INTERNATIONAL
JOINT COMMISSION

6th Report to Governments on the International Watersheds Initiative:

Collaboration and Science for Shared Solutions

October 2025

Acknowledgements

The International Joint Commission thanks the governments of Canada and the United States for their continued support of the International Watersheds Initiative (IWI). The Commission thanks IJC boards for embracing the IWI to help address the challenging binational water issues in their basins and their continued collaboration and contributions to the program. The Commission is also grateful to its staff for their work on the IWI and contributors to this report.

Cover Caption: Black Bay, Voyageur National Park. Credit: IJC.

Caption: Paddling along the St. Croix River. Credit: IJC.

Executive Summary

The International Watersheds Initiative (IWI) was launched by the International Joint Commission (IJC) in 1998 in response to the November 19, 1998 Reference from the United States and Canada under Article IX of the Boundary Waters Treaty of 1909. The IWI uses a watershed-based approach to the stewardship of Canada-US boundary waters. It applies a holistic lens when addressing water quantity and quality issues, directly involves the people who live and work in a given watershed, and supports IJC board projects to deliver on their responsibilities through its Request for Project Ideas (RFPI) process. The IWI program has matured to the point where its principles are integral to the IJC's work across the entire boundary.

In this sixth report on the IWI, we trace the evolution of the IWI and its accomplishments in the most recent five-year period, from January 2020 through December 2024. Seen through the watershed lens, the IWI has demonstrably helped the IJC deliver on its mandate of assisting the governments of the United States and Canada in preventing and resolving disputes concerning boundary waters. We also look ahead in this report to the value of the IWI in a fast-changing hydrological environment in years to come.

The IWI identifies and brings together people, programs and organizations with responsibilities and interests in water quality, aquatic ecosystem health and water quantity in transboundary watersheds. In so doing, the IWI has succeeded through work that has been characterized by broad-based engagement and tailoring solutions to local needs, while reducing duplication, avoiding a buildup of bureaucracy and making best use of existing resources.

IWI accomplishments during the last five years include:

- Improved understanding of boundary waters through disciplined, problem-solving science.
- Enhanced engagement with the public, leading to important progress in specific watersheds.
- Enhanced engagement and problem-solving partnerships with First Nations, Métis and Tribal governments.
- Development of tools to assist with the adaptation of watershed stewardship strategies.
- Improved management of and efficient use of funding for the IWI.
- Supporting board work to better understand risks to their responsibilities posed by a changing climate.
- During the reporting period, the establishment of international watershed boards has continued. The IJC has established the International Red River Watershed Board and is exploring others. International watershed boards, like other IJC boards, are made up of an equal number of members from Canada and the U.S, appointed from a range of groups including governments, non-governmental organizations, industries, First Nations, Métis and Tribal governments, academic institutions, and the public. Establishing such boards not only strengthens the watershed approach for boundary waters issues but also builds public support for watershed stewardship activities.

In 2023, the IJC celebrated the 25th anniversary of the IWI program since the 1998 reference from the governments. As part of the anniversary, the Commission held two workshops to discuss and reflect on the program and issued a special showcase report to highlight important milestones in the program and to consider where the program can go in the future.

The IJC continues to strengthen IWI program management with changes to promote on-the-ground results, accountability for use of funds, and measurements of success.

Looking forward, the watershed approach in Canada-United States transboundary watersheds will be even more vital to achieve the IJC's mandate in the face of increasingly unpredictable weather events. Commissioners recognize the value of the watershed approach for IJC boards and its ability to assist the Commission to prevent and resolve disputes. Commissioners have highlighted the importance of this science-backed approach as a Commission priority.

Other advancements prioritized by Commissioners in the years ahead will include increased collaborative governance. There are opportunities for enhancement of understanding and application of this concept in Canada-United States transboundary watersheds, especially as it relates to building relationships with Tribal governments, First Nations and Métis. The IJC will continue to encourage the submission of IWI project proposals through its RFPI process that incorporate that collaboration as a critical element.

Additionally, the Commission worked to clarify essential aspects of watershed boards including Indigenous participation.

In a time of limited resources, the IJC will place an even greater emphasis on cost-effectiveness, leveraging additional resources from partners. IJC boards that submit IWI project proposals will continue to be encouraged to leverage external monetary and in-kind resources and are required to specify the amounts in their proposals.

Responsiveness to changing hydrologic conditions, increased engagement, and most of all, an even greater deployment of the watershed approach will build on the IWI's nearly 30-year record of successes in meeting mandates of the Boundary Waters Treaty.

Figure 1: Members of the International St. Croix River Watershed Board prepare for a paddle on the River. Credit: IJC.

Table of Contents

Overview of the IWI

Caption: Lake Superior Provincial Park. Credit: IJC.

Launched with the support of the Canadian and U.S. governments in November 1998, the IJC's IWI is based on the principle that transboundary watershed problems are best prevented or resolved by applying a holistic watershed lens and involving the people who live and work in that watershed. A watershed is an area of land within which all waters flow to a single river system. The watershed – also known as a drainage basin or catchment – has been recognized as a practical hydrological unit for water resources study and management. A "watershed approach" is based on an ecosystem approach to environmental management and the value of public participation in environmental decision-making. An ecosystem approach is a process framework endorsed by many researchers, planners, and managers to account for the interrelationships among land, air, water, and all living things, including humans, and to involve all user groups in comprehensive management.

In a 1997 report to governments, *The IJC and the 21st Century*, the IJC stated that the establishment of international watershed boards in specific transboundary basins would "provide a much improved mechanism for avoiding and resolving transboundary disputes by building a capacity at the watershed level" to deal with the increasingly complex water-related and other environmental challenges that could be foreseen for the 21st century. These concepts led to the creation of the IWI and shortly thereafter the first international watershed board in 2005.

The IWI concept grew out of the IJC's experience applying a watershed approach while implementing its responsibilities under the Great Lakes Water Quality Agreement (GLWQA) since 1972. The IJC saw the value in this approach to watershed management and sought to provide similar opportunities to other transboundary basins through the establishment of permanent IJC international watershed boards. The IJC continues to explore methods of applying the watershed approach to other transboundary basins. International watershed boards and other IJC boards are able to bring forward project ideas to the IJC, funded through the IWI, that are tailored to local needs in their watersheds. The IJC also works with the boards on strategic initiatives that span the entire transboundary region.

The IWI clearly continues to demonstrate the value of international watershed boards. The IWI provides critical support for IJC boards to deliver on their responsibilities. The IJC reaffirms this vision as the most resilient model for managing shared waters in the face of future challenges.

Previous IWI reports to governments are available here: Reports to governments | International Joint Commission.

Goal, Objectives and Approaches

The goal of the IWI is to help prevent or resolve transboundary water issues, grounded in the belief that local communities, given appropriate assistance, are best placed to achieve solutions. Three objectives guide the IWI's efforts to prevent and resolve transboundary water issues:

1. Building a shared scientific understanding of watershed issues, harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and First Nations, Métis and Tribes.

2. Communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis and Tribes, to increase awareness and understanding of these important issues.

3. Facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, engaging with broader communities that are affected by these issues more directly.

"Ice formation on Osoyoos Lake has increasingly created reduced flows downstream with the potential to negatively impact the incubating eggs of salmon. Through IWI funding the IOLBC have been able to study the conditions that result in these ice jams. We think this information will be valuable in looking for ways to mitigate reduced downstream flows in the future"

— JOHN ARTERBURN, U.S. IOLBC MEMBER

The IWI identifies and brings together programs and organizations with responsibilities and interests in water quality, aquatic ecosystem health and water quantity in transboundary watersheds. In so doing, the IWI has succeeded in developing and tailoring solutions to local issues, while reducing duplication and making best use of existing resources and expertise, including experts from federal, state, provincial, and local government, along with First Nations, Métis and Tribes. One way the IWI supports these solutions is through regular Requests for Project Ideas (RFPI) from IJC boards, which provide resources for local activities in basins along the border.

Figure 2: International Osoyoos Lake Board of Control visits the Outlet of Osoyoos Lake. Credit: IJC.

As the IWI has evolved, so too have its approaches, including strengthened consultation with boards and governments to further refine priority issues, increased emphasis on public participation, working with First Nations, Métis and Tribes as partners and rightsholders, and helping to prevent and resolve disputes. IWI Strategic Initiatives, activities that address needs of many IJC boards across the transboundary help watershed communities adapt to shifting hydrologic patterns that affect water availability, variability in water levels and flows, and worsening water quality, and help communities to build resilience to these changing conditions.

The IWI adapts existing frameworks to promote and coordinate watershed-level approaches to transboundary issues. This approach increases efficiency and maximizes the impact of limited resources instead of adding to bureaucracy and driving up spending. Over the past decades, the IWI has worked to grow and evolved to meet today's needs and live up to the promise first envisioned at its 1997 inception and continues to be a mechanism for IJC boards to address their responsibilities and benefit from the watershed approach.

