



**Great  
Lakes**  
AQUARIUM

January 15, 2022

**Final Report to the Governor  
and the Legislature**

As per M.S. 3.303, SUBD. 10 and M.S. 129D.17, SUBD.2(D)

**H<sub>2</sub>O:**

**Watersheds  
at Work**



**mn** DEPARTMENT OF  
NATURAL RESOURCES



On behalf of the Lake Superior Center Authority, we are pleased to provide this final report on *H2O: Watersheds at Work*, an exhibit project which was funded in part by the Arts and Cultural Heritage Fund.

In entering into the grant agreement, the state entity Lake Superior Center Authority has designated its non-profit, Lake Superior Center dba Great Lakes Aquarium to serve as its managing agent for the project. After an unprecedented year of closures and uncertainty, *H2O: Watersheds at Work* opened to the public on November 20, 2021. In the exhibit's first month open, more than 12,000 people experienced the movement of water through the Great Lakes and their watersheds, engaging with the properties of water and discovering all the ways water becomes dirty and clean in our community and ecosystems.

Great Lakes Aquarium aims to protect and sustain the health of our shared waters through outstanding freshwater education. Situated at the mouth of the St. Louis River and at the headwaters of the St. Lawrence Seaway, the Aquarium is uniquely positioned to showcase the wonder of these ecosystems to both locals and visitors to the region. *H2O: Watersheds at Work* elevates the work of scientific researchers, conservation professionals, and community leaders, uplifting their efforts and amplifying their messaging to the public. Through play, experimentation, and personal connection, *H2O* invites everyone to celebrate the Great Lakes, rise to the challenges of improving water quality in our region, and see water itself in a new light.

The public response to *H2O: Watersheds at Work* has been overwhelmingly positive. The exhibit has increased visitor dwell time, engagement, and social interaction. We thank the members of the Minnesota State Legislature for providing funding for this project from the Arts and Cultural Heritage Fund. A copy of this report and images of the exhibit can be found at [glaquarium.org/exhibits/h2o](http://glaquarium.org/exhibits/h2o).

