



# **IN HOT WATER: THE GREAT LAKES COMPACT**

MARCH 15th-17th, 2024



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## MSUMUN NOTICES

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### Committee Content Warning

While MSUMUN values the discussion and awareness of most topics and a delegate's obligation to accurately represent their assigned role, all participants who engage in any bigoted, racist, sexist, homophobic, ableist, fatphobic, xenophobic, or other such comments or sentiments will be subject to appropriate disciplinary action at the discretion of MSUMUN's Secretariat. Additionally, in all things, MSUMUN pledges its Secretariat and staff to maintain approachability and inclusivity; if any participant has any questions, comments, or concerns they are encouraged to contact MSUMUN's Secretariat or, in the case of delegates, its staff. If you have questions or concerns regarding this, please reach out to your committee's senior staff before conference weekend.

MSUMUN is committed to fostering a safe and secure environment for all delegates, staff, and advisors. In this, MSUMUN operates with a zero-tolerance policy concerning any and all instances of harassment and discrimination. Further, MSUMUN is committed to promoting the mental health of its participants and requires all participants to act with compassion, grace, and understanding. MSUMUN encourages participants to step out of their committee room and/or speak with a trusted individual if they are feeling overwhelmed or are otherwise uncomfortable.

All participants should be aware that MSUMUN's Secretariat and staff are designated mandatory reporters with MSU's Office of Institutional Equity while operating within their roles before and during the conference.

### **MSUMUN Statement on Mental Health**

*MSUMUN* is committed to fostering a safe and secure environment for all delegates, staff, and advisors. In this, *MSUMUN* operates with a zero tolerance policy with regard to any and all instances of harassment and discrimination. Further, *MSUMUN* is committed to promoting the mental health of its participants and requires all participants to act with compassion, grace, and understanding. *MSUMUN* encourages participants to step out of their committee room and/or speak with a trusted individual if they are feeling overwhelmed or are otherwise uncomfortable.

Moreover, *MSUMUN* recognizes that some of its committees may include references to or discussions of sensitive topics. While MSU values the discussion and awareness of these topics and a delegate's obligation to accurately represent their assigned role, all participants who engage in any bigoted, racist, sexist, homophobic, ableist, or other such comments or sentiments will be subject to appropriate disciplinary action at the discretion of *MSUMUN*'s Secretariat. Additionally, in all things, *MSUMUN* pledges its Secretariat and staff to maintain approachability and inclusivity; if any participant has any questions, comments, or concerns they are encouraged to contact *MSUMUN*'s Secretariat or, in the case of delegates, its staff.

All participants should be aware that *MSUMUN*'s Secretariat and staff are designated mandatory reporters with MSU's Office of Institutional Equity while operating within their roles before and during the conference.

### **MSU Provisional Land Acknowledgement**

"We collectively acknowledge that Michigan State University occupies the ancestral, traditional, and contemporary Lands of the Anishinaabeg – Three Fires Confederacy of Ojibwe,

Odawa, and Potawatomi peoples. In particular, the University resides on Land ceded in the 1819 Treaty of Saginaw. We recognize, support, and advocate for the sovereignty of Michigan’s twelve federally-recognized Indian nations, for historic Indigenous communities in Michigan, for Indigenous individuals and communities who live here now, and for those who were forcibly removed from their Homelands. By offering this Land Acknowledgement, we affirm Indigenous sovereignty and will work to hold Michigan State University more accountable to the needs of American Indian and Indigenous peoples.”<sup>1</sup>



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<sup>1</sup> “Land Acknowledgement,” American Indian and Indigenous Studies, accessed December 5, 2021, <https://aiis.msu.edu/land/>.

## LETTER FROM THE CHAIR

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Hello Delegates!

My name is Elliot Cayabyab and I am your chair for the Great Lakes Compact Committee. I am a sophomore majoring in International Relations and Comparative Cultures and Politics with minors in French and Asian-Pacific American Studies. This is my second year in MSUMUN. Last year I was an assistant chair in the Asian Labor Rights Crisis in 2030. I also compete in the collegiate Model UN circuit with MSU's International Relations Organisation. Now that I'm done introducing myself, let me introduce my junior staffers! Jai Patel and Jacob Herzig are the Assistant Chairs for this committee!

Jai is currently a freshman majoring in Political Theory and Constitutional Democracy with minors: Law, Justice, and Public Policy; and Leadership of Organizations. This is his first year in MSUMUN and Model UN.

Jacob is currently a sophomore majoring in International Relations with minors in German and European studies. This is his second year at MSUMUN. Last year he staffed the SpaceX Committee and has been on the MUN traveling team at MSU for the past 2 years.

(continued on next page)...

We cannot wait to see what you all will do with the topic at hand. The entire dias live in Michigan and assuming that you're from around here as well, we can't wait to see the debate. If you've read this far, please email us what [Great Lake you are](#) when sending us your position papers. ;)

If you have any questions, please email us at [specialized1@msumun.org](mailto:specialized1@msumun.org) if you need any questions about research, your character, the topic, or MSUMUN in general.

Happily,

Elliot-Marie Balmonte Cayabyab

Jacob Stephen Herzig

Jai Dharmesh Patel

In Hot Water: The Great Lakes Compact Dias

[specialized1@msumun.org](mailto:specialized1@msumun.org)



# RULES OF PROCEDURE

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## Article I: General Rules

1. Delegates are expected to adhere to all regular MSUMUN XIII rules and standards of decorum.
2. In the event of a dispute over the Rules of Procedure, either those of MSUMUN generally or the Great Lakes Compact Committee, the MSUMUN Secretariat will be the ultimate authority of appeal.

## Article II: Meetings

1. All of the Great Lakes Compact Committee meetings shall be attended by all specified members of the committee, unless otherwise authorized by the MSUMUN Secretariat.
2. Unless otherwise indicated by the MSUMUN Secretariat or the Great Lakes Compact Committee staff, all meetings of the committee will be held in the specified Great Lakes Compact Committee room as designated by MSUMUN.

## Article III: Agenda

1. Items for debate may be pulled from the background guide, but are not limited to what is explicitly mentioned. Staff would like to see well-rounded and well-researched delegates bring new and relevant topics to the table.
2. Any Committee member may make a motion to restrict debate to one topic. If this motion passes, debate shall be limited to the topic specified until such time as another motion is made to either change the topic under consideration or return to general debate.



3. The Agenda is to be set at the beginning of committee, formal debate on committee topics may not begin until the Agenda has been set.
4. A Speaker's List may be opened at any time when motions are being entertained. Additionally, a delegate may request to be added to the Speaker's List at any time. If the Chair is not actively calling for speakers to be added, a delegate may send a note to the dias.

#### **Article IV: Types of Proposals**

1. Working Papers: When initially proposing solutions, delegates must first draft and present working papers to the committee. These documents will not be subject to a vote by committee, but are merely a presentation of ideas. These will then be adapted into resolutions, as described below.
2. Resolutions: A resolution requires only one sponsor, though it may have more. The amount of required signatories is up to the discretion of the Chair. A committee member need only move to introduce a resolution in order for it to be considered by the entire committee.

#### **Article V: Voting**

1. Votes may be entered as For, Against, or Abstentions.
2. Any delegate who designates themselves as "Present and Voting" during roll call may not abstain on any matter.

3. Votes on non-substantive proposals or procedural matters will be passed by the affirmative vote of a simple majority of committee members. Abstentions are allowed on non-substantive proposals, but not procedural matters.
4. Votes on substantive matters will be passed by the affirmative vote of a simple majority of committee members.
5. In all cases, a simple majority constitutes more than half of the For and Against votes.

### **Remaining Points**

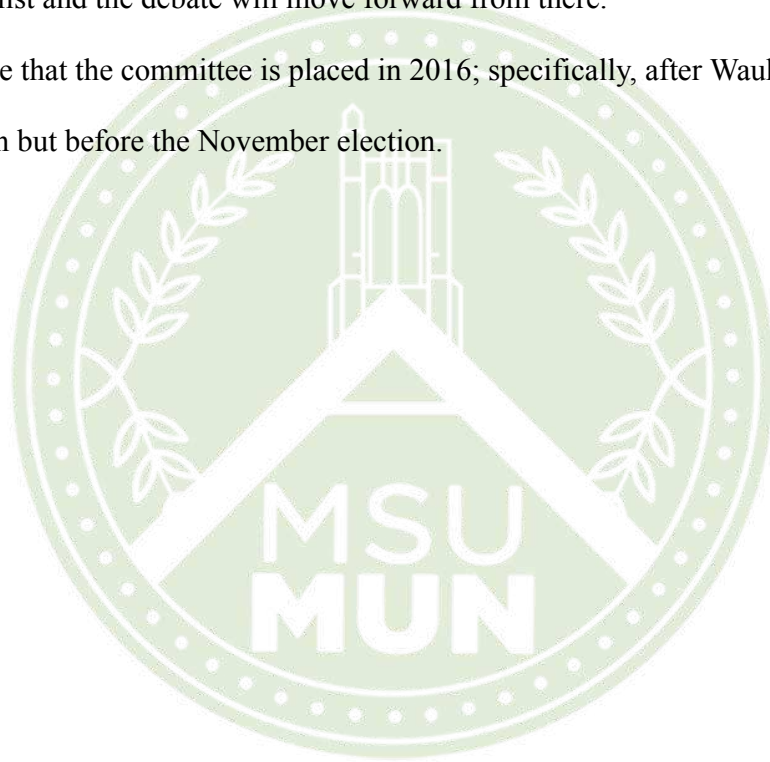
1. Any rules and regulations are subject to change at the discretion of the Chair.
2. If you have additional questions, please visit the [MSUMUN Website](#)



## SPECIAL COMMITTEE LOGISTICS

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1. This committee will be run like a smaller, faster-paced GA with no crisis elements. So the delegates can understand the breadth of this issue, there will be no primary speaker's list nor any topics to specifically choose from. The delegates should draft and propose solutions regarding all the topics given. The committee will instead start with a secondary speaker's list and the debate will move forward from there.
2. Please note that the committee is placed in 2016; specifically, after Waukesha applied for a diversion but before the November election.



