Saugeen	N=9	Henvey Inlet First Nation	N=1
Alderville First Nation	N=7	Dokis First Nation	N=1
Red Rock	N=6	Fort William	N=1
Biigtigong Nishnaabeg	N=5	Mishkeegogamang	N=1
Aundeck Omni-Kaning	N=3	Whitesand First Nation	N=1
M'Chigeeng First Nation	N=3	Lac des Mille Lacs 22A1	N=1
Nipissing First Nation	N=2		

Table 24: Of the 4.3 percent of respondents self-identifying as Canadian First Nations members, proportion of respondents reporting to live on or off reserve.

Q52b. Do you live on or off reserve?

RESPONSE	%
On	55%
Off	45%

10.2 US Tribal Nation member respondent additional questions

The 266 (5.8 percent) US Tribal Nation member respondents were also asked about the Tribal Nation or community they identify with (**Table 25**) and then if they live on or off reserve (**Table 26**).

Table 25: State or federally recognized Tribal Nation or community enrollment or affiliation of the 5.8 percent of respondents who self-identified as a US Tribal Nation member.

Q53a. Please indicate which state or federally recognized Tribal Nation or community you are enrolled or affiliated with?

Potawatomi	N=23	Shakopee Mdewakanton Sioux	N=6
Thunder Mountain	N=20	Leech Lake Reservation	N=6
Pokagon Band of Potawatomi	N=20	Shinecock Indian Nation	N=6
Refused	N=19	Mille Lacs Band of Ojibwe	N=5
Cattaraugus	N=16	Match-E-Be-Nash-She Wish Band/Gun Lake	N=4
Little Traverse Bay Bands of Odawa Indians	N=13	Sault Tribe of Chippewa Indians	N=4
Allegany	N=11	Lac du Flambeau Tribe	N=4
Miami Nations of Indians of Indiana	N=11	Hannahville Indian Community	N=3
Oneida Nation	N=11	Sokaagon Chippewa Community	N=3
Little River Band of Ottawa Indians	N=11	L'Anse Indian Reservation	N=3
Lac Courtes Oreilles	N=9	Grand Traverse Band of Ottawa and Chippewa	N=3
Lower Sioux Indian Community	N=9	Tonawanda	N=3
Bay Mills Indian Community	N=9	Ho-Chunk Nation	N=2
The Bad River Reservation	N=8	Red Lake Nation	N=2
White Earth Ojibwe	N=8	Tuscarora people	N=2
Nottawaseppi Huron Band of the Potawatomi	N=7	Lac Vieux Desert Band of Chippewa Indians	N=1

Table 26: Of the 5.8 percent of respondents self-identifying as US Tribal Nation members, proportion of respondents reporting to live on or off reserve.

Q53b. Do you live on or off reserve?

RESPONSE	%
On	58%
Off	42%

10.3 All Indigenous additional questions

All 500 (11 percent) First Nations, Métis and Tribal Nation member respondents were asked the following Q54 about the ways they culturally engage with the Great Lakes (**Table 27**). Multiple responses were accepted and below are the combined findings from the 823 total responses.

Table 27: Ways that the 11 percent of respondents self-identifying First Nations, Métis and Tribal Nation members reported to engage culturally with the Great Lakes.

Q54. In what ways that you engage culturally with the Great Lakes? OPEN DO NOT PROMPT/ACCEPT MULTIPLE RESPONSES

Fishing/ice fishing	29%
Canoeing/kayaking/wind surfing/paddleboard	13%
Swimming/beach visits	12%
Do not	11%
Winter activities (skiing, skating, snowshoeing, sleds)	8%
Boating	7%
Cultural activities	7%
Political action	4%
Do not know	3%
Camping/picnicking	2%
Hunting	2%
Wild rice harvesting	1%
Birdwatching/scenic viewing	1%
Walking/hiking	1%

Next, all 500 (11 percent) First Nations, Métis and Tribal Nation member respondents were asked if any of the ways they engage with the lakes are threatened, of which almost half said they were because of poor health and water quality (**Figure 22**).