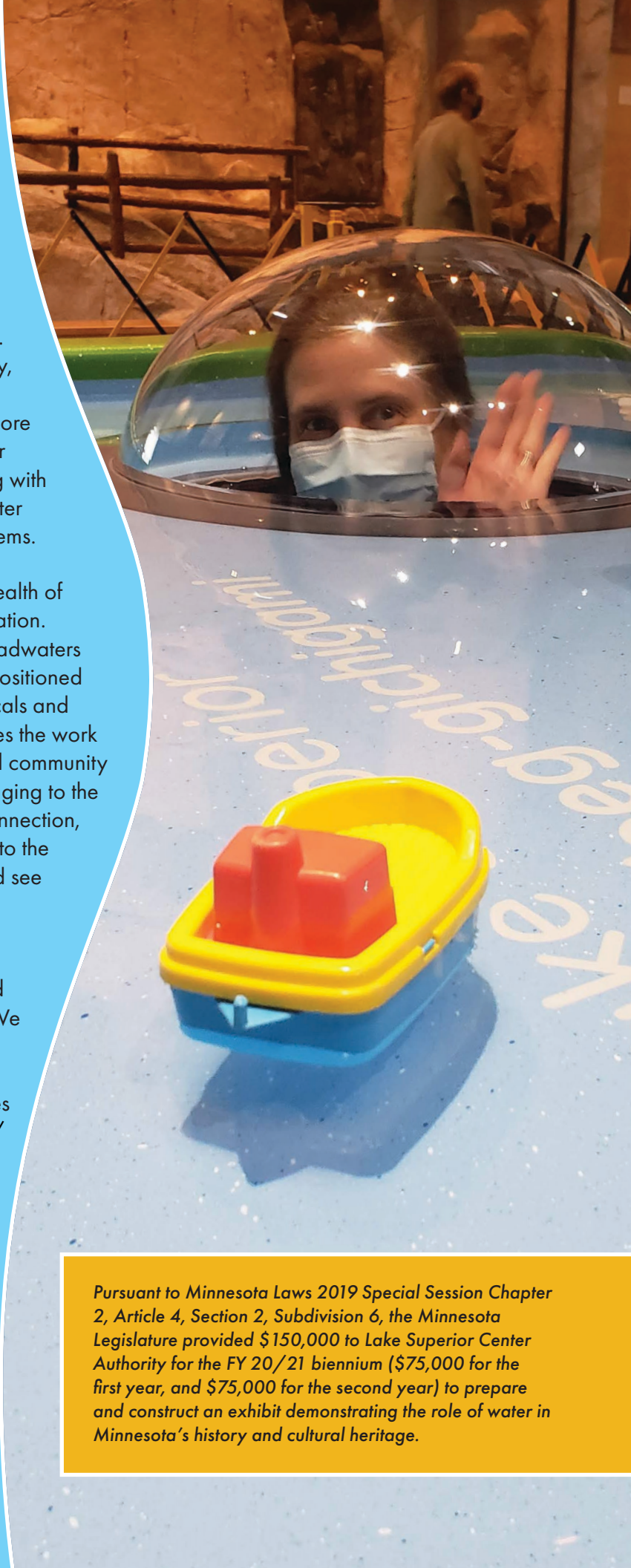
Sincerely,



**Jay Walker**  
Executive Director  
Lake Superior Center  
dba Great Lakes Aquarium



**Elaine Hansen**  
Chair  
Lake Superior Center Authority



*Pursuant to Minnesota Laws 2019 Special Session Chapter 2, Article 4, Section 2, Subdivision 6, the Minnesota Legislature provided \$150,000 to Lake Superior Center Authority for the FY 20/21 biennium (\$75,000 for the first year, and \$75,000 for the second year) to prepare and construct an exhibit demonstrating the role of water in Minnesota's history and cultural heritage.*

# Project Description

The Lake Superior Center dba Great Lakes Aquarium endeavored to prepare and construct an exhibit demonstrating the role of water in Minnesota's history and cultural heritage using \$150,000 in Arts and Cultural Heritage Funds.

## Exhibit Components

*H<sub>2</sub>O: Watersheds at Work* showcases the unique properties of water, the methods for and importance of supporting healthy aquatic ecosystems, and the roles that water plays in human communities. Through place-based tactile experiences, *H<sub>2</sub>O* explores the ecological, cultural, and economic value of the Laurentian Great Lakes.

### Great Lakes Water Table

This splash-and-play model of the five Great Lakes features free-floating toy boats, functional lock systems, and notable landscape features identified in both English and Anishinaabemowin. Replacing an extant Great Lakes water table, this new iteration features a chemical-free sanitization process and a more universally accessible physical layout.



### Water on the Move

This three-room playspace invites young audiences to explore concepts in water quality and treatment through role play, a Rube-Goldberg-esque marble maze, visual puzzles, real-time water quality data, and live fish.



### Properties of Water

Three visually-stunning standalone interactives showcase properties of water — adhesion, cohesion, and hydrostatic pressure. These properties make water vital in sustaining all life on Earth and invite both experiential play and focused experimentation.



# Goals and Objectives

*H<sub>2</sub>O: Watersheds at Work* was designed to align with Great Lakes Aquarium's mission to "connect all people to the water and wildlife of Lake Superior and beyond." Specifically, this exhibit aimed to increase visitor dwell time and multi-point engagement with Great Lakes content, increase visitor understanding of key properties of water, and improve visitor application of watershed knowledge to community-based situations. These learning outcomes were accomplished through best practices in exhibit design and visitor engagement. Exhibit content focused around the following interpretive themes:

- 💧 Water moves continuously through the world as a solid, liquid, or gas.
- 💧 Water transports people, wildlife, and materials across landscapes and waterscapes.
- 💧 Water has unique properties that make it unlike any other substance on Earth.
- 💧 The Laurentian Great Lakes are important to the region, nation, and the planet.
- 💧 Water needs to have specific characteristics to meet the needs of specific animals.
- 💧 Human-made water treatment systems mimic natural systems to clean and cool water.