## HISTORICAL BACKGROUND

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### Example: The Aral sea

The Great Lakes are great modern examples of how important conservation is to culture in economics. However, they are not the first lakes to become discussions of usage and conversion. A significant example that is almost dried up now is the Aral Sea.

The Aral Sea used to lay between Kazakhstan and Uzbekistan. Originally the Aral Sea covered 26,300 miles<sup>2</sup> in water and was once considered the world's fourth-largest body of inland water. The sea resided in an arid climate. To combat the water loss from evaporation, it relied on river inflow.



However, in the 1950s, Soviet Russia sought to irrigate the deserts in what is now Uzbekistan, Kazakhstan, and Turkmenistan. To do that, they diverted from the Amu Darya and Syr Darya rivers which ran water into the Aral Sea. The Soviets used hydro-infrastructure to maximize crop production. The desert turned from a barren area to a vibrant farmland and marketplace for cotton and rice but at the cost of the sea shrinking.

Since the 1960s, the Aral Sea has lost 90% of its surface area and 96% of its former volume. The Aral Sea split into three parts: the Greater Sea, the Western Lake, and the Lesser Sea.

Because of the reduction of water in the Aral Sea, the salt and mineral content of the body of water “rose dramatically”<sup>2</sup> making the water unfit for drinking and the natural fauna of the sea died off. The fishing industry in the sea is ruined. People that lived on the shoreline moved out. The climate around the area changed: winters were colder and summers were hotter.

The evaporated sea caused dust storms to be composed of salt, fertilizer, and pesticides. The health of the populace that was once near the shoreline declined.<sup>3</sup>

### Former Water Agreements

Timeline:



Throughout the 20th century, Canada and the United States created documents to outline each other’s presence in and around the Great Lakes as well as what they do to maintain them.

<sup>2</sup> The Editors of Encyclopaedia Britannica, “Aral Sea | Description, History, Demise, & Facts,” in *Encyclopaedia Britannica*, 2019, <https://www.britannica.com/place/Aral-Sea>.

<sup>3</sup> Ibid.

The Boundary Waters Treaty of 1909 outlined the rights of both countries in the shared waters. It allowed both countries to enter into future agreements on how the waters should be used and their right to argue against anything that would affect their respective waters. The treaty established restrictions on diversions of the Niagara, St. Mary, and Milk Rivers. The International Joint Commission (IJC) was created and given powers to advise the two countries on steps to ensure that the Great Lakes are in the best shape.<sup>4</sup>

The IJC made a final report on the Great Lakes' water quality in 1918. In the report, concerning amounts of B. Coli throughout the Great Lakes and their tributaries were discovered. In 1972, the United States and Canada passed the Great Lakes Water Quality Agreement (GLWQA).

The agreement defines the areas of concern in the Great Lakes and what the countries need to regulate. The GLWQA made objectives to regulate oil, product coloring, debris from human activity, and fertilizer.<sup>5</sup> The agreement made it easier for the countries to fix the issues together.

The 1985 Great Lakes Charter is one of the first steps for the Great Lake states and provinces to work with each other rather than their federal governments. It created a water management group and research program to conserve the levels and flows.<sup>6</sup>

The Great Lakes states and provinces were added to the previously stated document in the 2001 Great Lakes Charter Annex. In this additional document: the leaders outline their

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<sup>4</sup> International Joint Commission, "Boundary Waters Treaty of 1909 | International Joint Commission," International Joint Commission, 2018, <https://www.ijc.org/en/boundary-waters-treaty-1909>.

<sup>5</sup> REG 05 US EPA, "What Is GLWQA?," US EPA, March 2, 2015, <https://www.epa.gov/glwqa/what-glwqa>.

<sup>6</sup> The Council of Great Lakes Governors, "The Great Lakes Charter Principles for the Management of Great Lakes Water Resources," 1985, <https://www.internationalwaterlaw.org/documents/regionaldocs/Local-GW-Agreements/1985-GL-Charter.pdf>.

commitments, develop how they gather information, make the information that they receive public, and create new sets of agreements between the states and provinces.<sup>7</sup>

In 2004, the draft of the Great Lakes Compact outlined the restrictions on diversions, what criteria they needed to meet, and the restrictions to the in-basin withdrawals.<sup>8</sup>

The next year, the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement was created to pair with the compact. It acted as “an updated version of the nonbinding Great Lakes Charter.”<sup>9</sup> The document adds in the “straddling communities” section, ensuring each country’s sovereignty, and more in-depth restrictions on diversions.

All the Great Lakes states finally signed in 2007.

### Disputes Between the States and Provinces

Although there have been many agreements and resolutions made prior to the Great Lakes Compact, there have been many disagreements between all of the actors. The Canadian provinces criticized the states because of how the US focuses on industries and agriculture as most of the Canadian opposition was from environmentalists and nationalists.<sup>10</sup> In the United States, the states all have different ideas of each others’ responsibilities and for themselves: Michigan where anti-diversions, however, refused any restrictions to their own water usage, New York focuses on hydropower, Minnesota is more environmentally progressive, and Indiana is the least environmentalist.

Between the states, there was contention on how much each state took out from the Great Lakes and what cities were allowed to divert water from the Basin. One issue was how the

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<sup>7</sup> The Council of Great Lakes Governors, “THE GREAT LAKES CHARTER ANNEX a SUPPLEMENTARY AGREEMENT to the GREAT LAKES CHARTER,” 2001, <https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Programs/WRD/Water-Use/Great-Lakes-Charter-Annex-2001.pdf>.

<sup>8</sup> Peter Annin, *The Great Lakes Water Wars* (Island Press, 2009).

<sup>9</sup> Ibid.

<sup>10</sup> Peter Annin, *The Great Lakes Water Wars* (Washington, Dc: Island Press, 2018).

compact should treat Chicago diversions. Pennsylvania and Ontario suggested that the Chicago diversion should be covered under the Compact with the exception that if Illinois ever wants to increase its diversions, they'd have to apply for approval. Illinois argued against this, citing how the US Supreme Court ruled for the diversion in 1929 and refused to sign any agreement that changed their regulations. In an ultimatum, the other states backed down.<sup>11</sup>

However, the disagreements didn't stop at the border. Canada had many problems with how the US dealt with the Great Lakes. Although the Annex 2001 was looked at positively in the US, many Canadians saw it as a "unilateral US water grab" and that it was used to let the US "drain the Great Lakes."<sup>12</sup> To contrast much of the states' hesitation to put restrictions on diversions, Canada banned diversions provincially and federally. The mistrust in the US got so bad that many Canadians questioned why Canada should sign an agreement that would ban nothing, not improve the lakes, and allow Canadian waters to become "a tradable commodity."<sup>13</sup>

### Prior actions (prior 2016)

In 2009, the Great Lakes Commission des Grands Lacs passed "The Water Energy-Nexus". The 2009 resolution goal is to make water-generated-electricity the main source of power in the Great Lakes region to combat climate change. It merges the region's water and energy planning by allowing for new protocols and management models. The resolution outlines that the US Department of Energy, Environment Canada, Natural Resources Canada, and Fisheries and Oceans Canada will work with each other when looking at energy and water policies.<sup>14</sup>

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<sup>11</sup> Peter Annin, *The Great Lakes Water Wars* (Washington, Dc: Island Press, 2018).

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

<sup>14</sup> The Great Lakes Commission des Grand Lacs, "Policy Resolutions," Great Lakes Commission, 2009, <https://www.glc.org/work/advocacy/resolutions/>.



In 2010, the Great Lakes Compact Council detailed the conservation and efficiency goals and objectives and created interim procedures. The interim procedures provided an outline for the application for diversions that fulfill the requirements for the “Straddling Communities/Countries” and “Intra-Basin Transfer” exceptions.<sup>15</sup>

In 2014, the Great Lakes Commission des Grands Lacs reinforced the federal protections from the importation and trade of invasive species in the Great Lakes region. This enables the region to be able to combat the Great Lakes with immediate responses and inhibit the spread of invasive species in the water.<sup>16</sup> In 2015, the commission made and added to the list of “injurious” species from Title 18 of the Lacey Act.<sup>17</sup>

Also in 2014, the commission addressed pollution in Lake Erie and the Toledo water crisis. The 2014 resolution affirms that drinking water has to be according to the World Health Organization’s guidelines and makes loan plans for the City of Toledo. It also touches on reports and follows the suggestions of the ICJ regarding Lake Erie. It reaffirms that it is both the US and Canada’s responsibility on this issue.<sup>18</sup>

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<sup>15</sup> Great Lakes Compact Council. “Archived Materials- the Great Lakes-St. Lawrence River Compact Council.” [www.glscompactcouncil.org](http://www.glscompactcouncil.org), 2010. <https://www.glscompactcouncil.org/historical-information/archived-materials/>.

<sup>16</sup> The Great Lakes Commission des Grand Lacs, “Policy Resolutions,” Great Lakes Commission, 2014, <https://www.glc.org/work/advocacy/resolutions/>.

<sup>17</sup> The Great Lakes Commission des Grand Lacs, “Policy Resolutions,” Great Lakes Commission, 2015, <https://www.glc.org/work/advocacy/resolutions/>.

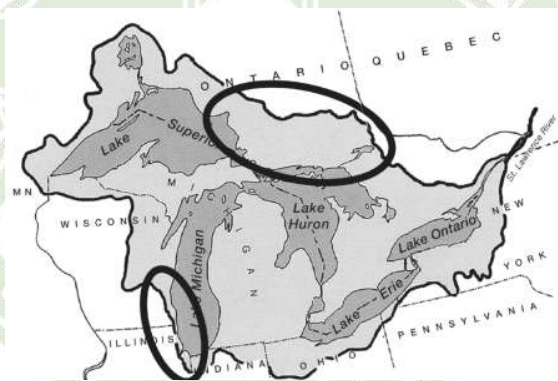
<sup>18</sup> The Great Lakes Commission des Grand Lacs, “Policy Resolutions,” Great Lakes Commission, 2014, <https://www.glc.org/work/advocacy/resolutions/>.