Q55. Are any of the ways that you engage with the lakes threatened or are you no longer able to participate in them because of the poor health and water quality of the lakes?

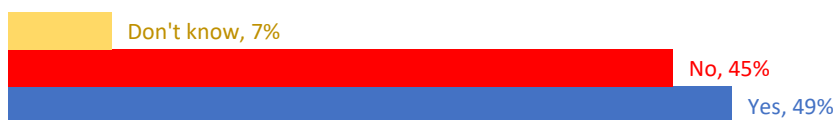


Figure 22: Of the 11 percent of respondents self-identifying as First Nations, Métis and Tribal Nations members, proportion that reported whether poor health and water quality of the Great Lakes threaten or prevent engaging with the lakes.

In an unaided or open probe, the 500 (11 percent) respondents were asked to name any policies, regulations or actions related to the Great Lakes their Nation or community has undertaken.

Table 28: Policies, regulations, programs or actions that the 11 percent of respondents self-identifying First Nations, Métis and Tribal Nation members reported that their Nation/community has undertaken to protect the Great Lakes.

Q56. What policies, regulations, programs or actions has your <First Nations>/<Tribal Nation>/<community> undertaken to protect the Great Lakes?

Do not know	N=313	63%
None/not applicable	N=87	17%
Water testing/quality testing	N=33	7%
Education/educating/web-based sessions	N=23	5%
Workshops	N=11	2%
New position/resources coordinator/land resource/board person	N=7	1%
Enacted policies/local environmental (laws)	N=7	1%
Community cleanup	N=5	1%
Scholarships	N=5	1%
Hired/engaged a consultant	N=3	1%
Funding secured/fundraising	N=3	1%
Working with government department (fisheries)	N=2	<1%
Consultation/engagement process	N=1	<1%

The final question in this section asked about concern over fish, plant, or wildlife species of cultural importance (**Figure 23**). More than two thirds or 68 percent are concerned about species because of the threats facing the health and water quality of the Lakes.

Q57. Are there fish, plant or wildlife species of cultural importance you are concerned about due to the threats facing the health and water quality of the Great Lakes?



Figure 23: Of the 11 percent of respondents self-identifying as First Nations, Métis and Tribal Nation members, proportion that reported whether they are concerned about fish, plant or wildlife species of cultural importance that are threatened by poor Great Lakes health and water quality.

11. Demographics

D1. AGE GROUP

18-34	N=1380	30%
35-44	N=1009	22%
45-54	N=848	19%
55-64	N=574	13%
65+	N=688	15%
Refused	N=51	1%

D2. HIGHEST LEVEL OF EDUCATION

Some high school or less	N=338	7%
Graduated high school	N=720	16%
Some post-secondary	N=1088	24%
Graduated university/college	N=2043	45%
Refused	N=361	8%

D3. OCCUPATION

Professionals	N=630	14%
Management	N=496	11%
Self-employed/small business	N=247	5%
Clerical/white collar/support	N=731	16%
Technician/trades/skilled	N=413	9%
Laborer/unskilled	N=311	7%
Service sector/sales	N=352	8%
Armed forces	N=10	0%
Retired/disability	N=626	14%
Student	N=49	1%
Unemployed/social assistance	N=287	6%
At home/caregiver/not looking	N=25	1%
Refusal	N=373	8%

D4. POLITICAL PERSUASION

Conservative	N=1329	29%
Liberal/progressive	N=1504	33%
Moderate	N=1230	27%
Apolitical/nonpolitical	N=134	3%
Do not know/refused	N=353	8%

D5. RACE/ETHNICITY

White/Caucasian/European	N=2757	61%
Black/African American or CDN	N=445	10%
Hispanic/Latinx	N=159	3%
South/SE Asian (India, Pakistan)	N=98	2%
East Asian (China, Japan, Vietnam)	N=141	3%
Middle Eastern/North African	N=137	3%
First Nations/Métis/Tribal Nation	N=500	11%
Refused	N=313	7%

