AquaHacking
Lake Winnipeg
2020 Challenge

FINAL REPORT
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Bringing the AquaHacking Challenge to Lake Winnipeg

Vision & Strategy

The AquaHacking Challenge was established in 2015 by Aqua Forum to harness the talent of innovative young Canadians to help solve some of our country’s most urgent water issues with cleantech solutions. Every year, post-secondary students and recent graduates are recruited into this water-focused innovation challenge, where they are mentored by experts and participate in leadership development workshops as they develop solutions to critical issues plaguing our fresh water. Challenges have been held annually in the Great Lakes and St. Lawrence region since 2015, resulting in 22 new startups and social enterprises, as well as 30 jobs created in the water sector.

In 2020, the International Institute for Sustainable Development (IISD) brought the AquaHacking Challenge to the Great Lake of the Prairies: Lake Winnipeg. With a watershed spanning over 1,000,000 km², the iconic Lake Winnipeg provides cultural, economic, and recreational benefits to over 7 million people. It’s also facing serious threats, such as new contaminants, harmful algal blooms, and a lack of funding to invest in the health of the lake. IISD set out to showcase the talent of our youth and the leadership of our tech and business communities here in Manitoba by bringing them together through the AquaHacking Challenge to solve some of Lake Winnipeg’s most pressing water issues.
The AquaHacking Lake Winnipeg 2020 Challenge Timeline

**January 31**

**KICK OFF**
At DisruptED Future Conference in Winnipeg, MB

**February–May**

**PHASE 1**
Register and form teams, 3 workshops on demand, 360° Mentorship

**June 10 & 11**

**SEMI-FINAL**
Top 5 teams move on to Phase 2

**June–September**

**PHASE 2**
$2,000 bursary per team, teams refine their solutions, 360° Mentorship

**July 27–29**

**E-EXPEDITION**
Virtual workshops in team-building and professional development

**October 20**

**FINAL**
$50,000 in prizes and Incubator Space awarded

**INCUBATION**
Business support
Lake Winnipeg
Water Issues & Water Issue Leaders

**MICROPLASTICS**
How can we keep microplastics out of Lake Winnipeg?

**WATER ISSUE LEADERS**
- Dr. Chelsea Rochman, Co-Founder of the UofT Trash Team & Assistant Professor, University of Toronto
- Susan Debreceni, Co-Founder & Outreach Lead UofT Trash Team, University of Toronto

**WATERSHED INVESTMENT**
How can we create systems that make it easy for people to invest in the health of Lake Winnipeg?

**WATER ISSUE LEADERS**
- Alanna Gray, Policy Analyst, Keystone Agricultural Producers
- Patty Rosher, General Manager, Keystone Agricultural Producers
- Mitchell Timmerman, Agri-Ecosystems Specialist, Manitoba Agriculture & Resource Development

**FISH HEALTH**
How can we better assess fish health and populations without having to kill them?

**WATER ISSUE LEADERS**
- Dr. Vince Palace, Head Research Scientist, IISD-ELA
- Lauren Hayhurst, Fisheries Research Biologist, IISD-ELA
- Lee Hrenchuk, Senior Biologist, IISD-ELA

**DRINKING WATER**
How can we ensure that remote northern centres have access to clean drinking water?

**WATER ISSUE LEADER**
- Pauline Gerrard, Deputy Director, IISD-ELA and Corporate Secretary

**WATER & LAND MANAGEMENT**
How can we provide agricultural producers with cost-effective solutions for water and land management?

**WATER ISSUE LEADERS**
- Geoff Gunn, Policy Advisor – Data & Technology, IISD
- Madeline Stanley, Project Officer, IISD

**WATERSHED INVESTMENT**
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The Launch

IISD and Aqua Forum launched the AquaHacking Lake Winnipeg Challenge on January 31, 2020, at Tech Manitoba’s DisruptED Future tech conference. Jane McDonald, IISD’s Executive Vice President, announced the official start of the challenge during a panel discussion on harnessing tech for social good chaired by RBC’s Valerie Chort and featuring Chelsea Lobson of the Lake Winnipeg Foundation and Carolyn DuBois of the Gordon Foundation. IISD also participated in the Coffee With Strangers event and ran an AquaHacking booth in the Interactive Playground. Over 400 tech workers, entrepreneurs, policy-makers, educators, and students attended the 2-day conference.
Recruitment and Outreach

Between January and May, IISD hosted nine on-campus information sessions at various universities and colleges to get the word out to students about the AquaHacking Lake Winnipeg 2020 Challenge. Other recruitment tools included classroom presentations, campus info booths, and virtual information sessions. We also held a series of “Ask Me Anything” virtual networking sessions where students and young professionals had the opportunity to meet experts working in the water sector.