IWI Accomplishments

Caption: Lake Sherburne Reservoir. Credit: IJC.

Across the transboundary region, the IWI has continued to build on the successes of more than two decades of the initiative. The quarter-century anniversary of the IWI provided an important opportunity to review progress as well as challenges ahead.

2023 marked the 25th anniversary of the International Watersheds Initiative, a milestone covered in a special showcase report. The report provided an overview of the IWI's origins, development, successes and needs, and suggested ways the IWI could be calibrated to meet recurring short-term needs as well as emerging trends with significant long-term impacts.

The showcase report catalogued important IWI achievements across the transboundary region as well as successes in individual basins:

- A harmonization project produced a seamless data set for each transboundary basin, ending major difficulties that resulted from data sets for the Canadian and U.S. portions that were developed with different methodologies, interpretations, data formatting and naming conventions.
- IJC-led application of a numerical water quality model to mid-continent basins to better understand water quality dynamics and nutrient loading.
- The development and implementation of a Climate Change Guidance Framework.

The showcase report also looked ahead, detailing numerous challenges in years to come, including worsening pollution problems in some basins, increasing hydrologic uncertainties resulting from historic floods and drought, and geographic gaps in coverage of basins by international watershed boards.

Finally, the report noted the IJC's growing emphasis on strengthening relationships and collaboration with First Nations, Métis and Tribal governments and communities, the advantages and necessity of continued agency participation in IJC work, and increased direct involvement of IJC commissioners and staff. These matters have served as a compass for the IJC in moving ahead with the IWI.

It should be noted here the considerable impact of the COVID-19 pandemic on the IJC boards and their IWI projects. It was a time of significant transition as staff and partners adjusted to working in new environments, merging virtual meetings and social distancing for critical in-person activities as well as adjusting fieldwork commitments. The IJC continued to work with boards to adapt and advance IWI project work and to support local watersheds during this time.

Project Statistics

Since January 2020, the IWI has supported many projects to assist boards to deliver on their responsibilities and the IWI's goal of assisting to prevent and resolve disputes by delivering on the IWI objectives. From January 2020 through December 2024, 28 projects costing an average of $80,316.14 per project, were completed through the IWI to support the work of 9 IJC boards and included collaboration with 57 partners to deliver on this important work. The IJC partners with many different organizations in transboundary basins, including federal, state, and provincial agencies, municipalities, non-governmental organizations, academic institutions, and First Nations, Métis and Tribes. A full list of the 28 projects completed between January 2020 and December 2024 can be found in Appendix I.

All IWI projects must serve at least one of the three IWI objectives noted above and meet the goal of the IWI – to help prevent or resolve transboundary water issues, grounded in the belief that local communities, given appropriate assistance, are best placed to achieve solutions. The IWI has provided a holistic approach to water management that, through IWI-defined projects, enables IJC boards to gain a better scientific understanding of problems and communicate findings to binational resource managers, thereby providing a progressive means by which the IJC and its boards can deliver on their individual mandates. Of the projects supported since 2020, all 28 contributed to a shared scientific understanding of watershed issues, 24 contributed to communicating transboundary water issues, and 20 contributed to facilitating dialogue for shared solutions. All projects have served to help meet the overarching goal of the IWI program.

Between 2020 and 2024, 28 IWI projects were completed.
Of these:

1. All **28 projects** worked toward the **first IWI objective**.
2. **24 worked** toward the **second objective**.
3. **20 of the projects** worked toward the **third objective**.

Across these **28 projects**, there were **57 partner organizations** that collaborated with the projects teams.

*See the three IWI objectives on page 5

IWI Funding

The Commission greatly appreciates the funding received from the two governments, as well as its partners' collaboration and contributions to IWI projects and their support to the work of the IWI program. One of the IWI's principles is involvement of local expertise which includes pursuing opportunities to leverage additional local resources with IWI funding provided to the Commission by the two governments.

The IJC's expenditures on IWI activities by fiscal year between January 2020 and December 2024 are captured in Table 1. IWI expenditures by section vary by year and country due to non-overlapping fiscal years, the number and cost of projects proposed by IJC boards, the procurement process requirements to initiate IWI projects, and amount of funding received from governments.

TABLE 1: IWI Expenditures by Country

Canadian Fiscal Year*	Canadian Expenditures (CAD$)	US Fiscal Year*	U.S. Expenditures (USD$)
2020–2021	$386,000	2020	$465,000
2021–2022	$224,000	2021	$567,000
2022–2023	$429,000	2022	$523,000
2023–2024	$438,000	2023	$710,000
2024–2025	$608,000	2024	$344,000
TOTAL	$2,085,000		$2,610,000

**Canadian fiscal years are April 1 – March 31. U.S. fiscal years are October 1 – September 30. Expenditures are rounded to the nearest thousand dollars. Differences in US and Canadian spending are largely due to differences in fiscal years, the number of IWI projects initiated, project procurement processes, received funding, and support requested by boards.*

Leveraged funding helps deliver on the IWI mandate while eliminating duplication of effort and ensuring prudent expenditure of IWI funds. IJC boards that submit IWI project proposals identify and specify anticipated amounts of leveraged external monetary and in-kind resources in their proposals. Leveraged funding is categorized as external contributions (financing provided by collaborators for project work in parallel to IJC funding), and in-kind contributions (non-monetary support; e.g., researcher time, equipment, etc.) to IWI projects.

IWI projects completed between 2020 and 2024 are estimated to have received $5,195,800 in leveraged support (see figure 1). The major contributors of monetary and in-kind resources are Canadian and U.S. federal agencies, followed by state and provincial agencies. In-kind contributions, offered by government agencies, municipalities, NGOs and First Nations, Métis and Tribes, have taken the form of providing technical expertise and data, access to sites and research facilities, guidance and steering of projects, mentoring and collaboration, equipment and labor. Smaller groups such as non-governmental organizations, municipalities and academia have also contributed critically needed funds and, in particular, in-kind resources on specific IWI projects that aligned with their interests and expertise. For example, the town of Osoyoos contributed a forum venue and expertise for the 2022 Osoyoos Lake Water Science Forum, and The Lake of the Woods County, as well as the Lake of the Woods Soil and Water Conservation District, contributed in-kind resources to researching the erosion of barrier islands in Lake of the Woods. Several First Nations and Tribes have also contributed assistance and funds to several projects in their respective watersheds. For example, the Passamaquoddy Tribe assist each year in the alewife fish count project in the St. Croix River by offering fish counting equipment and technical assistance, the 2022 Osoyoos Lake Water Science Forum partnered with the Okanagan Nation Alliance as well as the Confederated Tribes of the Colville Reservation for its steering committee and Grand Council Treaty 3 collaborated and to contributed Indigenous knowledge to the Rainy-Lake of the Woods State of the Basin Report.

IWI project funding from IJC and leveraging: 2020 to 2024

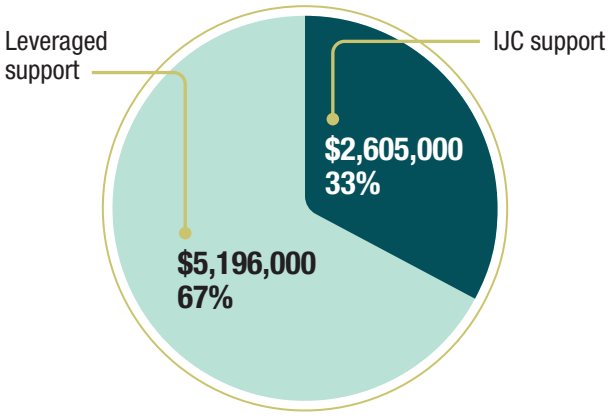


Figure 3: Funding support for IWI projects January 2020–December 2024. IWI projects received over $2.6M from the IJC and are estimated to have received over $5.1M in leveraged funding from partnering agencies, organizations, and other partners.

IWI Projects by Board

Projects described here were completed or began between January 2020 and December 2024 and highlight key aspects of the IWI program and the projects it supports. This is not an exhaustive list of all IWI projects completed or in-progress during the reporting period for this report. Appendix 1 lists all IWI projects completed between January 2020 and December 2024.

International Osoyoos Lake Board of Control (IOLBC)

Figures 4 & 5: Zosel Dam. Credit: International Osoyoos Lake Board of Control.

Osoyoos Lake Water Science Forum 2022

As in previous years, in 2022, the Osoyoos Lake Water Science Forum provided an opportunity for residents of Osoyoos Lake and the Okanagan watershed to learn about water management, climate change and the ecology of this transboundary watershed. It also provided a forum for resource managers, policy makers, residents, and all interests to share issues of concern and identify common goals and challenges, and it promotes transboundary stewardship of this valuable lake and the ecosystem it supports. Previous forums (also supported by the IWI) were held in 2007, 2011, and 2015, and were a great success.