D6. GENDER IDENTITY

Male	N=2175	48%
Female	N=2227	49%
Other	N=104	2%
Refused	N=44	1%

D7. COMBINED FAMILY INCOME

Less than \$50,000	N=1346	30%
\$50,000 to \$74,999	N=882	19%
\$75,000 to \$99,999	N=458	10%
\$100,000 or more	N=700	15%
Refused	N=1164	26%

12. Summary

Residents have mixed views on the environmental health and water quality of the Great Lake they are most connected with. One-third are of the opinion the health is poor or very poor, almost three in 10 (29 percent) that it is good or very good, 18 percent neither poor nor good, and 19 percent are uncertain. Those living in the Lake Ontario, Michigan and Erie basins tend to view their condition as poor, while residents of Superior and Huron see them as good.

When asked in a tracking question about where the lakes are headed, results were for the most part consistent with previous years. Somewhat fewer in this wave said things are deteriorating, while there were increases for remaining the same and a slight increase for improving. However, more residents from Lakes Erie (34 percent), Ontario (32 percent) and Michigan (30 percent) are of the view that health and water quality is deteriorating.

On the greatest challenge related to the health and quality of the lake they are most connected with, most residents see pollution as the biggest issue including industrial waste, and runoff (municipal and agricultural) flowing into the waters. Other key concerns related to invasive species, algae and water levels.

Almost half or 49 percent of First Nations, Métis and Tribal Nation member respondents said some of the ways they engage with the Lakes are threatened because of their poor health and water quality. In addition, 69 percent are concerned about threats to fish, plants, or wildlife species of cultural importance.

A low percentage of residents feel it is safe or very safe to drink water (29 percent) and eat fish (28 percent) from the lake closest to them, while results were higher with respect to swimming (40 percent). Positive safety scores were higher among those living near Lakes Superior and Huron, while unsafe results were elevated for Michigan, Ontario and especially Erie.

With respect to the impact that each of a dozen factors have on the health and quality of the Great Lakes, all areas were seen by a majority of respondents as having a negative impact as evidenced by the ratings of 4-negative and 5-very negative in the table on the following page.

Table 29: Proportion of respondents rating areas of impact negatively and very negatively.

<i>AREAS OF IMPACT (TOTAL NEGATIVE RATINGS)</i>	<i>%</i>
<i>Algae blooms</i>	<i>86%</i>
<i>Invasive species such as zebra mussels, Asian carp</i>	<i>83%</i>
<i>Municipal wastewater runoff, sewage or stormwater runoff</i>	<i>83%</i>
<i>Flooding/water levels</i>	<i>80%</i>
<i>Plastics/microplastics</i>	<i>79%</i>
<i>Farm runoff including manure, animal waste and fertilizers</i>	<i>78%</i>
<i>Climate change/global warming</i>	<i>76%</i>
<i>The impact of heavy rainstorms on infrastructure</i>	<i>76%</i>
<i>The petroleum industry i.e., pipelines, drilling, fracking</i>	<i>74%</i>
<i>Loss of wetlands</i>	<i>69%</i>
<i>Offshore wind turbines (in the lakes)</i>	<i>68%</i>
<i>Nuclear waste</i>	<i>61%</i>

Algae blooms, invasive species, water levels/flooding, plastics and runoff from municipalities and agriculture were highest rated. Algae blooms and flooding or water levels also witnessed the biggest increase (+10 percent each) compared to 2018.

When asked how concerned they are with the removal of water and their impact on the quantity and quality of water in the Great Lakes, the highest concerns related to water removal by industry (83 percent) and agriculture (75 percent), compared to commercial water bottling (69 percent) and private wells (60 percent).