472 youth engaged in water-related activities

109 individuals registered for the challenge

19 teams registered for the challenge
The Semi-Final

On June 11, nine teams went head-to-head in the AquaHacking Lake Winnipeg 2020 Challenge virtual Semi-Final. Each team pitched their solution ideas to a panel of 12 judges with expertise in business, technology, and water. Based on the judges’ scores, five teams were selected to move on to Phase 2 of the challenge, where they continued developing their solutions with the help of expert mentors and a $2,000 bursary.

Click here to watch the recording of the Semi-Final!

Business Judges

- Brent Wennekes
  MITACS
- Glenn Crook
  RBC
- Jan Forster
  GOVERNMENT OF MANITOBA
- Kevin Parsons
  THE WINNIPEG FOUNDATION

Water Judges

- Chelsea Lobson
  LAKE WINNIPEG FOUNDATION
- Karen Scott
  LAKE WINNIPEG RESEARCH CONSORTIUM
- Mark McMaster
  ENVIRONMENT AND CLIMATE CHANGE CANADA
- Sharon Gurney
  GURNEY AND ASSOCIATES

Tech Judges

- Gonzalo Lavin
  LAVERY LAWYERS
- Gord Currie
  BOLD COMMERCE
- Tareq Al-Zabet
  GOVERNMENT OF MANITOBA
- William Locke
  OVIVO
The Finalists’ e-Expedition

From July 27 to 29, the finalists went on a virtual retreat, or “e-Expedition,” to learn more about the Lake Winnipeg watershed. The finalists participated in professional development workshops on communication, empathy, collaboration, and leadership to get to know their teammates better and enhance their soft skills. The e-Expedition also included a session on the role of water in Anishinaabe culture and a world café with water experts, who facilitated discussions on connections between the water issues affecting Lake Winnipeg.

“It’s made me more aware of the interconnections of the issues and how ecosystem thinking can be helpful to address the issues better.”
Abdul-Latif Alhassan
TEAM ABBATEK

“My team will be able to communicate and debate the best way to tackle a problem more effectively due to our knowledge of collaboration and leadership types/styles.”
Meagan Smith
TEAM LASIR NUTRIENT TECHNOLOGY
The Final

On October 17, the five finalist teams pitched their solutions to help Lake Winnipeg and the communities who depend on it. The issues addressed by the teams’ proposals included testing drinking water quality in remote communities, microplastics pollution, eutrophication, and water and land management in agriculture. The teams presented their solutions in a Dragon’s Den-style pitch competition, and they did not make it easy on our panel of five judges:

Jay Myers
BOLD COMMERCE

Erin Ussery
ENVIRONMENT AND CLIMATE CHANGE CANADA

Dave Morgan
STANTEC

Mark Alexiuk
SIGHTLINE INNOVATION

Blaine Favel
KANATA EARTH
Particuleye Technologies

ISSUE: Microplastics

TEAM MEMBERS:

Quinn Desrochers  
**CEO – PROJECT MANAGEMENT**  
University of Manitoba

Michael Beck  
**CTO – HARDWARE & EMBEDDED SYSTEMS**  
University of Winnipeg

Ryan Tran  
**CIO – IMAGE PROCESSING & PROGRAMMING**  
University of Manitoba

Zacharie Gousseau  
**CIO – IMAGE PROCESSING & PROGRAMMING**  
University of Manitoba

Waseem Jawad  
**CFO – FINANCE & MARKETING**  
Queen's University

SOLUTION:

The Particuleye is a smart camera capable of quantifying and classifying microplastic particles in running water, in real-time, using machine learning and image processing techniques. Initially, we will focus on applying our device in lab settings and to effluent from wastewater treatment plants to provide operators with accurate microplastics profiles without the need for time-intensive lab analysis. The Particuleye will also speed up the development of removal techniques and aid in their fine-tuning by quickly recognizing microplastics in a water stream.

Watch their pitch!

LinkedIn: @particuleye

Learn more about Particuleye Technologies!
LasIR Nutrient Technology

ISSUE: Water and Land Management

TEAM MEMBERS:

Bentley Turner
CO-FOUNDER
University of Manitoba

Meagan Smith
CO-FOUNDER
University of Manitoba

SOLUTION:
Our solution is a portable device that uses infrared spectroscopy to analyze plant-available phosphate concentrations in soil, providing users with on-site, real-time results. We hope to reduce agricultural phosphorus runoff by providing this device to agronomists and consulting companies as a decision support tool that will be easier and cheaper to use than current alternatives.

Watch their pitch!

Social Media:
@lasirnutrient_tech

2nd Place | $15,000 Seed Funding
Typha Co.