The 2022 Osoyoos Lake Water Science Forum was hosted by the Osoyoos Indian Band and the Town of Osoyoos, October 27–29, 2022, in Osoyoos, B.C. The forum was made possible through partnerships with the Okanagan Basin Water Board, the IJC, the Okanagan Nation Alliance, along with many other partners with an interest in the Okanagan/Okanogan watershed. The Forum was an opportunity for interests in the basin to share and discuss common goals and challenges and provided an initial launch point for an ongoing effort to better bring traditional knowledge and Western science together through local basin residents and experts passionate about improving water quantity and water quality challenges in the basin.

"IJC boards extend the ability of the IJC to prevent and resolve water conflicts regionally along the international boundary. To be most effective, it is important that every IJC board is familiar with local community water concerns, and environmental trends like the increase of extreme weather events, and that the local community understands the mandate and function of the board. IWI support for the Osoyoos Lake Water Science Forum in 2022 allowed the IOLBC to increase the connections and understanding between the IOLBC and surrounding transboundary communities, especially the local Indigenous Tribes and First Nations. The region is grappling with floods and droughts, and the Okanagan First Nation has an important fishery restoration under way for Pacific salmonids – which all are affected by lake level management. The forum opened lines of communication and built relationships for the IOLBC to work better and smarter. As well as funding the forum, the IWI-funded work to understand the current and hydrology of the Similkameen River system and how it interacts with the hydrology of the Okanagan/Okanogan river system will support ongoing management of Osoyoos Lake levels, and lay the groundwork for the renewal of the operating orders in the next decade. And together, all the IWI funding helps clarify the needs and possibilities for establishing a watershed board for Osoyoos Lake."

— ANNA WARWICK SEARS, IOLBC CANADIAN MEMBER

Figure 6: Audience members engage in Syilx facilitation exercises at the Osoyoos Lake Water Science Forum. Credit: Corinne Jackson, Okanagan Basin Water Board.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

Osoyoos Lake Climate Change Vulnerability: Phase 1 and 2

The IOLBC is developing a multi-year, multi-phase project to analyze the vulnerability of Osoyoos Lake and the relevant IJC Orders of Approval to a projected shift in the climate and hydrology of the Okanagan/Okanogan (Canadian and American spellings respectively) River and Similkameen River Basins. In order to effectively manage Osoyoos Lake levels in the future, the IOLBC needs to consider the hydrological response of both the Similkameen and the Okanagan Basin to projected changes in climate.

Phase 1 is complete and assessed how the frequency of drought operations is expected to change in the future. Phase 1 concluded that the expected weaker relationship between the freshet and summer flows on the Similkameen River suggest that there may be less correlation between Osoyoos Lake levels and Similkameen River flows in the future, as Similkameen River flows are likely to be more stable.

Phase 2 is analyzing the vulnerability of Osoyoos Lake to a variety of projected climate change scenarios in order for the Board to make better decisions and recommendations. Phase 2 will integrate output from the recently developed Similkameen Basin Hydrologic Model (Phase 1) with hydrologic and hydraulic models of the Okanagan Basin and Okanagan River/ Osoyoos Lake.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities; and
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly.

Figure 7: International Osoyoos Lake Board of Control visits overlook of the Okanagan River. Credit, IJC.

International Kootenay Lake Board of Control (IKLBC)

Figures 8 & 9: International Kootenay Lake Board of Control visit to a Kokanee spawning ground on Kootenay Lake (West Arm). The Board is considering how lake level adjustments at the Corra Linn dam may impact spawning of this species. Credit: IJC.

Kootenay Lake Visualization Tool

Public understanding of the complex hydrology of Kootenay Lake is important in the effort to explain the reasoning behind Board decisions. In 2023, the International Kootenay Lake Board of Control (IKLBC) completed a project to design and develop a user-friendly, interactive visualization tool: Kootenay Lake Visualization Tool. With the control of outflows toggling between the Corra Linn Dam and Grohman Narrows (a natural restriction in the river upstream of the dam) depending on conditions, this tool was developed to help communicate to the public and stakeholders the drivers and seasonality of Kootenay Lake water levels, and the constraints of the IJC's 1938 Order of Approval rule curve, along with other overlapping demands. The tool illustrates the river profile downstream of Kootenay Lake given certain inflow, outflow, and lake level conditions. The information is presented through a dynamic, web-based visualization tool, to present and communicate relevant information to the public, stakeholders and rights-holders, Commissioners and Board members. This tool is complete, and the Board now frequently uses this tool to demonstrate operational scenarios and explain the basis for Board decisions at public meetings.

The Kootenay Lake visualization tool addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues;
- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities; and
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly.

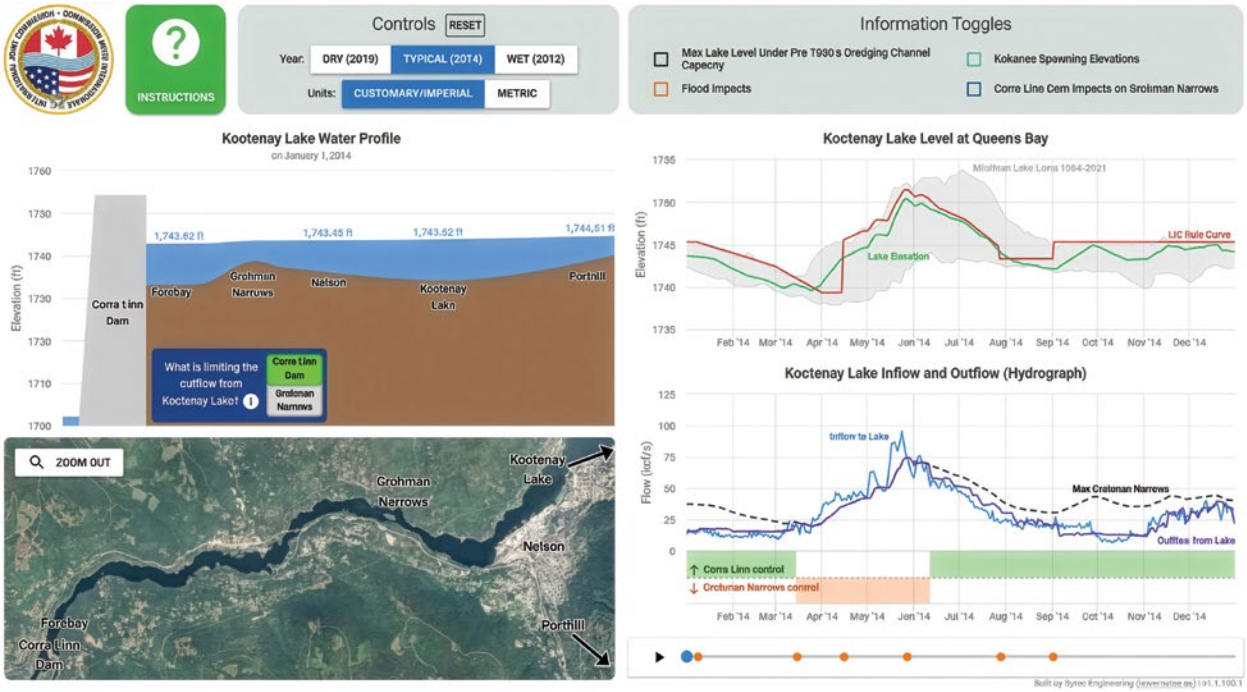


Figure 10: The Kootenay Lake Visualization Tool provides information to better understand the complexities, competing interests and physical limitations in the management of Kootenay Lake's water levels.

"The IWI projects have assisted the IKLBC with building tools for clearer public communication and investigating resiliency for the future of Kootenay Lake. The Kootenay Lake Visualization Tool has been integral to the Board's ability to explain complex hydraulics that govern Kootenay Lake levels. It has been used at public meetings and to train new Board members. The Kootenay Lake Vulnerability Assessment will better inform potential changes to the IJC Order and increase resiliency in Lake operations."

– SONJA MICHELSEN, IKLBC U.S. SECRETARY

Understanding the Impacts of a Shifting Climate

The IKLBC is working with climate change experts (government and academics) to conduct a climate change vulnerability assessment of the current IJC Kootenay Lake Order of Approval. In addition to conforming to the IJC's Order of Approval, the experts' assessment plan will include elements of the IJC's Climate Change Guidance Framework. The final report is expected to be delivered in 2025.

The climate work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities; and
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly.

Accredited Officers of the St. Mary and Milk Rivers (AOSMMR)

Figure 11: View of Lake Sherburne and spillway in Glacier National Park, Montana. Credit: Ethan Johnston.