## DIVIDING IT UP

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### The Watershed

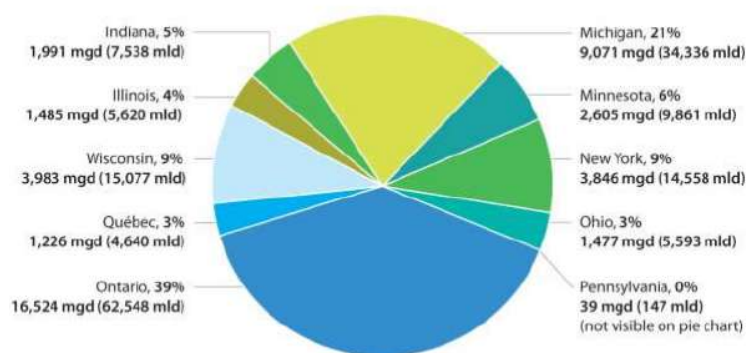
Many states and provinces share parts of the Great Lakes. The names of the five lakes that join together to form the Great Lakes are Lake Michigan, Lake Superior, Lake Huron, Lake Erie, and Lake Ontario. The Great Lakes Compact is made up of several states and two Canadian provinces: Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin, Ontario, and Quebec. Each state and province is represented by a governor and their alternative Department of Natural Resources (DNR) who all have different ways on how to address situations.



The basin's boundaries vary the distance away. Illinois only has a small portion of land that can be taken from Lake Michigan. Chicago is not included in Illinois and many states don't like the idea of the city getting a diversion. In contrast, Ontario has areas spanning thousands of miles that can use the water from the Great Lakes around them. Some governors argue on how much of their state has in the Great Lakes basin. Looking at the basin boundaries, the areas that were prescribed use the regulated amount of water they're allowed to use already.

## Dividing Water Usage

Each state and province withdraws different amounts of water for their respective primary reasons. Public water supply means water withdrawn by public or private water suppliers that provide water to at least 25 people or have a minimum of 15 connections. Public-supply water is delivered to users for domestic, commercial, and industrial purposes. Thermoelectric power is the process of generating electricity with steam-driven turbine generators. In a steam-generating cycle, heat is used to boil water in a large pressure vessel to produce high-pressure steam. Industrial is the economic activity concerned with the processing of raw materials and manufacture of goods in factories. Hydroelectric power production is the production of a renewable source of energy that generates power by using a dam or diversion structure to alter the natural flow of a river or other body of water. Hydroelectric power production provides flood control, irrigation support, and clean drinking water. Below is a graph of every state/province in the GLC and how much they withdraw water (mgd = million gallons per day):



19

<sup>19</sup> The Great Lakes Council, “Annual Report of the Great Lakes Regional Water Use Database Representing 2016 Water Use Data 1 Annual Report of the Great Lakes Regional Water Use Database Representing 2016 Water Use Data 2,” 2017, <https://waterusedata.glc.org/pdf/2016-Water-Use-Report-Final.pdf>.

Within Illinois lies the city of Chicago. From their victory over Missouri in the early 1900s, Chicago began taking measures to expand the geographic breadth of its diversion. During the next several years, city officials expanded the Illinois diversion. Between 1907-1910 on Chicago's North Side, the city dug a canal known as the North Shore Channel, and in 1911, started another canal in the South Side. In 1900, the flow started at 4,167 cubic feet per second (2,680 mgd) and by 1922, it had grown to 8,500 cubic feet per second (5,494 mgd).



With the use of tens of millions of gallons per day from the Great Lakes, water scarcity is an issue. Communities that lack the structures and systems to supply and distribute water equitably are particularly vulnerable to fluctuations in weather that lead to floods and drought conditions.<sup>20</sup>

Water can be scarce for many reasons:

- Agriculture
- Insufficient Infrastructure
- Climate Change
- High Water Demand

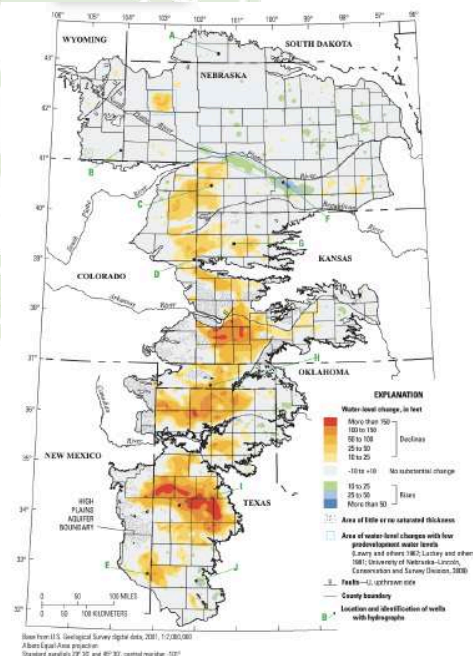
<sup>20</sup> UN Global Compact, "Detailed Definitions – Understanding Key Water Stewardship Terms," CEO Water Mandate, accessed December 30, 2023, <https://ceowatermandate.org/terminology/detailed-definitions/>.

- Global demand is expected to reach 40% by 2030.
- Disproportionate distribution
- Groundwater depletion
  - Sustained groundwater pumping can lead to long-term declines of water in several regions, which can cause deterioration of water quality and a reduction of water in streams and lakes.<sup>21</sup>

### Diversion of Water

Currently, there are plenty of states that are continuing to run out of water: Colorado, California, Nevada, New Mexico, Utah, Arizona, Montana, North Dakota, South Dakota, Idaho, California, Oregon, and Washington. Reasons can vary, but the most common reason why states are running out of water is because of shifted traditional precipitation patterns. Regions become drier, leading to the reduction of their already scarce water supplies.

To make the most of the Great Lakes, utilizing the undervalued resources found in other bodies of water is vital. This leads to aquifers, bodies of porous rocks or sediments saturated with groundwater. There are three aquifers that affect the states that hold a part of the Great Lakes and the Southern States: Ogalla, Mahomet, and Saginaw. The Ogallala Aquifer is one of the world's largest aquifers and is in portions of South Dakota,



<sup>21</sup> Lifeng Li, "Water Scarcity, the Climate Crisis and Global Food Security: A Call for Collaborative Action," United Nations, 2023, <https://www.un.org/en/un-chronicle/water-scarcity-climate-crisis-and-global-food-security-call-collaborative-action>.

Nebraska, Wyoming, Colorado, Kansas, Oklahoma, and Texas. The Mahomet Aquifer is the primary source of drinking water for more than 500,000 people in 14 Illinois counties. The Mahomet Aquifer provides an estimated 220 million gallons of water per day to communities, industry, agriculture, and rural wells in Illinois.<sup>22</sup> The Saginaw Aquifer is the primary source of municipal water, including in Clinton, Ingham, and Eaton counties, encompassing the Lansing-East Lansing Metropolitan Area. Only about .03% of the aquifer is used for drinking, while the rest is for domestic and industrial use.<sup>23</sup> Utilizing all the resources Earth has to offer is crucial for efficiently ensuring all states are not suffering from water scarcity.

### Diversions to South Western States

In 1982, *Sporhase v. Nebraska* put all the Great Lakes governors and premiers on their toes. The Supreme Court ruled in favor of Sporhase who had brought up a concern that Nebraska cannot ban him from irrigating his farm that resides in both Nebraska and Colorado by only using a well that he made on the Nebraska side. For this ruling: “[t]he justices said...infringing on interstate commerce crossed a constitutional line.”<sup>24</sup>

Although the trial was based away from the Great Lakes region, the apparent issue of diversions of water to places outside of the basin grew bigger. As shown in “Potential Water Supply Crises by 2025”, there is an increasing number of water

**Potential Water Supply Crises by 2025**

(Areas where existing supplies are not adequate to meet water demands for people, for farms, and for the environment).



<sup>22</sup> Town of Normal City Council, “Why Is the Aquifer Important? | Normal, IL - Official Website,” [www.normalil.gov](http://www.normalil.gov), accessed December 30, 2023, <https://www.normalil.gov/1343/Why-is-the-Aquifer-Important>.

<sup>23</sup> Brian McKenna, “Deep, Dark and Wonderous, the Saginaw Aquifer,” *City Pulse*, 2001, <https://lansingcitypulse.com/archives/011017/health/index.html>.

<sup>24</sup> Peter Annin, *The Great Lakes Water Wars* (Washington, Dc: Island Press, 2018) 75.

insecurities estimated in the next few years. In the South West region, there is a high estimate of water insecurity where the Ogallala Aquifer should be.

The Ogallala Aquifer might be one of the biggest aquifers, but it's also drying up quickly. The region has seen a depletion in the water supply rather than a rise. Some people blame the depleted water supply on the periodic droughts the region has. Others have blamed farming irrigation which accounted for 90% of the aquifer's withdrawals.<sup>25</sup>

Droughts and water insecurity in this region bring up ideas like the North American Water and Power Alliance (NAWAPA). NAWAPA was a project proposed in the 1960s to divert water from the Yukon River to water-insecure regions in North America. The idea was not only to distribute water but also to use hydroelectric plants to produce electricity and run water through Lake Superior to wash out the pollutants. The project was seen in two different lights: something amazing that could potentially be able to save the regions or a monstrous concept.

For Canadians, the NAWAPA project was seen as the US trying to appropriate a Canadian resource. Others point out that anyone has the right to change North America's ecosystems because regions in the US need water.<sup>26</sup>

### Waukesha/Straddling Counties

Earlier this year (2016), a city in Illinois, Waukesha, applied for a diversion of water from Lake Michigan. This is the second time that Waukesha has applied for a water diversion; the first

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<sup>25</sup> V.L. McGuire, "USGS Scientific Investigations Report 2011-5089: Water-Level Changes in the High Plains Aquifer, Predevelopment to 2009, 2007-08, and 2008-09, and Change in Water in Storage, Predevelopment to 2009," pubs.usgs.gov, 2011, <https://pubs.usgs.gov/sir/2011/5089/>.