**ISSUE:** Watershed Investment

**SOLUTION:**
Typha Co. is developing eco-packaging products that will compete economically with plastics while maintaining a high standard of environmental responsibility. The products will be made from fibres extracted from cattail plants, significant contributors to the eutrophication of Lake Winnipeg.

Learn more about Typha Co!

**TEAM MEMBERS:**
- Alec Masse
  *CHIEF REPUTATION OFFICER AND MARKETING*
  *University of Manitoba*
- Julien Koga
  *PRODUCT DEVELOPMENT AND RESEARCH LEAD*
  *University of Manitoba*

**Website:** typhaccompany.com
**Social Media:** @typha_co

Watch their pitch!
Water Secure

**ISSUE:** Drinking Water

**SOLUTION:**

Water Secure is a series of localized testing hubs that affordably track water quality and upload the data to a live water map that can be used to raise public awareness, help governments identify and invest in infrastructure gaps, and increase the population health and water security of remote communities.

[Watch their pitch!](#)

**Website:** watersecure.ca  
**Social Media:** @watersecurenet

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**TEAM MEMBERS:**

- Arslan Azeem  
  **BUSINESS ANALYST**  
  University of Regina

- Noor Tajik  
  **OPERATIONS & COMMUNICATIONS MANAGER**  
  University of Regina

- Tinsae Alemu  
  **WATER QUALITY SPECIALIST**  
  University of Regina

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[Learn more about Water Secure!](#)
AbbaTek Group

**ISSUE:** Microplastics

**SOLUTION:**
AbbaTek is developing CompoundConnect, a complete suite software as a service (SaaS) package that will revolutionize microplastics research by leveraging state-of-the-art machine learning (ML) and artificial intelligence (AI) for researchers to quickly, accurately, and cost effectively identify microplastics in Lake Winnipeg for improved water management and policy.

🔗 Watch their pitch!

**Website:** abbatekgroup.com
**Social Media:** @abbatekgroup

**TEAM MEMBERS:**

Abdul-Latif Alhassan  
**POLICY & PARTNERSHIPS**  
Memorial University of Newfoundland

Ivo Arrey  
**RESEARCH & DEVELOPMENT**  
Memorial University of Newfoundland

Sam Swanson  
**BUSINESS & MARKETING**  
University of Manitoba

5th Place | $2,500 Seed Funding
What’s Next?

Moving forward, the five finalist teams have been offered an incubation spot at North Forge Technology Exchange, where they will receive mentorship and support as they continue work on their solutions. IISD will continue to support the AquaHacking Lake Winnipeg finalist teams through mentorship and networking opportunities, and we are delighted to serve on the advisory committee for the Western Canada AquaHacking Challenge in 2021.

IISD’s goal in bringing the AquaHacking Challenge to Lake Winnipeg was not only to find great solutions to problems facing our fresh water but also to build relationships between academia, tech, non-governmental organizations, government, and business. We have reached a point today where the impacts of our actions are reaching beyond our own backyards; we are changing entire global systems—like our climate—and we need to work together to come up with solutions.

AquaHacking highlights how cross-sector collaboration drives innovation. Drawing on the relationships we’ve built through the AquaHacking Lake Winnipeg 2020 Challenge, IISD will continue to champion solutions to global sustainability issues, especially through the innovative use of data and technology.

Stay tuned to our social media and website for updates on our work, and if you have ideas for how we can work together to solve freshwater challenges, be sure to contact us at cvanreenen@iisd.ca. 
Thank You to Our Partners

NATIONAL FINANCIAL PARTNERS

LOCAL FINANCIAL PARTNERS
Thank You to Our Partners

IMPLEMENTATION PARTNERS

ADVISORY COMMITTEE MEMBERS

Peter Tielmann, President & CEO, Palliser Furniture Ltd. & IISD Board Member
Ray Bouchard, President, Enns Brothers
Jay Myers, Co-Founder & VP Growth, Bold Commerce
Glenn Crook, VP Commercial Financial Services, MB West, RBC & IISD-ELA Board Member
Mark Alexiuk, CTO & Co-Founder, Sightline Innovation Inc.

Joelle Foster, CEO, North Forge
Annette Trimbee, President & Vice-Chancellor, MacEwan University
Dayna Spiring, President & CEO, Economic Development Winnipeg
Ray Hoemens, Executive Director, Research Partnerships & Innovation, Red River College

Masoud Asadzadeh, Assistant Professor, Civil Engineering (Water Resources), University of Manitoba
Joanne Zuk, Assistant Deputy Minister, Renewal and Strategic Alignment, Government of Manitoba
Chris Kirby, Senior Technology Leader, IBM
Anne-Pascale Richardson, Program Manager, Aqua Forum

ACADEMIC PARTNERS

University of Manitoba
University of Winnipeg
University of Saskatchewan
Red River College
Brandon University