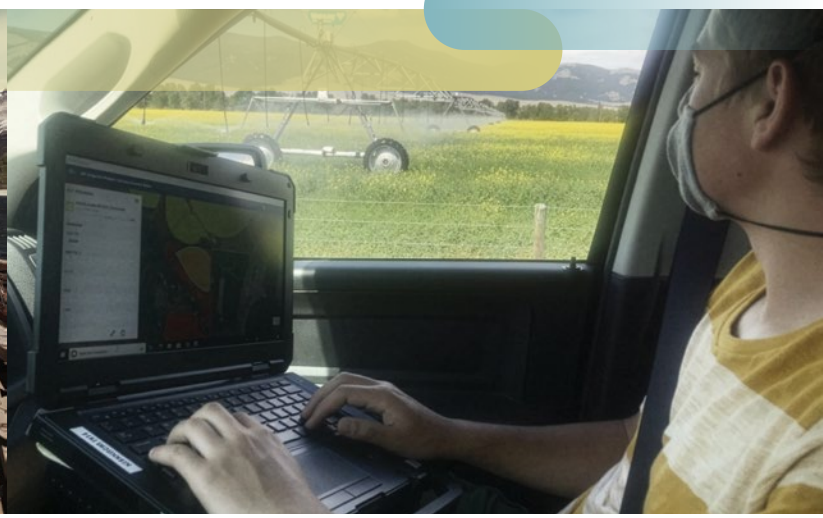


Figure 12: USGS field assistant Heath Caldwell identifies, and maps irrigated fields in Montana. Credit: USGS Wyoming Montana Water Science Center.

Understanding Recent and Historic Isotope Signatures in the Milk River

The project investigated stable hydrogen and oxygen isotopes that naturally occur in water as a means of determining flow pathways, evaporation rates and the sources of water in the Milk River. The study revealed that the waters of the St. Mary and Milk Rivers are isotopically distinct and can be traced using stable water isotope analysis. Isotopic analysis was also used alongside hydrometric records for the Milk River, to determine the relative evaporation from different portions of the river, and identify the sources (i.e. groundwater, surface water) of water in the river.

The project resulted in a map of isotopic end members for the system. Other products were summaries of existing isotopic datasets from Water Survey of Canada, Long-term River Network and U.S. Geologic Survey that can be leveraged for future studies and recommendations for the design of an isotopic monitoring program for this system to aid in understanding hydrologic sources and sinks along the Milk River.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities; and
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly.

Figures 13: View of Lake Sherburne and spillway in Glacier National Park, Montana. Credit: Ethan Johnston.

Isotope Monitoring and Water Balance Assessment of the St. Mary/Milk River basins

This project builds upon the findings of the *Understanding Recent and Historic Isotope Signatures in the Milk River* project through the design a long-term stable isotope monitoring network for the St. Mary and Milk River basins to support source water separation and identification. A coupled isotope-hydrologic model of the basins has been applied to simulate isotopic separations and source water signatures. The model will assess the potential impacts to the water balance and source water separations under various climatic and diversion scenarios. This project will produce a low-cost analysis and monitoring protocol that may assist the Accredited Officers of the St. Mary and Milk Rivers in interpreting the natural flow and channel losses of the Milk River for improved calculation of natural flow estimation.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities; and
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly.

Figures 14: View of Lake Sherburne and spillway in Glacier National Park, Montana. Credit: Ethan Johnston.

International Souris River Board (ISRB)

Figure 15: Souris River Basin, Glenavon area. Taken June 2024 during Souris River Basin Tour. Credit: IJC

Determination of Factors Affecting Dissolved Oxygen Levels in the Souris River to Inform Operation Decisions and Assist with Water Quality Objectives Review

This IWI project investigated how variations in Souris River flow affect dissolved oxygen (DO) levels, which are important to determining biological conditions in a river. All forms of life rely on oxygen that is dissolved in the water to survive, so DO plays an important role in biological processes, both directly (organism physiology and survival), and indirectly (the effect on nitrogen and carbon cycles in water). Spanning 2019 to 2023, the project work consisted of installing and maintaining continuous water-quality monitoring sensors to measure water temperature and DO on the Souris River. The three sites on the Souris River were chosen for DO monitoring because they provided the best opportunity to capture potential effects on DO in areas downstream from major flow control structures and because identifying the connection of streamflow to DO at the international border is a focus of the ISRB.

This project provided data and reports containing needed information on how flow and under-ice conditions affect DO levels. This information has been integrated into control structure (reservoir) operation decisions for improving riverine DO levels. It will also be used to inform suitable ISRB DO objectives as part of the water quality objective review process, which is an important aspect of the Board's responsibilities as a pilot international watershed board and their use of the watershed approach.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities;
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

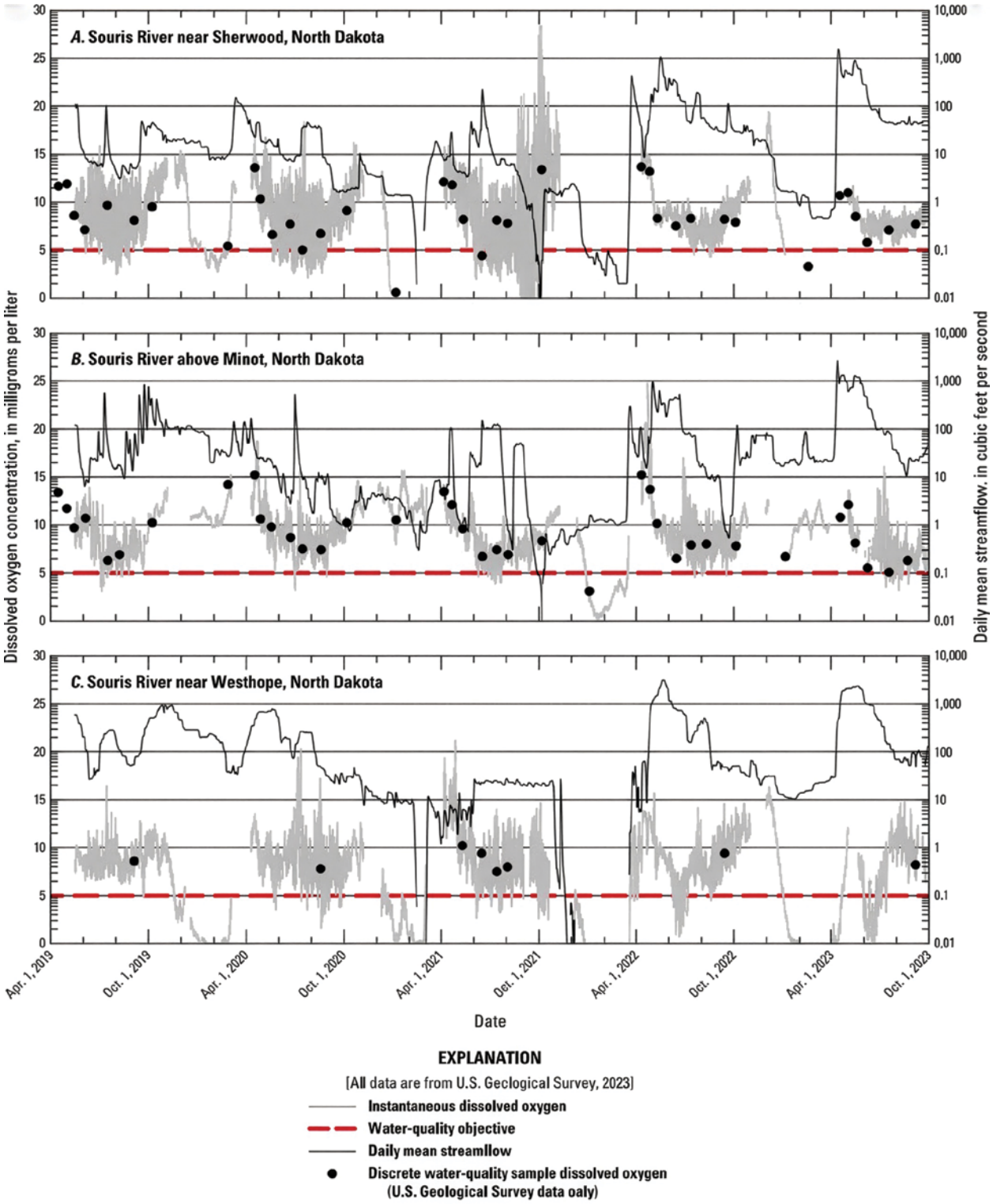


Figure 16: From the Souris River Dissolved Oxygen Report – Daily streamflow and instantaneous DO with discrete measurements of DO at three locations on the Souris River Credit: Joel M. Galloway.