*H<sub>2</sub>O: Watersheds at Work* is designed not only with learning outcomes in mind, but also with attention to visitor learning styles and behavioral habits. Experiential evidence from the previous Great Lakes water table shows that visitors will return to the water table time after time, whether they're local members making the Aquarium a part of their weekly routine or travelers including the Aquarium in yearly vacations to Lake Superior. *H<sub>2</sub>O* is tailored to engage minds and bodies over and over again, imparting layers of understanding over repeated visits. Great Lakes Aquarium is proud to foster this learning and engagement for years and years to come.



# Evaluation Measures and Results

The exhibit benchmarks were completed as projected in the timeline amended for COVID-19-related closures and disruptions. *H<sub>2</sub>O: Watersheds at Work* measurably achieved all of its proposed outcomes.

When people understand the role of water in their lives, they are better equipped to address major issues such as climate change, fisheries management, drinking water, and weather safety in their communities. Systems thinking is at the heart of understanding the water cycle, watershed function, and ecosystem function.

## **Outcome: Increase visitor dwell time and multi-point engagement with Great Lakes content.**

While in the concept design phase of the project, Aquarium staff executed a timing and tracking visitor study of the proposed *H<sub>2</sub>O* gallery space to establish baseline metrics for visitor dwell-time and engagement. A follow-up timing and tracking study was completed in the weeks following the exhibit opening. Analytical comparison shows that ***H<sub>2</sub>O: Watersheds at Work* increased visitor dwell time by 165%**, with an average dwell time of 10 minutes (compared to a 4 minute average dwell time in the pre-project baseline study). Additionally, hands-on **engagement with exhibit elements increased by 319%**, and visitor social interactions increased by 335%.

## **Outcome: Increase visitor understanding of key properties of water.**

A sample of visitors to the *H<sub>2</sub>O* gallery were invited to participate in a pre/post retrospective survey after exploring the exhibit. Among respondents, **53% reported an increase in knowledge related to properties of water** after engaging with Properties of Water interactives. Anecdotally, evaluators observed a wide variety of learning and teaching behaviors, including show-and-play demonstration, intergenerational discussion, reading aloud from signage, and iterative experimentation with exhibit elements.

## **Outcome: Improve visitor application of watershed knowledge to community-based situations.**

Due to pandemic-related closures, a pre-intervention knowledge survey could not be completed. Instead, a literature review was conducted to assess baseline watershed knowledge of both local and regional populations. Once the exhibit was completed, a sample of visitors to the *H<sub>2</sub>O* gallery were invited to participate in a pre/post retrospective survey after exploring the exhibit. Among respondents, **64% reported an increase in watershed knowledge** after engaging with one or more elements in the exhibit gallery. Evaluators assessed visitor understanding of community-based situations with questions comparable to a 2015 study by the Regional Stormwater Protection Team (RSPT). After engaging with the exhibit, respondents demonstrated elevated understanding of stormwater treatment (but also elevated uncertainty) relative to RSPT survey respondents. Additionally, a majority of *H<sub>2</sub>O* participants could correctly identify pollutants within a list of elements present in stormwater runoff. Anecdotally, evaluators observed a wide variety of learning and teaching behaviors, including storytelling, dissemination of family history, collaborative problem solving, show-and-play demonstration, and iterative experimentation with hands-on exhibit elements.

# Budget and Funding

Lake Superior Center dba Great Lakes Aquarium received an allocation of \$150,000 from the Legacy Amendment's Arts and Cultural Heritage Fund for fiscal biennium 2020/2021.