<sup>26</sup> Encyclopedia, "North American Water and Power Alliance | Encyclopedia.com," www.encyclopedia.com, accessed November 23, 2023, <https://www.encyclopedia.com/environment/encyclopedias-almanacs-transcripts-and-maps/north-american-water-and-power-alliance>.

time the city applied for a water diversion was in 2010 because of the amount of radium contaminating the city's wells.<sup>27</sup>



During the 2010 Waukesha mayor election, candidate and future mayor Jeff Scrima stated that they [Waukesha] didn't want to become "Milwaukee's water pawn". Waukesha would have to start paying for Milwaukee's financial problems and they'd lose their identity and independence as a city.<sup>28</sup>

In 2012, the city recorded a record concentration of radium in its water supply. The city previously protected itself from other cities nearby wanting diversions from them but now needs the water. Under the Straddling Counties Act, Waukesha could get a diversion if the committee approves of it. Under the requirements of the straddling communities exception, Waukesha would need to return that amount of water to Lake Michigan, but the region does not want contaminated water coming back to the Great Lakes.

### Questions to consider:

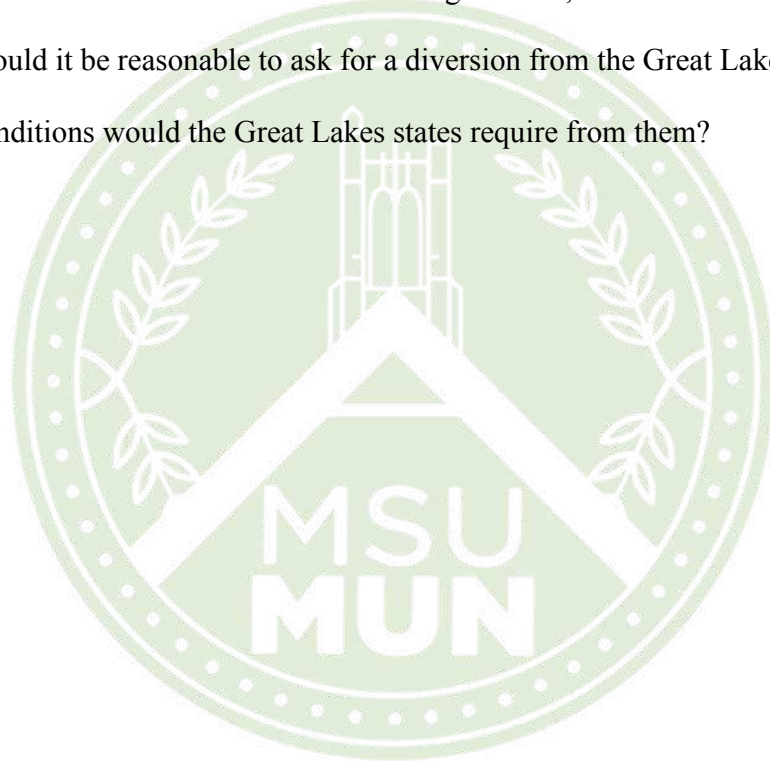
- Are the basin boundaries currently equitable?
  - If not, what can the leaders do about it?
- What international agreements or treaties need to be made or altered to facilitate the division of the Great Lakes between the U.S. and Canada?

<sup>27</sup> Wisconsin DNR, "City of Waukesha Diversion | Wisconsin DNR," [dnr.wisconsin.gov](https://dnr.wisconsin.gov/topic/wateruse/waukesha.html), 2023, <https://dnr.wisconsin.gov/topic/wateruse/waukesha.html>.

<sup>28</sup> Peter Annin, *The Great Lakes Water Wars* (Washington, Dc: Island Press, 2018). pg 276.



- How can the division of the Great Lakes account for potential natural disasters such as droughts, floods, or contamination events?
  - What contingency plans need to be in place?
- Should the compact states and provinces accept the Waukesha application and what conditions would need to be established for the city?
  - How would accepting this application be seen by other parties?
- As droughts in the South West and California get worse, what can those states do?
  - Would it be reasonable to ask for a diversion from the Great Lakes and what conditions would the Great Lakes states require from them?



## ECONOMIC

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As soon as the first few settlers arrived, the Great Lakes were a great source of economic wealth. Starting from the exploration of the region to the establishment of trade: the Great Lakes provided many mediums of income for those in the region. However, to think solely of profit has either hurt resources or people. In the example *The Lorax* (1972), after the Onceler polluted the lake with the humming-fish leaving, The Lorax says “Oh, their future is dreary”, to which the Humming-fish reply with “I hear things are just as bad up in Lake Erie.” The situation with water pollution in the Great Lakes was so grand that it gets alluded to in a children’s movie.

Like the Onceler, the region disregarded the water in an effort for profit. The American Great Lakes states reviewed how much they would regulate water consumption over the economic benefits. The apprehension to make stricter regulations agitated Ontario and Quebec. There were other issues regarding water consumption during the mid-20th century: factories didn’t dispose of their waste well, leading to legal battles with bottled water companies like Nestlé Waters NAC.

### Exporting Water

The idea of exporting water isn’t a foreign idea around the world, as shown by the Aral Sea. Water is a necessity around the world that many people don’t have access to, unlike the Great Lakes region which has 20% of the world’s usable surface water. In 1997, John Febbraro came up with the idea of shipping Great Lakes water to people in a water crisis around the world. He and a partner in the Nova Group, an advisory firm, began plans to ship out water from Lake

Superior to Asia. Although this sounds like a humanitarian effort, Febbraro still made a profit off of the plan he made.

The following year, Febbraro applied and got a permit “for the withdrawal of bulk water” with his plans attached.<sup>29</sup> This permit allowed the Nova Group to export 158 million gallons of water to Asia per year (up to 10 million liters a day). The Nova Group claims that the water “will never run out.”<sup>30</sup>

The main issue that the region had for the company shipping out water was that it would start a precedent. If the Nova Group could take out this much water, how could they say no to other applicants, especially in the US? From this, the region prohibited shipping water in tanks, however, that didn’t stop bottled water.

For years the topic of bottled water remained contentious but was being tabled. In 2001, the Michigan Citizens for Water Conservation filed a complaint against Nestlé Waters, preventing the company from taking out water via wells and pipelines. This complaint took until 2005 for the Michigan Court of Appeals to make a decision. Earlier in the same year, Nestlé sued Michigan claiming that the state’s restrictions on water were a violation of constitutional commerce protections.

Nestlé sued in response to the increase of restrictions on bottled-water production: Michigan prohibited “expanding bottled-water operations”, Governor Granholm proposed the Water Legacy Act, and the Department of Environmental Quality restricted the company’s distribution of bottled water from the City of Ewart to the Great Lakes basin.<sup>31</sup> Unsurprisingly in

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<sup>29</sup> Peter Annin, *The Great Lakes Water Wars* (Washington, Dc: Island Press, 2018). pg 204.

<sup>30</sup> CBC News, “Great Lake Water Deal Draws Criticism,” CBC, November 14, 1998, <https://www.cbc.ca/news/canada/great-lake-water-deal-draws-criticism-1.167346>.

<sup>31</sup> Scott Hubbard, “Everything Old Is New,” November 2005, <https://www.michbar.org/file/barjournal/article/documents/pdf4article930.pdf>.

2005, the issue of bottled water was put on the negotiating table for the council and was led by Michigan.

There were arguments made by environmentalists saying that if the Nova Group's proposal to export water in tankers is considered a diversion, so should bottled water. Nestlé counters that if bottled water is counted as a diversion so should beer, fruit juices, potatoes, and other products that consume water.<sup>32</sup> The counterarguments were that products like fruit juices and canned cherries were value-added goods and should be counted separately from water.

To the dismay of Michigan, some states didn't see a problem with Nestlé Waters using the Great Lakes water for produce. Minnesota saw it as a nonissue; Ontario had their own regulations on the size of the containers that the water could be shipped out.

It wasn't until Nestlé sued Michigan with a 22-page lawsuit (10 of which attacked the Water Resources Development Act) that governors and premiers started noticing the issue. However, they were more concerned about whether a federal judge would rule the WRDA unconstitutional, making the lake vulnerable.

Currently, 49 places in the US are removing water from the basin for bottled water.



<sup>32</sup> Peter Annin, *The Great Lakes Water Wars* (Washington, Dc: Island Press, 2018). pg 232-3.

## Shipping

The Great Lakes have always been a major transit route in the region. From the Native Americans to the fur traders and the four nations that would come to settle the area. According to the Chamber of Marine Commerce, “230 million metric tons” transit the Great Lakes and Saint Lawrence Seaway annually; this is valued at “\$77.4 billion (CAD\$ 100 billion).”<sup>33</sup> Ships are the most convenient way of moving large cargo since the largest ones on the Great Lakes can carry up to 70,000 tons of cargo or the equivalent of “700 rail cars or 2,800 trucks.”<sup>34</sup>

The Great Lakes and Saint Lawrence Seaway contains 110 ports. These ports range from all types of capabilities and industries. These ports are divided into public and private ports; some ports contain both with some sections being owned by a company and operated solely by them, while the rest of the port takes in cargo from all over.

These ports are often contaminated with toxic sediment as a result of the long industrial usage. This is also compounded by the air quality, which is reduced as a result of ships being exempted from clean air laws and the dust from bulk cargo being unloaded and loaded.

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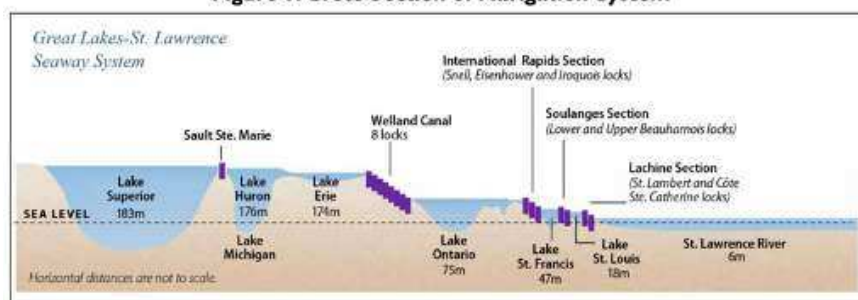
<sup>33</sup> International Joint Commission, “Great Lakes-St. Lawrence Shipping: What Have You Done for Me Lately?,” International Joint Commission, September 11, 2018, <https://www.ijc.org/en/great-lakes-st-lawrence-shipping-what-have-you-done-me-lately>.