A nine in 10 majority are of the opinion it is important or very important that the health and water quality of the Great Lakes basin be protected, up two percent over 2018 and five percent higher than in 2015. Results are strongest among First Nations, Métis and Tribal Nation member respondents, younger residents 18- to 34-year-olds, liberal/progressives and those with moderate political views. When then asked what they feel presents a threat to the waters that feed into the Great Lakes, results once again reinforce the concerns over pollution, runoff, invasive species and algae.

There is a strong sense among 84 percent of residents that the individual has a role to play in protecting the health and water quality of the Great Lakes: up 4 percent compared to 2018 and 6 percent higher in relation to 2015. Individuals are also willing to act to help protect the water quality of the Great Lakes. They are especially likely to be careful as to what they are disposing down drains (86 percent), conserve water (78 percent) and purchase products that use less water

(68 percent). However, they are less inclined to take a more activist role such as signing a petition (45 percent), engaging in an online forum (42 percent), contacting a local elected representative/government official (37 percent) or joining a local group volunteering time/donating money (26 percent). Considering the current COVID-19 environment, they are least likely to attend a public meeting (20 percent).

As in the 2015 poll, (10 percent) and 2018 poll (9 percent), awareness remains consistently low at only 11 percent for awareness of specific policies or regulations to protect the Great Lakes.

But almost six in 10 or 58 percent feel there are too few regulations, programs and actions in place to protect the Great Lakes, an increase of five percent over the previous 2018 poll. This includes most First Nations, Métis and Tribal Nation member respondents or 94 percent and eight in 10 residents living on Great Lake islands. The areas where gaps are seen related to pollution, emissions or effluents, stopping the spread of invasive species (aquatic and terrestrial), and preventing runoff that contributes to algae blooms.

Despite the perceived lack of regulations in place, there was a split of opinion on the willingness to have greater protection of the Great Lakes through regulations and their enforcement if it means that it may increase the cost of certain consumer products. In total, 51 percent said that they would be willing to have greater protection of the Great Lakes through regulations and their enforcement even if it meant an increase in the cost of some consumer products, down 4 percent compared to 2018. Opposition was strongest among conservatives, older residents and those earning the least.

There was no clear consensus on what impact greater protection through regulations and their enforcement will have on jobs and the economy: 21 percent said they will have a positive impact, 29 percent said negative impact, 32 percent said no impact and 17 percent were unsure. Demographic splits were evident, with positive responses being higher among First Nations, Métis and Tribal Nation members (47 percent) residents, liberals/progressives (54 percent), respondents from the Lake Superior basin (34 percent), 18- to 34-year-olds (29 percent), and females (26 percent). Negative responses were highest among conservatives (80 percent), those earning \$100,000+ (48 percent) and males (35 percent).

Resident concerns were also expressed with respect to their drinking water. Among those using groundwater wells or springs, 42 percent rated the quality as good or very good and 31 percent poor or very poor, with more than a quarter being neutral or unsure.

In total, 54 percent of all residents surveyed agreed (31 percent) or strongly agreed (23 percent) that they have access to clean, safe drinking water in their community, compared to 58 percent in 2018. Only 31 percent of First Nations, Métis and Tribal Nation member respondents agreed, and results were also lowest among Michigan residents (37 percent), those in the Lake Erie (42 percent) and Lake Michigan (49 percent) basins. Half or 50 percent agreed that all members of their community have affordable, equitable access to drinking water, while a lower 47 percent agreed that their community effectively manages and treats used wastewater or sewage.

Forty-six percent use some form of a water filtration system for their drinking water, 36 percent drink unfiltered tap water, while the bottled or commercial water delivery segment is 17 percent.

Results indicate that 56 percent are willing to pay an additional amount of money (\$5 to \$25) each month to ensure drinkable, swimmable, fishable, waters in the Great Lakes, with \$25 being most named by 25 percent, \$10 by 16 percent and \$5 by 15 percent.