**Direct Expenses: \$506,168**

**Administrative Expenses: \$0**

## Project Budget

Category	Funds	Source
Salaries	\$66,569	LSC dba GLA
Fringe Benefits	\$13,314	LSC dba GLA
Travel	\$31	LSC dba GLA
Contract Costs	\$281,850	\$145,500 (Legacy)* \$82,950 (Lake Superior Coastal Program Grant)* \$53,400 (LSC dba GLA)
Supplies & Other Expenses	\$144,404	\$16,000 (Lake Superior Coastal Program Grant)*; \$128,404 (LSC dba GLA)
<b>TOTAL COSTS:</b>	<b>\$506,168</b>	*Pending final reimbursements

## Funding Sources

- \$145,500** Legacy Funds (\$150,000 appropriation)
- \$141,140** LSC dba GLA
- \$98,950** Minnesota's Lake Superior Coastal Program Grant
- \$63,578** Gifts from Individual Donors
- \$20,000** Lloyd K. Johnson Foundation
- \$16,000** Western Lake Superior Sanitary District
- \$10,000** Donald Weesner Charitable Trust
- \$9,000** Pachel Foundation
- \$2,000** Duluth Superior Area Community Foundation



# Timeline

The projected timeline was amended due to closures and work disruptions related to the COVID-19 pandemic. Under this amended timeline, the project was completed as anticipated.

Time Period	Project Phase and Activities
July 1, 2019 – June 30, 2020	<b>Concept Design:</b> Identification and engagement of content-area stakeholders; front-end timing and tracking evaluation; collaboration with design and fabrication partners; identification of focused content areas
July 1, 2020 – June 30, 2021	<b>Design Development:</b> Content research (literature review and content-area expert interviews); development of content and interactive displays (initial planning, writing, and design); prototyping of interactive elements, structures, and finishes; development of marketing and publicity plan
July 1 – October 31, 2021	<b>Fabrication and Installation:</b> Off-site fabrication of fish tank, playspace structures, and water interactives; demolition of extant exhibit structures; site prep and installation of epoxy flooring; writing and graphic design of interpretive content; printing and installation of signage; installation of playspace structures and interactives (including behind-the-scenes water treatment, plumbing, and electrical infrastructure); completion of gallery finishes and theming; execution of marketing plan
November 20, 2021	<b>H<sub>2</sub>O: Watersheds at Work</b> opens to the public
November 21 – December 30, 2021	<b>Evaluation and Reporting:</b> Timing and tracking survey; content knowledge exit survey; data analysis and summary; exhibit maintenance adjustments

# Staffing

Great Lakes Aquarium project staff were supported entirely by Aquarium operating funds. These talented individuals contributed an estimated 3,500 hours of skilled research, design, fabrication, installation, evaluation, marketing, and project management work towards the project. Over the timeframe outlined above, and with an average billable rate of \$19 per hour, this provided nearly \$80,000 or the equivalent of 1.7 FTE in-kind match.

# Media Coverage

Local and regional media outlets and publications were engaged throughout the exhibit design and fabrication process. Television, print, and online publications frequently featured the exhibit's concept and in-progress content.

<b>Date</b>	<b>Program</b>
<b>May 30, 2019</b>	Great Lakes Aquarium Gets Funding for Updating Popular Program, <i>FOX21</i>
<b>March 11, 2020</b>	Great Lakes Aquarium celebrates 20 years with an opossum, <i>Duluth News-Tribune</i>
<b>April 25, 2020</b>	Duluth zoo, aquarium left with no ticket sales, plenty of hungry mouths to feed during COVID-19 pandemic, <i>Duluth News-Tribune</i>
<b>July 30, 2020</b>	Grant Supports Coastal Programs, <i>KDAL Radio</i>
<b>September 19, 2020</b>	Aqua Affair fundraiser goes outside this year, <i>WDIO TV</i>
<b>September 1, 2021</b>	'H <sub>2</sub> O: Watersheds at Work' Set to Replace Aging Water Table Exhibit at Great Lakes Aquarium, <i>FOX21</i>
<b>September 7, 2021</b>	New exhibit coming to Great Lakes Aquarium, <i>WDIO TV</i>
<b>November 14, 2021</b>	Visitor traffic rebounds as Duluth aquarium prepares to open new exhibit, <i>Duluth News-Tribune</i>
<b>November 15, 2021</b>	Great Lakes Aquarium Seeing Record Setting Attendance, <i>FOX21</i>
<b>November 18, 2021</b>	Great Lakes Aquarium unveils <i>H<sub>2</sub>O: Watersheds at Work</i> , <i>WDIO TV</i>
<b>November 18, 2021</b>	Great Lakes Aquarium Hosts Grand Opening of New Exhibit, <i>FOX21</i>
<b>December 22, 2021</b>	Green Visions: Watersheds at Work, <i>The North 103.3 Radio</i>