<sup>34</sup> American Great Lakes Ports Association, “Industry Overview | American Great Lakes Ports Association,” [www.greatlakesports.org](https://www.greatlakesports.org), n.d., <https://www.greatlakesports.org/industry-overview/>.



Key pieces of infrastructure that allow access to the lakes and the Atlantic are called locks. The locks work by raising and lowering the water level so that ships can pass through them. These locks provide a path for invasive species to enter such as the Zebra Mussels which enter through a ship. There are 13 locks on the Great Lakes comprising three sections: Erie Canal, Sault Ste. Marie “Soo” Locks, and the Welland Canal.

**Figure I. Cross Section of Navigation System**



**Source:** Figure created by CRS using St. Lawrence Seaway Management Corporation diagram.

**Notes:** The figures in meters are lake elevations above sea level. Lake Michigan is at the same elevation as Lake Huron.

Most ships operating on the Great Lakes are over four decades old. The ships in the 1000+ feet range were built in the 1970s-1980s with ships in the 700+ place range being built in the 1940s-1950s. Canadian ships are of a similar age. Because of this, ships on the Great Lakes are exempt from clean air laws put in effect in 2015. These ships also have issues resulting from

their age causing leaks. This remains an issue because of two major factors: Limitations of the locks, and The Jones Act.

**Questions to Consider:**

- How can this committee balance the economic benefits of shipping while still being mindful of the harm that it creates?
- What is the environmental impact on the Great Lakes from shipping and ports?
- What actions can be taken or proposed to improve the sustainability of the shipping industry?
- How has the long-term focus on bulk cargo impacted the health of the Great Lakes?
- How does water conservation impact economic output?



## ECOLOGICAL

For most of history, no attention was paid to what entered the waterways, which served as an easy way to dispose of trash, sewage, and dead animals. This continued until the 1972 Clean Water Act was passed in response to the Cuyahoga River catching fire. Runoff is one the main causes of pollution in the Great Lakes; it can be attributed to many sources, such as industrial production (like in the Rouge River in Detroit), mining, agriculture, fracking, and water treatment plants. Potential sources are of just as much concern, such as nuclear waste. In a study, 90% of water samples had dangerous levels of microplastics and 20% of those are at the most dangerous levels. Water filtration and plastic pellets from production are one of the major causes of the introduction of microplastics. One of the reasons that the filtration system has this issue is the release during the washing of clothes; there are no monitoring systems in place at the moment.

### Nuclear Power

There are 55 current or former nuclear reactors at 28 generating stations in the Great Lakes Basin. This is divided into 38 reactors in Canada and 17 in the United States. Currently, there are 30 operating reactors, 18 at 3 sites in Ontario and 12 at 9 generating stations in the United States.<sup>35</sup> The reason that so many



<sup>35</sup> (Commission 2020)



nuclear power plants on the Great Lakes is that they output extreme heat due to energy production and require a cooling system using fresh water intake which prevents the core from melting itself.

There are also 60,000 tons of radioactive waste improperly stored at the reactor on the shores of the Great Lakes; 50,000 tons of them are at Canadian nuclear facilities.<sup>36</sup> A nuclear waste storage facility is being proposed to be placed in Huron-Kinloss or South Bruce because of a lack of available storage facilities on Lake Huron in Ontario. The US proposes to create underground storage in Texas and New Mexico. These spent uranium fuel rods have a half-life of 700 million years. A scientific paper from 2016 highlights the danger that this poses, saying that a terrorist attack, natural disaster, or accident could result in a loss of coolant in the storage casks. This would cause an explosion with a radioactive cloud that would mandate evacuation of hundreds of miles of major metropolitan areas such as Chicago, Detroit, or Toronto.<sup>37</sup> It would result in a Chernobyl-esque exclusion zone, which would be uninhabitable for 20,000 years, and a government fishing ban on the Great Lakes.



credit:Great Lakes Commons/*Environmental Health Perspectives*

<sup>36</sup> Keith Matheny, "60,000 Tons of Dangerous Radioactive Waste Sits on Great Lakes Shores," Detroit Free Press, October 19, 2018, <https://www.freep.com/story/news/local/michigan/2018/10/19/nuclear-waste-great-lakes/1417767002/>.

<sup>37</sup> Frank N. von Hippel and Michael Schoepfner, "Reducing the Danger from Fires in Spent Fuel Pools," 2016, <https://scienceandglobalsecurity.org/archive/sgs24vonhippel.pdf>.

## Mining and Industrial Pollution

The Great Lakes region is surrounded by pockets of minerals (e.g. iron, gold, and platinum). In the past, there was also a large industrial capacity surrounding the Great Lakes. “Over 20% of the shoreline of the Great Lakes are impaired due to sediment contamination, and 33% of the 1,305 EPA Superfund sites in the United States are in the Great Lakes Region.”<sup>38</sup> The mining industry and steel and iron mills released large quantities of cadmium and mercury into the water as it is a byproduct of mining and smelting.

The mercury settles on the bottom of the lake and is ingested by invertebrates which move up the food chain. The same goes for the other toxins that have leached into the waters. Ingestion of heavy metals can cause “neurological diseases, reproductive problems, respiratory problems, immune system damage, allergic reactions, liver and kidney damage, and delayed youth development.”<sup>39</sup> Other dangers are posed by the possibilities of oil and fracking contamination. The national debate on aging oil infrastructure was heightened when, in 2010, 800,000 gallons of oil spilled into the Kalamazoo River. This calamity drew attention to the 62-year-old Enbridge's Pipeline 5 which runs underneath the strait of Mackinac and carries 23 million gallons of light crude.<sup>40</sup> “Michigan’s codification of the Great Lakes Compact under the Natural Resources and Environmental Protection Act of 1994, Great Lakes Preservation section, exempts the oil and gas industry from complying with the requirements of large quantity water withdrawals, including obtaining a water withdrawal permit, stating a withdrawal undertaken as part of an oil and gas activity are exempt withdrawals unless they result in a diversion. Fracking has been occurring in Michigan over the past few decades, and deep horizontal well drilling has

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<sup>38</sup> Erin Garmaas-Holmes, “Great Lakes: A Toxic ‘Sink,’” Great Lakes Commons, June 5, 2013, <https://www.greatlakescommons.org/our-blog-b/2013/06/great-lakes-a-toxic-sink>.

<sup>39</sup> J Bernier et al., “Immunotoxicity of Heavy Metals in Relation to Great Lakes.,” *Environmental Health Perspectives* 103, no. Suppl 9 (December 1, 1995): 23–34, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1518818/?page=1>.

<sup>40</sup> Carol Cain, “Concerns over Great Lakes Rise to New Levels,” Detroit Free Press, May 21, 2015, <https://www.freep.com/story/money/business/columnists/carol-cain/2015/06/21/cain-pipeline-5-mackinac-bridge-enbridge/28918741/>.

been in abundance since 2010.<sup>41</sup> Drilling is banned in the lakes and within 300 feet of freshwater, but it's not usually enforced.

## Agriculture

*“Agriculture remains one of the largest consumers of Great Lakes water and it is the largest consumer of water globally as well.”*<sup>42</sup>

The Great Lakes region is home to some of the most fertile soil in North America with the Midwest accounting for 27% of all US agricultural products and in the Great Lakes basin. “Agriculture occupies over a third of the land area... supporting 7% of American and nearly 25% of Canadian farm production.”<sup>43</sup> There are over “127 million acres of agricultural land in the Midwest” of which 75% produces corn and soybeans, and the other 25% produces a diverse set of fruits, vegetables, and wheat.<sup>44</sup> The combined value of crops and livestock products sold in 2016 from the Midwest was “\$76 billion<sup>45</sup>” of which \$15 billion<sup>46</sup> comes from the Great Lakes Basin. A large amount of agricultural products are often covered in fertilizers, pesticides, and the animals produce waste that ends up in the watershed. The high concentration of nitrogen and phosphorus from these chemicals causes eutrophication which consumes oxygen and suffocates marine life and creates dead zones.

Large amounts of pesticides make the water unsafe for recreation and the excess manure can cause E. Coli outbreaks. Current efforts to combat runoff include to “expand federal soil and

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<sup>41</sup> Carol Cain, “Concerns over Great Lakes Rise to New Levels,” Detroit Free Press, May 21, 2015, <https://www.freep.com/story/money/business/columnists/carol-cain/2015/06/21/cain-pipeline-5-mackinac-bridge-enbridge/28918741/>.

<sup>42</sup> Peter Annin, *The Great Lakes Water Wars* (Washington, Dc: Island Press, 2018).

<sup>43</sup> The Nature Conservancy, “Great Lakes Agriculture,” Nature.org, 2014, <https://www.nature.org/en-us/about-us/where-we-work/priority-landscapes/great-lakes/great-lakes-agriculture-/> John M. Kerr et al., “Sustainable Management of Great Lakes Watersheds Dominated by Agricultural Land Use,” *Journal of Great Lakes Research* 42, no. 6 (December 1, 2016): 1252–59, <https://doi.org/10.1016/j.jglr.2016.10.001>.

<sup>44</sup> USDA, “Agriculture in the Midwest | USDA Climate Hubs,” Usda.gov, October 19, 2017, s ofnio<https://www.climatehubs.usda.gov/hubs/midwest/topic/agriculture-midwest>.

<sup>45</sup> Ibid.