Souris River Trends Analysis

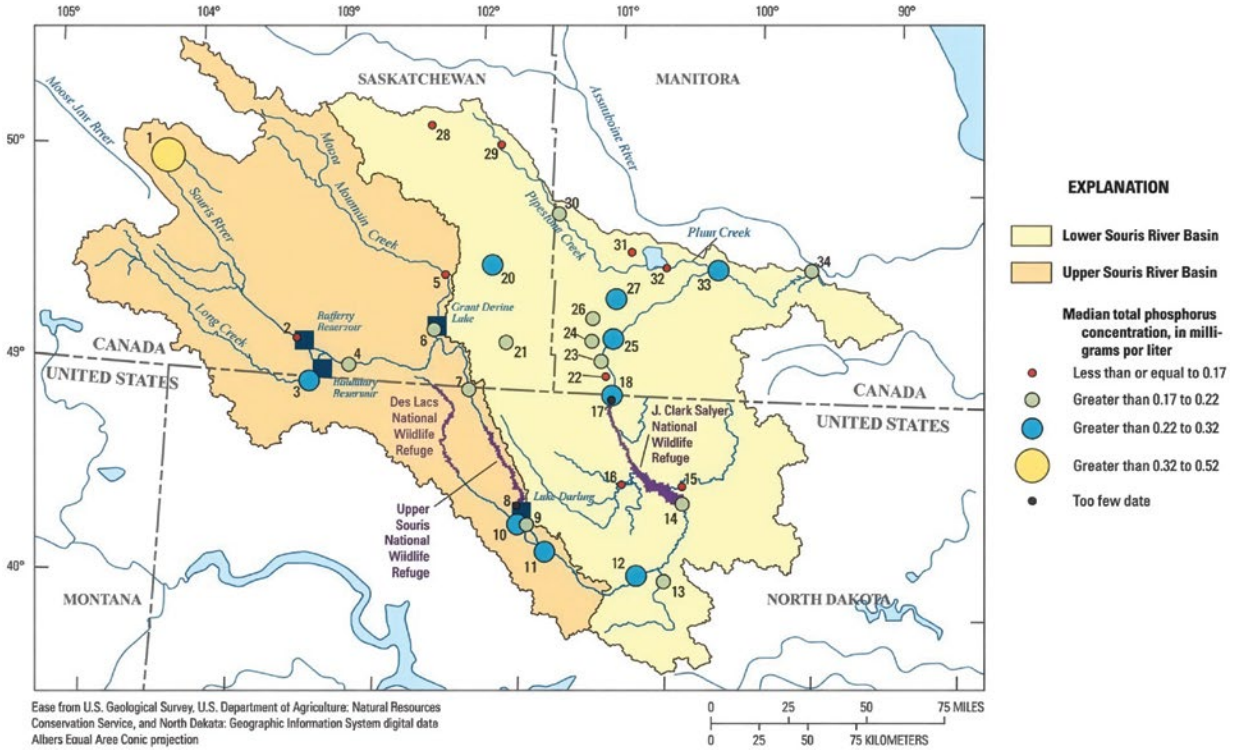


Figure 17: From Souris River Trends Analysis Report – Map showing median concentrations of total phosphorous in the Souris River Basin. Credit: Rochelle A. Nustad and Wyatt S. Tatge.

The ISRB has a mandate to annually report on compliance with WQOs, review existing WQOs every five years and develop new recommendations regarding water-quality objectives. This project has filled a critical knowledge gap for fulfilling this mandate by analyzing water quality trends in rivers and creeks within the Souris River Watershed in Saskatchewan, Manitoba, and North Dakota. Trends in water-quality concentrations can be affected by human-induced changes on the landscape or natural changes in land-runoff interactions that are driven by climate patterns and reflected by changes in streamflow. These trends inform a watershed approach for identifying risks to water quality and management approaches to water delivery under the 1989 Canada-United States Agreement Water Supply and Flood Souris River Basin | International Joint Commission.

During the historical period (1976–2019), large and consistent increases in total dissolved solids and sulfate have occurred since the late 1980s, with the largest increases and the most sites with mildly significant or significant increases generally occurring during the middle period (1988–2005). The most consistent spatial and temporal trends observed during this study was large and consistent increases in sulfate and total dissolved solids among tributary and main-stem sites since the late 1980s. Sulfate is ecologically important in natural waters and aquatic organisms use sulfate (e.g., it acts as an essential plant nutrient) and low concentrations can limit algal growth. Higher concentrations can lead to gastrointestinal health consequences in humans and the development of kidney stones. High total dissolved solid concentrations can result in unpleasant odor and bitter taste issues in drinking water.

The basin-wide approach of this report provided an improved understanding of water-quality conditions in the Souris River Basin, to assist the ISRB in assessing current water quality conditions, exceedances of WQOs, informing potential changes to water management in the basin, and serve as a starting point for tracking future progress. Although a better understanding of spatial and temporal changes in water quality in the basin was gained from this study, gaps in understanding of water-quality conditions were also identified for future study.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

International Red River Watershed Board (IRRWB)

Figure 18: The International Red River Watershed Board was hosted by Brokenhead Ojibway Nation during a visit to Brokenhead Wetland Ecological Reserve Interpretive Trail in August 2024. Credit: Lyne Sabourin.

Building the Foundation for Indigenous Collaboration in the International Red River Basin

In 2021, the International Red River Watershed Board (IRRWB) undertook a project to improve overall understanding of the rights, interests and priorities of the First Nations and Tribes in the International Red River Basin. The work incorporated research, workshops, and a final report entitled Indigenous Nations Roundtable to build a common understanding of the Nations and Tribes in the Red River Basin through virtual meetings and workshops including Nations on both sides of the international border. This foundational work led to a second event, focused on building a common understanding amongst Board members about Indigenous rights, treaties, legislation and relationships with land and water for the IRRWB. The event took place on Brokenhead Ojibway Nation territory August 21–22, 2024 and included a tour and discussion led by First Nations, Metis, and Tribal members. The Board has begun implementing recommendations from this work and continues to integrate these recommendations in their work and work planning.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly;
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues; and
- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities.

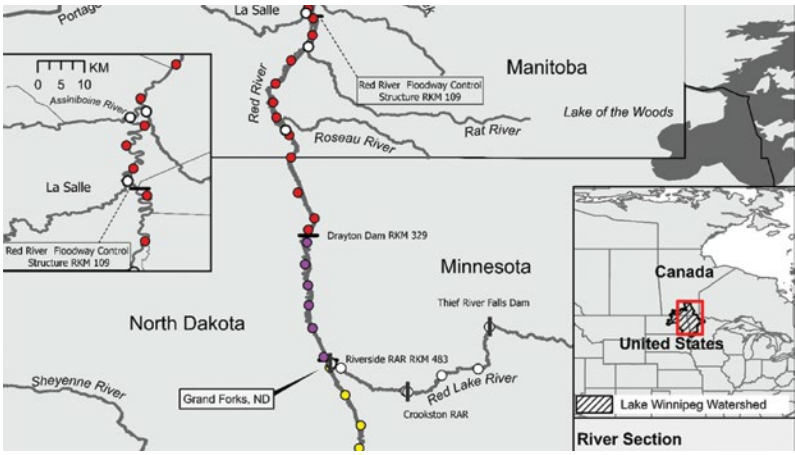


Figure 19: From the Integrating Fish Passage Considerations into Cultural and Ecological Connectivity in the Red River Watershed report – A map of the receiver array from Lake Winnipeg down through the Red River system and its tributaries. The different colors denote different portions of the river system for analysis purposes. Credit: Marshall Stuart/Mark Pegg.

"The IWI project Building the Foundation for Indigenous Collaboration in the International Red River Basin enabled the gathering of Indigenous Nations (First Nations, Red River Metis and Tribal Nations) from both sides of the border to discuss priorities related to the International Red River Watershed Board and the International Joint Commission through a roundtable dialogue. The outcome of the roundtable was to inform future opportunities for collaboration and identify recommendations for meaningful and respectful inclusion of Indigenous peoples and knowledge in the work of the International Red River Watershed Board (IRRWB) moving forward. The perspectives shared at the roundtable, led to 13 recommendations that have been accepted by the Board and are now at various stages of implementation. These recommendations have informed the strategic plan and Board priorities with a key milestone of having at least one Indigenous member appointed to each IRRWB subcommittee achieved in 2025. The recommendations continue to be advanced by the Board with the support of the Indigenous Collaboration Task Team"

— UTE HOLWEGER, OUTREACH AND ENGAGEMENT COMMITTEE AND INDIGENOUS TASK TEAM, IRRWB

Evaluation of Factors Contributing to Trends in Sulfate, Chloride, and Total Dissolved Solids in the Red River Basin: Statistical Models

The project sought to identify factors contributing to the increasing concentrations of sulfate, total dissolved solids (TDS), and chloride as a group in the Red River Basin and evaluate the relative effect of those factors on water quality objectives for the Red River at Emerson, Manitoba. A key question is to what extent rising concentrations of these substances are attributable to human activity (and which activities those are) versus large-scale natural processes. These pollutants can lead to taste and odor problems, corrosion, scaling, and potential health concerns, as well as impacting aquatic life and water quality. Findings from a recently completed trend analysis of stream water quality in the Red River Basin, funded as an IWI project, determined that concentrations of sulfate and TDS have increased substantially and significantly across the basin from 2000–2015 including on the Red River at the US/Canada border, and to a lesser extent chloride concentrations. Concentrations of sulfate and total dissolved solids routinely exceed water quality objectives (WQOs) established for the Red River at the US/Canada border. This work will provide IJC with critical information concerning the cause and source for elevated levels of these constituents and will also provide a critical piece of information in the IRRWB's routine review of threshold levels for these water quality objectives.