# Publications, Campaigns, and Events

*H<sub>2</sub>O: Watersheds at Work* has been marketed to a regional audience through a variety of ad campaigns. Aquarium staff have also engaged the community in the exhibit development process through one-on-one conversation, presentations to civic clubs and organizations, and social media to promote the exhibit.

## Secured Ad Campaigns

### Duluth Chamber of Commerce

Quarterly newsletter insert

### Community Currents

Quarterly Aquarium-published newsletter

### Cloquet KOA Campground

Print brochure ad

### WDIO

Digital display ad

### Lavender Magazine

Print ad

### Media USA Skywalk

Billboard ad

### Media USA DECC/Amsoil Arena

Digital display ad

### Lake Superior Magazine

Print ad

### Grand opening campaign

Email blast and postcard invitations

## Social Media Video Series

Featured on Facebook and YouTube, "Behind the Build" engaged viewers in the behind-the-scenes intricacies of the exhibit development process.

**May 27, 2021** Behind the Build: H<sub>2</sub>O

**July 1, 2021** Behind the Build: Exhibit Design

**July 28, 2021** Behind the Build: Partners

**August 27, 2021** Behind the Build: Prototyping

**September 28, 2021** Behind the Build: Demolition

**October 29, 2021** Behind the Build: Building a Habitat

**November 29, 2021** Behind the Build: Opening

**December 29, 2021** Behind the Build: Evaluation

## Events

### Grand Opening and Ribbon-Cutting Ceremony

November 18, 2021





# Audience & Reception

*H<sub>2</sub>O: Watersheds at Work* has been warmly and enthusiastically received by the local community. In its first month open, the exhibit saw 12,327 visitors. Nearly 600 of those guests utilized the Aquarium's limited income access program. Furthermore, 62% of exhibit visitors were Minnesota residents, and 73% of exhibit visitors live in the Great Lakes' watershed.

"We have a membership to the aquarium and are there all the time! The new water exhibit is awesome and the food and drink was an added bonus for sure!"

- *Anonymous Google Review (opening night)*

"Much improved from what it was years ago [...] Interactive areas that are both fun and educational. Great for the whole family. Highly recommend!"

- *Facebook comment*

"I am most excited about the party when the new water table is opening. I like the wheely things and the bubble. Thank you for helping build a new exhibit."

- *4 year old visitor*

"We went to the aquarium with kids and grandkids. All enjoyed it. Fish, other aquatic life, history, geology, and generally all about water and its importance around the world. Grandkids especially loved the interactive Great Lakes water play and tree houses slide."

- *Anonymous Google Review*

"Love the "hands on" experience! Also lots of information. Great staff."

- *Facebook comment*

## Contact Information

353 Harbor Drive  
Duluth, MN 55802  
www.glaquarium.org

## Project Manager

Jay Walker, Executive Director  
(218) 740 - 2011  
jwalker@glaquarium.org

## Exhibit Team Leaders

Emma Pardini, Exhibit Designer  
(218) 740 - 2036  
epardini@glaquarium.org

Darin Reinke, Director of Husbandry  
(218) 740 - 2022  
dreinke@glaquarium.org

## Finance and Grant Manager

Annie Thors, Director of Business Operations  
(218) 740 - 2001  
athors@glaquarium.org

## Notable Project Partners

Fond du Lac Band of Lake Superior Chippewa  
Lake Superior National Estuarine Research Reserve  
Minnesota Department of Natural Resources  
Minnesota Pollution Control Agency  
Regional Stormwater Protection Team  
St. Louis River Alliance  
U.S. Environmental Protection Agency  
Western Lake Superior Sanitary District

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Minnesota Power

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