<sup>46</sup> “Sustainable Management of Great Lakes Watersheds Dominated by Agricultural Land Use,” *Journal of Great Lakes Research* 42, no. 6 (December 1, 2016): 1252–59, <https://doi.org/10.1016/j.jglr.2016.10.001>.

water conservation programs; expand voluntary payment-for-environmental-services programs; and increase grant-making to public and private sector agencies and organizations<sup>47</sup> have proven inadequate; there are almost no laws to restrict the entry of fertilizers into the waterways. Further complicating the issue, most farms have been farming for generations, which means applying expensive regulations are a non-viable solution to the problem and needs to be done voluntarily with costs in mind.<sup>48</sup>

### Invasive species

Invasive species pose a threat to the Great Lakes in many ways. Because of their lack of natural predators, they can outcompete most of the native species causing them to die out. “Of the over 180 established aquatic non-native species in the Great Lakes basin, 34% are considered invasive. Infamous Great Lakes invaders include the Sea Lamprey, Zebra and Quagga Mussels, Round Goby, and Phragmites.<sup>49</sup>” The Lampreys cause bacterial infections in fish; the Asian carp out-competes most native species and zebra mussels filter feed and spreads so efficiently that they can leave waters devoid of nutrients necessary for the ecosystem to function. Zebra mussels have also proven to be detrimental to the Scuba Diving industry because they destroy wooden shipwrecks. The loss of native species also poses a threat to commercial and recreational fishing and natural ecosystems which depend on stable environments with balance. Throughout the Mississippi River and the Chicago canal, the Asian carp could gain entry to the lakes and would be detrimental to local fish populations as well as the invasive species in the lakes. They currently invade 31 states that share watersheds with the Mississippi. Keeping control of these

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<sup>47</sup> John M. Kerr et al., “Sustainable Management of Great Lakes Watersheds Dominated by Agricultural Land Use,” *Journal of Great Lakes Research* 42, no. 6 (December 1, 2016): 1252–59, <https://doi.org/10.1016/j.jglr.2016.10.001>.

<sup>48</sup> USDA. “Family Farms Are the Focus of New Agriculture Census Data.” [www.usda.gov](http://www.usda.gov). United States Federal Government, March 17, 2015. <https://www.usda.gov/media/press-releases/2015/03/17/family-farms-are-focus-new-agriculture-census-data>.

<sup>49</sup> US EPA, REG 05. “Invasive Species in the Great Lakes.” [www.epa.gov](http://www.epa.gov), August 12, 2022. <https://www.epa.gov/greatlakes/invasive-species-great-lakes-0>.

species is crucial to a healthy environment in the Great Lakes region. Ways of controlling these invaders are “chemical treatments, physical removal, limiting access to neighboring high-risk locations, and targeted education and outreach efforts.”<sup>50</sup> Other ways of helping mitigate the damage are monitoring places of possible introduction and spread.

### Questions to consider:

- What can be done to mitigate the spread of invasive species and prevent new ones from entering the lakes?
- What can be done to regulate the agriculture industry without placing a disproportionate burden on farmers?
- Can the agriculture industry be changed to be less reliant on fertilizers and pesticides?
- What can be done to remove/mitigate historic heavy metal contaminants from the lakes, especially in areas close to cities?
- How can runoff from agriculture be prevented from entering the watershed through water diversions and filtration or regulation?
- How can a further implementation of a contaminants monitoring system be achieved?

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<sup>50</sup> REG 05 US EPA, “Invasive Species in the Great Lakes,” www.epa.gov, August 12, 2022, <https://www.epa.gov/greatlakes/invasive-species-great-lakes-0>.

## Bibliography

- American Great Lakes Ports Association. "Industry Overview | American Great Lakes Ports Association." [www.greatlakesports.org](http://www.greatlakesports.org), n.d.  
<https://www.greatlakesports.org/industry-overview/>.
- Annin, Peter. *The Great Lakes Water Wars*. Island Press, 2009.  
———. *The Great Lakes Water Wars*. Washington, Dc: Island Press, 2018.
- Bernier, J, P Brousseau, K Krzystyniak, H Tryphonas, and M Fournier. "Immunotoxicity of Heavy Metals in Relation to Great Lakes." *Environmental Health Perspectives* 103, no. Suppl 9 (December 1, 1995): 23–34.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1518818/?page=1>.
- Cain, Carol. "Concerns over Great Lakes Rise to New Levels." Detroit Free Press, May 21, 2015.  
<https://www.freep.com/story/money/business/columnists/carol-cain/2015/06/21/cain-pipe-line-5-mackinac-bridge-enbridge/28918741/>.
- CBC News. "Great Lake Water Deal Draws Criticism." CBC, November 14, 1998.  
<https://www.cbc.ca/news/canada/great-lake-water-deal-draws-criticism-1.167346>.
- Garmaas-Holmes, Erin. "Great Lakes: A Toxic 'Sink.'" Great Lakes Commons, June 5, 2013.  
<https://www.greatlakescommons.org/our-blog-b/2013/06/great-lakes-a-toxic-sink>.
- Great Lakes Compact Council. "Archived Materials- the Great Lakes-St. Lawrence River Compact Council." [www.gslcompactcouncil.org](http://www.gslcompactcouncil.org), 2010.  
<https://www.gslcompactcouncil.org/historical-information/archived-materials/>.
- Hippel, Frank N. von, and Michael Schoeppner. "Reducing the Danger from Fires in Spent Fuel Pools," 2016. <https://scienceandglobalsecurity.org/archive/sgs24vonhippel.pdf>.

Hubbard, Scott. "Everything Old Is New," November 2005.

<https://www.michbar.org/file/barjournal/article/documents/pdf4article930.pdf>.

International Joint Commission. "Boundary Waters Treaty of 1909 | International Joint Commission." International Joint Commission, 2018.

<https://www.ijc.org/en/boundary-waters-treaty-1909>.

"Great Lakes-St. Lawrence Shipping: What Have You Done for Me Lately?" International Joint Commission, September 11, 2018.

<https://www.ijc.org/en/great-lakes-st-lawrence-shipping-what-have-you-done-me-lately>.

Kerr, John M., Joseph V. DePinto, Dennis McGrath, Scott P. Sowa, and Scott M. Swinton.

"Sustainable Management of Great Lakes Watersheds Dominated by Agricultural Land Use." *Journal of Great Lakes Research* 42, no. 6 (December 1, 2016): 1252–59.

<https://doi.org/10.1016/j.jglr.2016.10.001>.

Li, Lifeng. "Water Scarcity, the Climate Crisis and Global Food Security: A Call for Collaborative Action." United Nations, 2023.

<https://www.un.org/en/un-chronicle/water-scarcity-climate-crisis-and-global-food-security-call-collaborative-action>.

Matheny, Keith. "60,000 Tons of Dangerous Radioactive Waste Sits on Great Lakes Shores." Detroit Free Press, October 19, 2018.

<https://www.freep.com/story/news/local/michigan/2018/10/19/nuclear-waste-great-lakes/1417767002/>.

McKenna, Brian. "Deep, Dark and Wonderous, the Saginaw Aquifer." City Pulse, 2001.

<https://lansingcitypulse.com/archives/011017/health/index.html>.

- The Council of Great Lakes Governors. "THE GREAT LAKES CHARTER ANNEX a SUPPLEMENTARY AGREEMENT to the GREAT LAKES CHARTER," 2001.  
<https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Programs/WRD/Water-Use/Great-Lakes-Charter-Annex-2001.pdf>.
- "The Great Lakes Charter Principles for the Management of Great Lakes Water Resources," 1985.  
<https://www.internationalwaterlaw.org/documents/regionaldocs/Local-GW-Agreements/1985-GL-Charter.pdf>.
- The Editors of Encyclopaedia Britannica. "Aral Sea | Description, History, Demise, & Facts." In *Encyclopædia Britannica*, 2019. <https://www.britannica.com/place/Aral-Sea>.
- The Great Lakes Commission des Grand Lacs. "Policy Resolutions." Great Lakes Commission, 2014. <https://www.glc.org/work/advocacy/resolutions/>.
- The Great Lakes Council. "Annual Report of the Great Lakes Regional Water Use Database Representing 2016 Water Use Data 1 Annual Report of the Great Lakes Regional Water Use Database Representing 2016 Water Use Data 2," 2017.  
<https://waterusedata.glc.org/pdf/2016-Water-Use-Report-Final.pdf>.
- The Nature Conservancy. "Agriculture in the Midwest." The Nature Conservancy, 2014.  
<https://www.nature.org/en-us/about-us/where-we-work/priority-landscapes/great-lakes/great-lakes-agriculture->.
- Town of Normal City Council. "Why Is the Aquifer Important? | Normal, IL - Official Website." [www.normalil.gov](http://www.normalil.gov). Accessed December 30, 2023.  
<https://www.normalil.gov/1343/Why-is-the-Aquifer-Important>.
- UN Global Compact. "Detailed Definitions – Understanding Key Water Stewardship Terms."



CEO Water Mandate. Accessed December 30, 2023.

<https://ceowatermandate.org/terminology/detailed-definitions/>.

US EPA, REG 05. “Invasive Species in the Great Lakes.” [www.epa.gov](http://www.epa.gov), August 12, 2022.

<https://www.epa.gov/greatlakes/invasive-species-great-lakes-0>.

“What Is GLWQA?” US EPA, March 2, 2015. <https://www.epa.gov/glwqa/what-glwqa>.

USDA. “Agriculture in the Midwest | USDA Climate Hubs.” [Usda.gov](http://Usda.gov), October 19, 2017. <https://www.climatehubs.usda.gov/hubs/midwest/topic/agriculture-midwest>.

“Family Farms Are the Focus of New Agriculture Census Data.” [www.usda.gov](http://www.usda.gov), March 17, 2015.

<https://www.usda.gov/media/press-releases/2015/03/17/family-farms-are-focus-new-agriculture-census-data>.

Wisconsin DNR. “City of Waukesha Diversion | Wisconsin DNR.” [dnr.wisconsin.gov](http://dnr.wisconsin.gov), 2023.

<https://dnr.wisconsin.gov/topic/wateruse/waukesha.html>.



## POSITIONS

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### Illinois Governor

**Bruce Rauner** is the 42nd governor of Illinois and a founder of Golder, Thoma, Cressey, Rauner Inc. (GTCR), an investment company. He is in favor of the privatization of water systems where private companies can buy large water systems more easily. Rauner rejected 8 million dollars of funding from Michigan to help counter the Asian carp issue in the Great Lakes. He rejected the proposal because the plans were not finalized but the Michigan Governor would not stop. However, Rauner is willing to talk about solutions to invasive species. Rauner does support Waukesha's diversion application based on the severity of the city's problem.