Forty-six percent of respondents use the Great Lakes for recreational purposes. The highest usage was among island inhabitants (71 percent), First Nations, Métis and Tribal Nation member respondents (66 percent), 18- to 34-year-olds (52 percent), 35- to 44-year-olds (50 percent) and 45- to 54-year-olds (51 percent), \$100,000+ earners (52 percent) and residents of the Lake Superior (56 percent) and Huron (52 percent) basins. Among users of the Great Lakes, 91 percent said that it is very important (82 percent) or important (9 percent) to them to have the Great Lakes available for recreational purposes, two percent higher than in 2018.

Interest in news or other information about the Great Lakes increased 5 percent in this survey period compared to the previous wave to 65 percent. Interest levels were highest among island residents (97 percent), First Nations, Métis and Tribal Nations member respondents (93 percent), 18- to 34-year-olds (72 percent), liberal/progressives (71 percent) and those in the Lake Huron basin (73 percent). On preferred sources for information, 36 percent named the internet in general (24 percent) or government websites (11 percent), while social media followed at 21 percent and then newspapers (online or print) at 19 percent.

A total of 23 percent of respondents have heard of or are aware of the International Joint Commission, an increase of two percent over 2018 and three percent higher than 2015. Those aware said the role of the IJC is to protect the Lakes, ensure water quality, facilitate cooperation and resolve disputes. Only 10 percent of residents that know of the IJC said they have seen or heard something recently from the organization; among those aware water levels were most recalled. A lower 17 percent said that they were aware of the Great Lakes Water Quality Agreement, but this number is up slightly by 2 percent over 2018.

There is strong buy-in for the need to protect the Great Lakes for the benefit of fish and wildlife at 83 percent, and eight in 10 feel that actions are needed to be taken to ensure the health and water quality of the Lakes for future generations, an increase of 4 percent and 2 percent, respectively compared to 2018.

Similar to previous polls, residents are still most concerned about the lake that is closest to them (81 percent) than the Great Lakes as a whole (70 percent), although there was a 10 percent increase in the latter over 2018. There is also consistency with the previous poll in the high number that agreed the economy (78 percent) and the health of residents (77 percent) will suffer without healthy Great Lakes and that water quality should be protected for the benefit of residents (76 percent). A lower 64 percent feel that Great Lakes water quality should be protected for the personal benefits they receive, inferring that individual advantage is less important than the greater good.

When specifically asked, three quarters of residents are concerned with the impact of climate change on the health and quality of the Great Lakes. Climate is not however a top-of-mind issue as more directly quantifiable or visible issues such as algae, invasive species, runoff and water levels take precedence.

In short, there continues to be high buy-in not only with respect to the importance of the Great Lakes, but over concerns for its future health. Residents are clearly aware of dangers to the lakes in terms of causes as they relate to runoff or pollution and effect such as algae, although they tend to conflate the two.

There is also an awareness of the role of the individual in protecting the health of the lakes and a willingness to take actions, mostly in the form of reducing consumption, waste and making smarter purchasing decisions. However, respondents are not willing to pay more for consumer goods, especially in this COVID-19 socio-economic setting. Becoming more engaged with groups or associations and politicizing the issue has limited appeal.

However, there are some fundamental disconnects about the lakes and drinking water. Respondents are unclear as to the source of their drinking water and they are even less certain about where their wastewater goes. The disconnect is evident as only 29 percent said it is safe or very safe to drink water from the lake closest to them, while on the other hand a higher 54 percent claimed they have access to clean safe drinking water. More awareness is needed to inform residents about the lakes as a major source of drinking water to increase the bond between residents with the lakes. For example, usage for recreational purposes is high and there is a very strong level of importance attached to this aspect of the lakes by its users.

There is room to build on the aforementioned items and the importance of individual action, as well as to grow the awareness of the IJC and the Great Lakes Water Quality Agreement. It stands to reason that improved online and social media messaging is required, but there is also a need to use more traditional mediums to reach groups such as the oldest 65+ that do not hold the same 'progressive' views towards Great Lake issues as younger residents.