This project addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities; and
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

Supporting Wastewater Utility Nutrient Voluntary Performance Improvement Through Training and Technical Assistance in the Red River Basin

Continued educational opportunities for operators at wastewater treatment plants are a significant component of meeting binational water quality goals and objectives. The project found that operators at wastewater facilities are committed to improving water treatment work but in many cases are not connected to information sources or encouraged to look at opportunities for improved performance. A follow-up project focused on ameliorating performance at one site. The wastewater facility in Halstad, Minnesota, has seen an approximately 70% reduction in the amount of nitrogen and phosphorus released into the Red River annually thanks to a wastewater treatment optimization program funded by the Red River Basin Commission (RRBC) and the IJC.

This project addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities.

Integrating Fish Passage Considerations into Cultural and Ecological Connectivity in the Red River Watershed

Infrastructure installed to prevent flooding may block the passage of species that are both ecologically and culturally significant. Increasing efforts dedicated to Lake Sturgeon recovery and reintroduction demonstrate the linkage between ecology and culture. Lake Sturgeons are regarded as spiritual keepers of the fishery in the Ojibwe culture. They are also indicators of a properly functioning ecosystem as they are a particularly vulnerable species to habitat fragmentation and degradation due to their need for long reaches of river to complete their life cycle. The project is assessing the movement of Lake Sturgeon and other native species of concern to evaluate whether there is sufficient connectivity in the Red River Watershed to allow for the completion of fish life cycles.

This project addresses the IWI objective of contributing to the prevention and resolution of watershed issues by building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities.

Figure 20: Researcher Marshall Stuart holds a lake sturgeon caught in the Red River watershed. Credit: Blake Logan.

International Rainy-Lake of the Woods Watershed Board (IRLWWB)

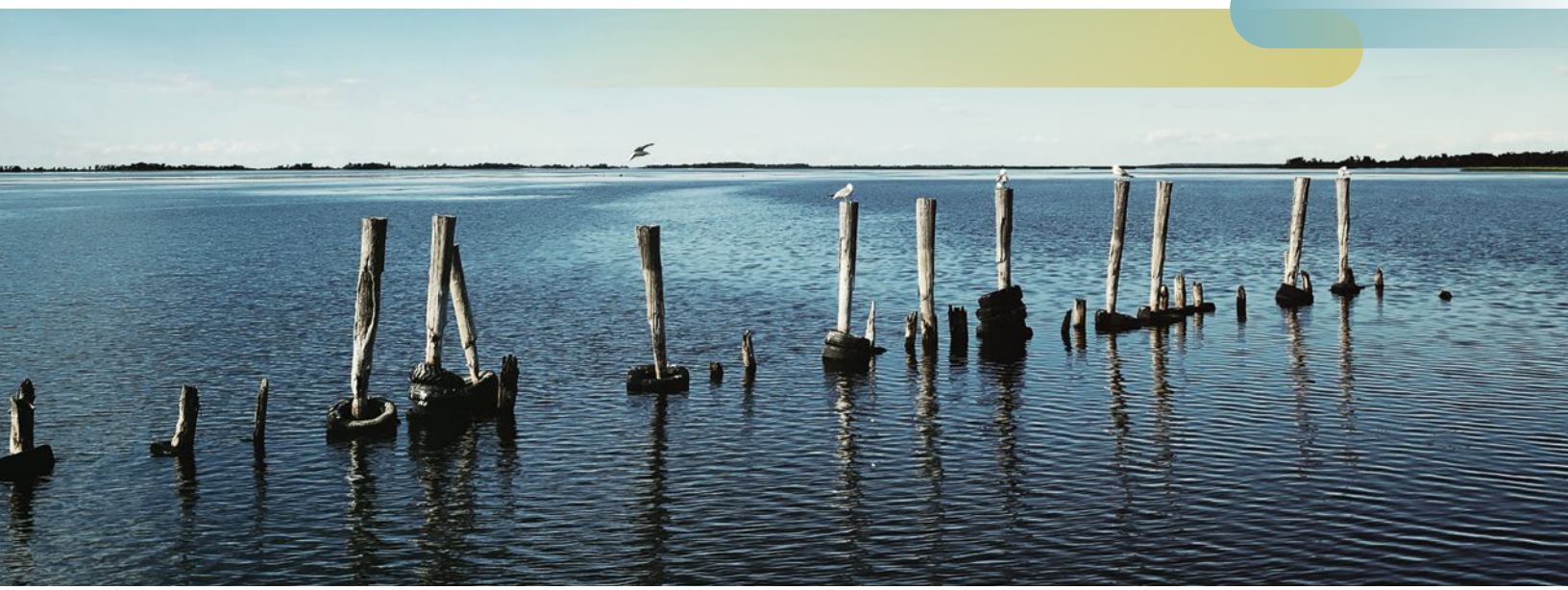


Figure 21: Wheelers Point, Rainy-Lake of the Woods Basin. Credit: IJC.

Southern Shore Barrier Island Erosion Investigation

Due to numerous factors, the sediments at Pine, Curry and Sable Islands, located within the International Rainy-Lake of the Woods Watershed, are eroding. This erosion has reduced the size of these islands and without determining the cause(s) of erosion, these islands are at risk of further degradation which negatively impacts the community, water quality, habitat, and wildlife in Lake of the Woods.

Local and state partners were seeking to better understand erosional processes which are occurring, and how they tie into resiliency, recovery and climactic factors. Using historical data and models to assess cause, it was first determined that the creation of the Norman Dam in the late 1800s elevated the water levels on the Lake of the Woods enough to erode the original set of islands at the mouth of the Rainy River. The influx of sediments from erosion of the new shoreline resulted in the creation of a new set of barrier islands, which are present today. Eventually, the sediment transport regime that stabilized the current islands was interrupted through the construction of hard structures along the southern shoreline.

This interruption in the longshore sediment transport, which occurs parallel to the shoreline, has prevented the islands from healing from storm damage. It was determined that major erosion is caused by extreme flow events occurring during periods of high water, which then allows more typical high flow events to erode the islands into the lake.

The project found that solutions for the erosion of the barrier islands come in two forms: regulation and remediation. Remediation would involve the nourishment of the islands with new sediment and vegetation to encourage their regeneration and stabilization. Regulation would address the reasons that the islands began to erode originally and encourage a natural sediment transport cycle.

The study recognized that the erosion of the barrier islands, as well as once protected shorelines by the barrier islands, is resulting in a decreased water quality for the lake. This reduced water quality will likely require action from the IRLWWB in accordance with the IJC's directive to the International Rainy-Lake of the Woods Watershed Board (IRLWWB) 4a & 4b. (https://www.ijc.org/en/rlwwb/directive)

"The IWI process has been instrumental in addressing essential projects documented in the Lake of the Woods Water Quality Plan of Study (WQPOS 2014), the document that shaped the priorities for the newly formed Rainy-Lake of the Woods Watershed Board in 2013. The IWI Lake of the Woods Southern Shore Barrier Island Erosion Investigation was in direct response to a WQPOS project. This project has cultivated partnerships between agencies and stakeholders on both sides of the border to address habitat loss and phosphorus loading experienced by the continued erosion of the unique freshwater barrier islands."

— MIKE HIRST, IRLWWB U.S. MEMBER

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

Figure 22: From the Southern Barrier Island Erosion Report – images showing the change in size and location of Pine & Curry Island & Sable Islands in 1965 (Top) and 2022 (Bottom). Credit: AMI Consulting Engineers.

Aquatic Invasive Species (AIS) Risk Assessment for Rainy-Lake of the Woods Watershed: Phase I, Coarse Filter

Given the popularity of the Rainy-Lake of the Woods Basin as a tourist destination that is close to several large water systems, there is ample passageway for AIS to enter. When this project was proposed, there was a lack of consistent AIS prevention efforts across jurisdictions, which left the basin vulnerable, so there was an interest in assessing risk collaboratively to support future prevention efforts.

This project was done through a partnership of the IWI and the USGS and involved the creation of a Risk Assessment Tool. The tool included a database of AIS and their potential level of risk to the basin. Based on proximity, ease of transport, or introduction and known impact to the Rainy-Lake of the Woods Basin or other impacted ecosystems, the 10 highest priority species identified for risk evaluations were designated.