### Indiana DNR

**Cameron Clark** was appointed by Indiana Governor Mike Pence to serve as the director of the Indiana DNR and Historic Preservation review board in 2013. Clark is a lawyer from Indianapolis who received an economics degree from Vanderbilt and a law degree from Indiana University where he specialized in zoning laws. He is an avid supporter of conservation, having created 39 new nature preserves encompassing 6,700 acres of land/water, including the JD Marshal Nature Preserve: Indiana's first underwater nature preserve. He strongly supports increasing recreation areas within state parks in partnership with private industry. Cameron is dedicated to fighting invasive species such as preventing the spread of Asian carp and creating a grant to fund the removal of invasive aquatic plants.

### Michigan Governor

**Rick Snyder** was elected as governor in 2011. He is a strong supporter of public-private partnerships to address environmental issues. He wants to establish a committee of environmental justice in Michigan as well as crowdsource solutions to invasive species to increase public engagement with funding from state and federal governments, including a state-funded program to increase biodiversity. He recognizes how eutrophication caused the overproduction of algae in Lake Erie. He supports expanding the Sault Ste. Marie "Soo" Locks with a

hydroelectric plant and dredging the Saint Mary River to increase profits. He wants to have a full transition from coal power by 2025 to natural gas and green energy. He supports the expansion of fracking and the creation of facilities for manufacturing components necessary for renewable energy. He appointed a BP lobbyist head of Michigan's Department of Environmental Quality (MDEQ) and wishes to create a strategic petroleum reserve in Michigan to take advantage of market prices.

## Minnesota DNR

**Tom Landweht** was appointed head of the Minnesota DNR by Governor Mark Dayton in 2011. His career began in the 1980s as a research biologist and wildlife and wetland program manager. He supports finding a balance between economics and sustainability by supporting the sustainable use of natural resources including water resources such as an initiative to refill aquifers. Landweht detailed in his plans that he wants to expand the protection of groundwater appropriation, wetlands conservation, invasive species management, and preventing solid waste, and pollution violations. In his published strategies for the DNR, he has made it a clear goal to educate the public on why conservation is crucial and why they should follow the regulations.

## New York DEC

**Basil Seggos** was appointed DEC commissioner by New York Governor Andrew Cuomo in 2015. He earned his law degree from Pace School of Law University, where he received the Environmental Law Award. He clerked for the President's Council on Environmental Quality and was an Associate at the Natural Resources Defense Council. Before his hiring, he was the VP of a clean technology private equity company. He was hired to be the Deputy Secretary for the Environment where he advised the governor and legislature on environmental issues, historic preservation, and legislature. Currently, in conjunction with being commissioner of the DEC, he is a Captain in the US Army Reserve, Judge Advocate General's Corps, a member of the American College of Environmental Lawyers, and a visiting fellow at the National Security Institute in Washington, D.C.

## Ohio DNR

**Jim Zehringer** is the Director of the Ohio Department of Natural Resources and the Ohio Department of Agriculture. He served in the Ohio House of Representatives from 2007-2011. A former owner of Meiring Poultry and Fish Farm, Zehringer has made a career out of agriculture. As Ohio DNR, Zehringer oversaw many accomplishments for the department, including completing the new dam at Buckeye Lake two years early and \$43M under budget, starting the purchase of almost 60,000 acres of wilderness called AEP's Recreation land, and millions of dollars invested in state parks starting with the \$88.5M of capital improvements announced in 2014. One of the significant areas of concern during Zehringer was the issue of harmful algae blooms (HABs) in Lake Erie. He collaborated with other state agencies to address and mitigate the causes of these harmful algae blooms. Zehringer supports measures to reduce nutrient runoff by promoting responsible land use policies to improve the water quality in Lake Erie. Zehringer is involved in the Great Lakes Restoration Initiative, which provides funding for projects focused on ecosystem restoration affecting the Great Lakes.

## Ontario Premier

**Kathleen Wynne** is the first openly gay premier in Canada. In 2013, her cabinet re-introduced the Great Lakes Protection Act to encourage the Great Lakes states and provinces to improve water quality. Influenced by her province and Environmental Defence, Wynne is against accepting Waukesha's application for diversion. Right after becoming premier, Wynne got herself involved in a scandal where she denied going to gas plant meetings or canceling the plants. Recently Wynne revealed Ontario's new climate change plan for a phase-in cap-and-trade plan which raises gas prices. She has recently openly talked about overhauling the water-taking permits as they are "outdated." Wynne suggests that they review the differences between taking water for agricultural/industrial use and using bottled water.

## Quebec Premier

**Philippe Couillard** formerly served as Quebec's Minister of Health. He implemented policies aimed at addressing water quality issues and promoting responsible water management practices. He emphasized the need for collaborative efforts among provinces and territories to safeguard the Great Lakes, recognizing their ecological significance and the importance of cross-border cooperation. Couillard's policies emphasize creating a net positive environmental impact. Additionally, he supported initiatives to promote public awareness and engagement in preserving these vital water resources. Couillard's approach reflected a balance between economic development and environmental stewardship, striving to ensure that future generations inherit a healthy and sustainable Great Lakes ecosystem. He is willing to condemn companies that are not ecologically friendly, like Shale Gas who were known to drill multiple wells in a small span of a few hundred miles.

## Pennsylvania Governor

**Tom Wolf** served as the 47th governor of Pennsylvania. He previously served as the chairman and CEO of his business, The Wolf Organization, and later a secretary at the Pennsylvania Department of Revenue from April 2007 to November 2008. Wolf, a Democrat, took oath in office as Governor on January 20, 2015. Shortly after being sworn into office, Wolf signed two executive orders banning gifts to state employees and requiring a bidding process for outside legal contracts. Wolf also restored a ban on hydraulic fracturing in state parks and placed a moratorium on the death penalty in Pennsylvania. The most significant executive action in his first days in office was his move to fully expand Medicaid under the Affordable Care Act. Six months into his tenure, in July 2015, the websites OnTheIssues and InsideGov named Wolf the most liberal incumbent governor in the nation, based on a rating of public statements and press releases among other measures; Wolf rejected this assessment, arguing that his policies were directed by practicality rather than ideology. Wolf prioritized addressing water quality issues, particularly in the watersheds.

## Wisconsin DNR

**Cathy Stepp** was born in Kenosha, Wisconsin and only has a high school diploma. She operated a construction business with her husband before being elected to the State Senate in 2003, where she co-chaired the Natural Resource Board which oversees the DNR. In 2011, Governor Scott Walker picked her to lead the DNR. Under her leadership, the DNR took on a focus on emphasizing business and economics first, as shown by her support of increasing fracking and mining. She rolled back oversight, monitoring, and regulations over all industries and conservation efforts, which saw increases in pollution and decreases in water quality around the state. She is an ardent denier of climate change and oversaw the reduction of the scientific staff and Bureau of Science Services in her time as secretary of the DNR. She pushed to privatize the permit system for agriculture and lakeside construction where the companies in question would handle due diligence, with the final say being held by the DNR. The governor at the time gutted the budget of the DNR which she supported.

## Texas Governor

**Greg Abbot** was elected to be a state judge where his partisan politics were evident. He made it his mission as a judge to quash any litigation that he saw as frivolous, which often led to unpopular decisions. He upheld the constitutionality of the Edwards Aquifer Act and Austin's water pollution control ordinance. In 2001, he was elected as the States Attorney General where he filed 19 lawsuits against the EPA, fighting things such as the regulation of carbon emissions and businesses' release of information regarding tier II chemical inventory reports under the Emergency Planning and Community Right-to-Know Act of 1986. Abbot denies that climate change is caused by greenhouse gasses. He partnered with the US Chamber of Commerce to find legal ways to dismantle climate regulation. He is credited with helping foster a pro-business environment with Texas being ranked number one by *Chief Executive* magazine and being awarded a shovel award in development for 11 years in a row. This in turn has happened at the expense of the environment with a ban on local governments from preventing fracking unless it interferes with emergency services or causes noise or light problems close to homes. He also instituted a 5-year statute of limitations on local governments suing companies for air and water pollution and capped damages at 2 million dollars, saying that it was the state's duty to go after polluters, not cities. He is a fervent advocate of states'

rights and has gone so far as to campaign for amendments to the constitution that would hobble the federal government.

## California Governor

**Edmund Gerald Brown Jr.** is the California Governor. His father, Edmund Gerald Brown Sr., created the infrastructure that many blame for causing the current drought before putting undue strain on the aquifers and water waste. He strengthened environmental protections, promoted renewable energy, and was the first governor to advocate for the use of solar panels. In 1976, he signed into law The California Coastal Act, which limited development along the 1,100-mile shoreline and guaranteed public access to the beach. Since then he has sparred openly with the board he commissioned and has made them more amenable to coastal development through his appointments. After losing his bid for reelection, he became the chair of the California Democratic Party, mayor of Oakland, and States Attorney General, until he was elected to a third term as governor in 2010. He passed regulations putting greater restrictions on fracking, however, environmentalists say it fell short because of his support for increasing fracking where it is allowed. He signed into law a bill that will help transition the grid to more sustainable energy and reduce carbon emissions in the state by 40% by 2030. He has traveled the world and met with leaders such as Pope Francis and spoke at the Paris Climate Conference making him a world-renowned environmentalist. His state is in the midst of one of the worst droughts it's ever faced.

## Director of Environment and Climate Change Canada

**Maria Falardeau** was born in Quebec City, Quebec. She graduated from the University of British Columbia with a Ph.D. in environmental ecology. She began her work as a field researcher where she focused on wetlands, invasive species, and aquatic environments. She rose to become the head of the regional department of the Environment and Climate Change Canada. In her role as head of the regional office, her time has been defined by her projects to coordinate measures to eradicate and limit the spread of invasive species, preventing overdevelopment of the lake shore while balancing the need for economic growth. She has also sought to restore the wetlands and rivers that feed into the river or share the watershed. Through her efforts to increase biodiversity, Canada's Great Lakes region has

seen a steady increase in gray wolf, moose, and wolverine populations, as well as expanded funding for projects to make fish spawning easier and stock lakes. She is currently working on a project to reintroduce the paddlefish, which was last sighted in 1917.