The project has helped build a shared understanding of AIS in the basin and has increased the Board's technical capacity. This has supported the development of consistent, multi-jurisdictional and binational efforts on AIS for the entire watershed, with federal, state, and provincial involvement to provide a platform for resource agencies to focus efforts on priority risks and prioritize efforts for AIS education, enforcement and projects needed to protect the watershed from AIS.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

Group	Scientific name	Common name
Crustaceans-Cladocerans	*Bythotrephes longimanus*	spiny waterflea
Crustaceans-Crayfish	*Faxonius rusticus*	rusty crayfish
Fishes	*Neogobius melanostomus*	round goby
Mollusks-Bivalves	*Dreissena polymorpha*	zebra mussel
Mollusks-Gastropods	*Bithynia tentaculata*	mnd bithynia, faucet snail
Mollusks-Gastropods	*Potamopyrgus antipodarum*	New Zealand mudsnail
Plants	*Butomus umbellatus*	flowering rush
Plants	*Iris pseudacorus*	yellow iris, yellow fiag iris, paleyellow iris
Plants	*Myriophyllum spicatıon*	Eurasian watermilfoil
Plants	*Phragmites australis australis*	common reed

Figure 23: From the AIS Risk Assessment for Rainy-Lake of the Woods Watershed Report – Top 10 priority species for risk evaluation for the Rain-Lake of the Woods Basin. Credit: Amanda H. Bell, Leon R. Katona, and Nicole M. Vellequette.

"The notion of managing water through a whole-of-watershed approach has been a critically important innovation that allows boards like ours, the International Rainy-Lake of the Woods Watershed Board, to address inter-jurisdictional challenges at a fundamental level. For example, under IWI-funded projects, the high degree of international, watershed-wide cooperation that has gone into preparing a comprehensive AIS (aquatic invasive species) risk assessment for Rainy-Lake of the Woods (2022) and to providing guidance on international water quality objectives & Board alerts levels for water quality (2024) ensures that these efforts meet water quality and ecosystem health challenges that span borders, while recommending paths to durable, long-term management solutions for complex watersheds that face dynamic vulnerabilities. The IWI is not, however, intended to provide core operational support to boards, and often watershed management initiatives that begin as one-off IWI projects reveal the need for long-term, sustained investment to adequately respond to challenges and to deliver lasting solutions. Though an invaluable catalyst for research and action, the IWI, in its current form and at its current level of funding availability, is insufficient to meet the expansive needs of the growing number of watershed boards, especially as aquatic ecosystem complexity escalates in response to the impacts of a changing climate."

– TEIKA NEWTON, IRLWWB CANADIAN MEMBER

Rainy-Lake of the Woods State of the Basin Report (SOBR) 2022

This project produced a Rainy-Lake of the Woods State of the Basin Report (SOBR) 2022 update (completed in 2022) by way of a binational project partnership of the Lake of the Woods Water Sustainability Foundation, the International Multi-Agency Arrangement, Grand Council Treaty 3 and the Board. An up-to-date SOBR provides the Board, partners in the project, and the public with a current understanding and reporting of priority issues in the Basin, an assessment of progress since the last report in 2014 (www.lowwsf.com/sobr), a gap analysis and needs recommendations to inform work planning, public communications tools and relationship building with First Nations, Métis and Tribes, and the inclusion of Indigenous knowledge systems.

The focus of the latest SOBR is on changes that have occurred from 2014 to 2022 in the primary areas of concern, which have been identified in past research as nutrients, contaminants, climate change, aquatic invasive species, and erosion/water levels. Since 2014, there have been additional concerns with respect to the health of the fishery in the north end of Lake of the Woods as well as human health concerns, so both have been included as concerns in this report. The report also addresses watershed governance and water quality objectives and presents a comprehensive gap analysis and needs assessment. This Board has a wide array of commitments in its purview, and this updated SOBR provides a roadmap to identify priorities and recommendations for an effective way forward. A primary next step is to address nutrients and harmful algal blooms in the Lake of the Woods basin, and the Board will play a key role in this alongside agency partners.

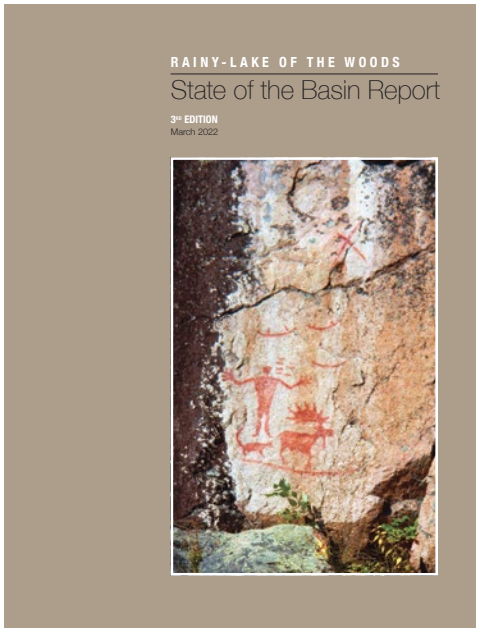


Figure 24: Cover page of the 3rd Rainy-Lake of the Woods State of the Basin Report. Credit: Lake of the Woods Water Sustainability Foundation.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

Assessing Vulnerability of Waters to Mining in the Rainy Lake of the Woods Watershed

The past, present and future impacts of mining in the Rainy-Lake of the Woods basin has been a topic of concern for the IRLWWB for many years. The IRLWWB and the Health Professionals Advisory Board (HPAB) began to address this by first assessing the extent of historical and current mining, mineral potential, and the availability of relevant data. Data collected in this first phase included mine locations, water quality, aquatic community health, mineral potential and hydrology.

Using all the collected data, a spatial analysis was conducted to identify any gaps in existing data, identify any priority areas for impact assessment and additional monitoring, and identify the elements required to develop a risk identification framework. The results of this first phase of the study, completed in 2024, will allow the IRLWWB to better assess what additional data may need to be gathered and to make informed recommendations to the IJC and other agencies about those needs. A Phase 2 was recommended in order to fulfill the tasks outlined in the original proposal.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

"The IWI Mining Vulnerability Study advances efforts toward the overall goal of better understanding the potential cumulative effects of past present and potential mining on water quality in the basin. To meet this goal the IRLWWB has been charting a path to summarize past, present, and potential mining, prioritize sub-watersheds based on potential impacts of future mining, and develop a snapshot of current data available to assess impacts. Results of the multi-phase project are expected to inform basin monitoring needs, and support decision making with respect to future mining and its impacts. The potential impacts of mining remain top of mind for communities on both sides of the Border in our basin. IWI support for this project is vital in ensuring the Board has the facts to inform future decision making and engage in dispute resolution/issues management in a credible manner"

— JIM STARK – U.S. MEMBER, DOUG FRANCHOT – U.S. MEMBER, AND MATT MYERS – CANADIAN MEMBER, IRLWWB

Figure 25: Rainy-Lake of the Woods Basin. Credit: IJC.

International Lake Superior Board of Control (ILSBC)

Figure 26: View of Saulte Ste Marie International Bridge from Whitefish Island, Ontario. Credit: Erika Klyszejko.

Strengthening Partnerships Between the Lake Superior Board of Control and Batchewana First Nation

Whitefish Island, located in the St. Marys River near Sault Ste. Marie, ON and downstream of the Compensating Works at the outlet of Lake Superior, is part to the traditional territory of the Batchewana First Nation (BFN). In recent years, high flows through the Compensating Works have resulted in flooding of trails and recreational infrastructure on the island and impacted BFN activities and access. The International Lake Superior Board of Control sought expert guidance from consultants to organize and facilitate a face-to-face meeting with the BFN. The purpose of this engagement effort and in-person session was to build meaningful relations with BFN; to honour a commitment, from a previous engagement session to meet in person; and to find ways to collaborate in the on-going review of Plan 2012 as part of the GLAM Committee's adaptive management process. Meeting facilitators provided follow-up meeting notes along with a final report with advice on the next steps towards building a lasting relationship.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities.

"The International Lake Superior Board of Control (ILSBC) received funding from the IWI in the Fall of 2023 for the IWI project, "Re-establishing a relationship between the Lake Superior Board of Control and Batchewana First Nation". The goal of this project was to facilitate a productive meeting with the Batchewana First Nations along the St. Marys River in Sault Ste Marie, Ontario. The funding was used to hire an expert contractor to support the planning preparation and execution of the meeting held on November 21, 2023. The facilitator provided read-aheads to the ILSBC and all other participants to help them prepare for the meeting with the BFN. The meeting was very productive and vastly improved communications between the BFN and the ILSBC on the issue of regulating flows through the compensating works on the St. Marys River. Thanks to the IWI funded project, the ILSBC and the BFN now have a better working relationship and lines of communication to rely on when needed."

— BRYCE CARMICHAEL, ILSBC U.S. SECRETARY

Figures 27 & 28: Visit of the Board to Whitefish Island as part of the "Re-establishing a relationship between the Lake Superior Board of Control and Batchewana First Nation" IWI project. Credit: IJC.

International St. Croix River Watershed Board (ISCRWB)

Figure 29 & 30: International St. Croix River Watershed Board Canadian Co-Chair Nicole O'Brien and US co-Chair COL Justin Pabis speaking to local reporter after the June public meeting. Credit: Daniel Ferreira, Christine San Antonio, and Rob Stephenson.