### **Waukesha Mayor**

**Shawn N Reilly** has been the mayor of Waukesha since 2014. He succeeded Jeff Schrima, who was vehemently against Waukesha applying for a diversion. However, in the previous years, Reilly has seen the need for clean water in his city. He works against misinformation about Waukesha's issues like the city being able to treat water from its radium-contaminated wells. Unlike his predecessor, Reilly is willing to work with Milwaukee for water. Other than being mayor, Reilly has experience as an attorney focusing on municipal law and corporate work. He graduated from the University of Wisconsin-Madison with a Bachelor's degree in Political Science with an Environmental Studies certificate and a concentration in energy policy.

### **Arizona Governor**

**Doug Ducey** is the 23rd governor of Arizona. Ducey was CEO of the ice cream parlor chain Cold Stone Creamery from 1995-2007 and was Arizona state treasurer from 2011-2015. Originally from Ohio, Ducey moved to Arizona to attend Arizona State University and earned a Bachelor of Science degree in finance. In 2010 Ducey was elected state treasurer of Arizona, replacing Dean Martin. As Arizona's chief banker and investment officer, Ducey oversaw more than \$12 billion in state assets and was an investment manager for local governments. Ducey's focus and responsibilities were primarily related to Arizona, but he was open to speaking to other governors and state leaders.

### **Nevada Governor -**

**Brian Sandoval** is the 29th Governor of Nevada, an academic administrator, and a former federal judge. In 2015, Sandoval was named one of the top water users in Reno. He is against a federal regulation on water that would infringe on states' authority after the US federal government passed the Water Resources Reform and Development Act. Sandoval is concerned that 97% of Nevada is experiencing droughts. As one of the Governors in the Western



Governors Association, Sandoval believes that the Great Lakes would be useful for the maintenance of Western states. He is against the 2015 Waters of the US (WOTUS) rule in the Clean Water Act.

### Colorado Governor

**John Hickenlooper** has been the governor since 2011. He has a career as a petroleum geologist and is a strong supporter of the oil and gas industries and hydraulic fracking. Hickenlooper believes fracking is beneficial with minimal environmental harm. Despite fracking diminishing the amount of water in the Ogallala Aquifer, Hickenlooper believes that trying to preserve water is important. At the same time, he is for diverting the water from the Great Lakes and would like to see it happen. Hickenlooper is already planning to expand the Colorado River diversion which would go to the Gross Reservoir.

### New Mexico Governor

**Susana Martinez** is the first woman and first Hispanic governor of New Mexico. Although most of New Mexico gets its water from a community water system, Martinez supports mining companies that contaminate the New Mexico Water supply. The governor is in support of industries but has now been focusing on how to improve water quality in her state. Martinez has been trying to fight the decreasing water levels in her state despite the many basins. The New Mexico government and their advisory team see help as necessary from other states regardless of where they are to temporarily assist while they implement solutions.

### Utah Governor

**Gary Herbert** is the governor of the “second driest state” in the US. In 2013, Governor Herbert relied on Utah’s Water Strategy Advisory team to help with the water scarcity in Utah. One of the ways the team saw Utah improving its water problem was taking diversions, whether they were from the Ogalla aquifer or the Great Lakes. However, the diversion of water is only one step improving Utah’s help. Herbert encourages citizens to conserve water and is looking for alternatives to relying on other states. In 2015, Herbert acknowledged a 4-year drought in Utah and signed an executive order for the state’s government to take conservation measures to show Utah citizens that they can do the same.

## Wyoming Governor

**Matt Mead** is a Wyoming attorney, businessman, and politician who served as the 32nd governor of Wyoming.

Mead vetoed legislation intended to prevent the state from permanently confiscating an individual's property through civil forfeiture until after a felony conviction had been attained. Mead prioritized water conservation efforts to ensure sustainable water use. Mead is considering in his statewide water strategy to implement two main main-stem dams on the Green River and a trans-basin diversion. He declared that “water is our most valuable resource,” and while his initiatives include large-scale conservation, like upgrading irrigation systems statewide, he suggests that dam construction is on his agenda.

## Commissioner of the US Bureau of Reclamation

**Estevan Lopez** is the former Director of the Interstate Stream Commission, overseeing water management in New Mexico and negotiations with other states over interstate water matters. In 2012, there was news that the Bureau of Reclamation would divert water from the Missouri River to Denver because of the projection of the depleting water in the Colorado River Basin. He knows how to work with water issues but is willing to divert or send water to regions that are experiencing droughts and water scarcity.

## Chair of the IJC

**Jean-Francois Cantin** is the co-chair of the IJC on the Canadian side. He is the head of the Hydrology and Ecohydraulic Section of the Meteorological Service of Canada. He was nominated by the Canadian federal government. He has a lot of say in the regulations of the Great Lakes as the IJC is there to guide the premiers and the governors to take every possible step to improve the water quality of the lakes. In Canada, he is in charge of looking over data collected on surface water and how it flows in the Great Lakes. Like most other Canadians, he is more for stricter water policies but is willing to listen to other solutions.

## Saskatchewan premier

**Brad Wall** is the premier of Saskatchewan and one of the most popular premiers in Canada. Wall is known for his focus on business and entrepreneurship. Saskatchewan is known for its resource-based economy which Wall helped build. Reports say that parts of Saskatchewan are experiencing water shortages. Wall is a strong supporter of pipelines, though his main focus is transporting fossil fuels. Wall is looking to solve these issues by looking at the Great Lakes. On top of environmental pressures, indigenous tribes have been reporting on not being able to receive fresh tap water.

## Michigan Representative

**Dan Benishek** expressed a commitment to protecting the Great Lakes and supported the Great Lakes Compact, a regional agreement aimed at preventing water diversions from the Great Lakes. He advocated for responsible water policies that balanced the economic interests of the region with the need for conservation and sustainable water management. Benishek's stance highlighted the importance of preserving the Great Lakes' ecological integrity while recognizing the vital role these bodies of water play in the economic vitality of the surrounding communities.

## EPA Region Head 5

**Susan Hedman** served on the Wisconsin Radioactive Waste Review Board as the Public Information Officer where she prepared and implemented a public information program for state agencies responsible for the disposal of radioactive waste. She then worked for the National Wildlife Federation Great Lakes Center Ann Arbor as a Staff Attorney/Clinical Assistant Professor where she represented people in filing lawsuits relating to the Clean Air Act and Clean Water Act. She served as environmental counsel and senior assistant attorney general in the Illinois Attorney General's office. In 2010, President Obama picked her to lead the EPA District 5, which covers Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and the 35 federally-recognized tribal governments in the area. She currently, in this role, chairs the Great Lakes Restoration Initiative Regional Working Group, which is a multi-agency effort to restore and protect the Great Lakes, co-chairs the Bi-National Great Lakes Executive Committee, and has been the Commissioner of the Ohio River Valley Water Sanitation Commission since 2014. In

2015, she funded \$1.8 million in Great Lakes Restoration Initiative Shoreline Cities grants to fund green infrastructure projects in cities across the Great Lakes Basin.

### **National Wildlife Federation, Great Lakes Regional Executive Director**

**Rebecca Meuninck** is the Regional Executive Director of the Great Lakes Regional Center for the NWF. Meuninck has worked on environmental issues for more than 16 years. She has a PhD from MSU where she researched about the environmental impacts of fair trade. Meuninck has lived in Michigan her entire life and lived near an inland lake. She is a co-chair of the Healing Our Waters coalition that prioritizes how federal policy affects the Great Lakes. Her main focus on issues are Great Lakes restoration, management reform, chemical policy reform, and lead poisoning in waters.

### **Deputy Under Secretary for Operations of NOAA**

**Benjamin Friedman** has been part of the NOAA since 2010. Friedman used to be the Deputy General Counsel and formerly the chief of the NOAA Office of General Counsel's Enforcement Section. He's also part of the Department of Commerce. Friedman oversees employment, litigation, and labor. The NOAA is in charge of monitoring oceanic and atmospheric conditions and managing marine animals. His former work as the General Counsel allowed him to connect with environmental agencies in the US and the UN. The NOAA helps advise committees on what would be and wouldn't be beneficial to the environment.

### **Director U.S. Fish and Wildlife Service Agency**

**Dan Ashe** graduated from the University of Washington with a graduate degree in Marine Affairs. At the creation of the compact, Ashe's predecessor advised against counting bottled water as a diversion of water. Ashe's position with the USFWS is to help conserve marine flora and fauna. He is concerned about endangered species, invasive species, and working with farmers on how to preserve the integrity of the waters. Ashe can issue permits. These permits are only necessary if these activities can't be done because of certain laws and treaties.

## Council of Canadians

**Sara Ehrhardt** is a senior technical officer of the Global Water Partnership where she advocates for water security. She is a water campaigner of the Council of Canadians and one of the many dissenting voices when the Great Lakes Compact was first being written. She is critical of how the US states handle water crises and how the Great Lake states in the US still prioritize economics and businesses over the water quality of the lakes. She finds that the US states want to take water from Canada and drain the Great Lakes dry. Ehrhardt is influential in the Canadian House of Commons. She is against water diversions, water privatization, and bulk water export. Moreover, the Council of Canadians is part of the Eau Secours. She wanted Canada to condemn the annex of 2001 and assert its jurisdiction on the Great Lakes.

## President of the Great Lakes Industries

**Kathryn A. Buckner** is the president of the Council of Great Lakes Industries. This council supported and had members of various companies that used Great Lakes water like Nestlé Waters NAC. Buckner is one of the biggest opponents to the strictness of the Great Lakes Compact. She and the CGLI played an influential role during the making of the compact as they did not believe that bottled waters counted as diversions of water. She formerly was the special advisor for the Great Lakes Observing System and has a background in law. She's known for her focus and strong-willed personality when coming to decisions. Buckner believes that the region has enough water to focus more on industry.