Supporting Alewife Restoration in the St. Croix River Watershed – Anadromous Fish Counts at Milltown Dam, Map and Document Library, and Youth Engagement Program

A sensitive topic dating back to the 1980s, concerns from fishing guides led to the closure of fishways on the St. Croix River. The main concern was about the river herring, specifically, alewife populations, causing decline on smallmouth bass populations which was impacting sport fisheries. Although the state of Maine and province of New Brunswick disagreed on the cause for the decline of recreational fisheries in the St. Croix River Watershed, the State of Maine closed fish passage on the U.S. side. This led to the population of alewives dropping to an all-time low.

The International St. Croix River Watershed Board (ISCRWB) worked with the St. Croix International Waterway Commission on this project to assist in preventing and resolving disputes regarding alewives. The results of this and other IWI projects in this basin have showed that the alewives did not have a negative impact on smallmouth bass which led to the reopening of fishways. The purpose of this project was to support and validate alewife population dynamics models through fish counts. The outputs were used to support alewife restoration planning, and support agencies with establishing plans, priorities, and targets for future alewife restoration efforts. Throughout this project, the ISCRWB played an important role in encouraging the watershed's diverse stakeholders to work together toward alewife restoration and multi species fish management and continue to do so. Alewife numbers have increased steadily since the IWI began supporting this effort. The results from this study improved the understanding of how the fishery is recovering in the system to prevent future disagreements between different binational jurisdictions over maintaining multi-fish species management for a variety of uses.

This project addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities; and

- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

Understanding Water Quality Stresses and Recent Trends in the St. Croix River Watershed

The potential for harmful algae blooms in the St. Croix poses a threat to the health and uses of the waterway. In 2018, an Environment and Climate Change Canada water quality trend analysis at two stations on the St. Croix River, at Milltown and Forest City, showed an increasing trend in nutrient concentrations, including higher phosphorus levels. To better understand stressors and water quality trends, a two-part IWI project created a watershed stress index and enhanced water quality monitoring plan. This monitoring plan builds on existing water quality sampling activities, where applicable, or recommends new sampling activities to better track nutrient levels throughout the watershed during the spring to fall period, when most biological activities occur. Monitoring will help better define the relative contribution of various stressors in the basin such as targeting outflows of sub watersheds, hydrological events, structures (e.g., dams) and discharge patterns (e.g., low flow and spring freshets).

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities; and
- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues.

"This project exemplifies the strengths of the IWI program, bringing together diverse stakeholders, including federal and local governments, local Tribes, private industry, and non-profits. By utilizing IWI funding, the Board has successfully coordinated targeted water quality data collection across various locations within the watershed, in response to observed increases in nutrient levels. The data gathered will be crucial for project leaders in pinpointing the potential sources and causes of these nutrient increases, ultimately guiding efforts to manage and improve water quality effectively."

— NICK STASULIS, U.S. ISCRWB MEMBER

An Analysis of Water Management Requirements in the International St. Croix River Watershed

Meeting the requirements of permits and licenses as well as soft targets in the St. Croix is complicated by fast-changing hydrologic conditions. The purpose of this project is to help the Board better understand current controls and constraints of water requirements/needs, to help inform future projects, to share with partners and watershed users, to raise awareness and to avoid tensions between users. The project compiled IJC, federal, state/provincial and local water license and permit conditions and requirements for water quality, water flow and lake levels, as well as targets for water level or flow conditions for activities overseen by federal, state, provincial, or municipal authorities but not requiring a license or permit within the International St. Croix River watershed.

This work addresses the IWI objective of contributing to the prevention and resolution of watershed issues by:

- communicating transboundary water issues at the local, regional, and national levels, including First Nations, Métis, and Tribes, to increase awareness and understanding of these important issues;
- facilitating discussions, participating in development of shared solutions, creating decision-making tools, fostering common ground, brokering resolutions, and bringing unresolved issues to the attention of the IJC, including by engaging with broader communities that are affected by these issues more directly; and
- building a shared scientific understanding of watershed issues by harmonizing data and information, developing shared tools, knowledge, and expertise, and expanding outreach to and cooperation among stakeholders and Indigenous communities.

Figure 31: Previous location of Milltown Dam on the Skutik (St. Croix) river. Credit: Daniel Ferreira, Christine San Antonio, and Rob Stephenson.

Figure 32: Skutik (St.Croix) river at Grand Falls Dam outflow. Credit: Daniel Ferreira, Christine San Antonio, and Rob Stephenson.

Key Progress on Strategic Initiatives

Caption: View of Lake Sherburne and spillway in Glacier National Park, Montana. Credit: Ethan Johnston.

In the IWI 5th Report to governments (IWI-5th_Report_to_Governments_2020.pdf), the IJC indicated its interest in starting new, and progressing existing, IWI-related initiatives along the transboundary in 2020–2025, specifically regarding Adaptive Management and the potential benefits of the establishment of new watershed boards. Since the 5th report, progress has been made in both areas.

Adaptive Management

Adaptive management uses the information obtained from long-term monitoring and modeling to support the evaluation of plans, policies and practices and adjusts them as knowledge improves or as conditions change. The very nature of many of the IWI projects feeds into the IJC's focus on Adaptive Management (AM) and the responsibilities of boards to move in the direction of AM. In the 5th IWI report, the IJC declared its intention to apply the concept of Adaptive Management to:

- Conduct regular reviews using IWI funds to ensure that relevant water quality issues are being focused upon; and
- Review how climate change could impact each of its boards to inform how operations and plans may need to be adjusted. The IWI would also be vital in ensuring that information and lessons learned are effectively shared between boards.

The IJC has followed through on both, through the application of the Climate Change Guidance Framework (CCGF) and by supporting regular reviews (on a 5-year cycle) of water quality objectives, such as nutrients (nitrogen, phosphorus), total suspended solids (TSS) or dissolved oxygen (DO).

To strengthen its ability to respond to changing climate events and hydrological conditions, the IJC developed a CCGF in 2017. The CCGF lays out a four-step process for boards to determine how each one's unique responsibilities may be affected. These steps are: organize, analyze, act and update. Several IJC boards have applied the CCGF to their responsibilities in basins across the transboundary including Osoyoos Lake, Kootenay Lake, Souris River, Red River, and Rainy-Lake of the Woods. This IJC initiative was built on the premise that IJC boards could learn from each other and apply lessons learned as they plan for possible future climate scenarios in their watersheds. To support this, the IWI held workshops in April and October 2023 and October 2024 where multiple boards were able to learn from each other and discuss shared challenges they face relating to changing hydrologic conditions in their respective basins.

In 2023, IJC staff and IJC boards investigated how climate resiliency can be achieved through adaptation actions and adaptive management. These include continuing to support the implementation of the CCGF by IJC boards across the transboundary and improved communications and collaboration on the IJC's climate resiliency work. IJC boards are in different stages of applying the CCGF to their work, but all are progressing in following its guidance which will allow boards to better understand potential risks to their responsibilities posed by changing climate and consider management depending on those risks. Continuing progress will best occur with information sharing and interaction among IJC boards.

Establishing New Watershed Boards

Since the initial concept of establishing watershed boards was first developed in the late 1990s, the IJC created watershed boards as basins identified the benefits of this approach. The first two watershed boards to be designated were the International St. Croix River Watershed Board (in 2005) and the International Rainy-Lake of the Woods Watershed Board (in 2013). To assist in further designations, the IJC worked with governments to develop watershed board criteria. Soon after, in 2021, the Red River Board was designated by the IJC as the International Red River Watershed Board. The International Souris River Board continues to make progress toward meeting the criteria of an international watershed board. The IJC has also discussed new basin candidates for consideration for the watershed board approach including the Osoyoos Lake region. After an initial scoping exercise, the IJC is doing further work to more deeply explore interest and feasibility in establishing an international watershed board in the Osoyoos Lake region.

IWI Management

Caption: Sunset on Lake Darling, Souris River Basin. Credit IJC.

The IJC continues to strengthen IWI program management with changes to promote on-the-ground results, accountability for use of funds, and measurements of success.

Twice a year, the IWI solicits IJC boards to submit proposals to Requests for Project Ideas (RFPIs) for activities that prevent and resolve water management related issues or improve understanding of particular issues in their basin. IJC staff improved processes and documentation for the RFPI to ensure that proposals are closely aligned with IJC board responsibilities and updated project proposal review documentation to improve tracking and efficiency. The IWI has enhanced its project tracking to monitor projects, their progress and successes more easily.

In addition to improvements to the RFPI process, the IWI also developed templates for board workplans and annual watershed board reports to the IJC. The IWI has also held three workshops with IJC boards and associates in conjunction with IJC Semi-Annual meetings, two in 2023 and one in October 2024, to discuss the program and continue to receive feedback from boards on their needs and potential improvements for IWI program management.

Improving the IWI program also means facilitating improved public communication and outreach. The IJC developed an IWI StoryMap to better communicate IWI project highlights to the public, governments, board members, and other interests. The IWI also created IWI Project Summary pages available on the IJC website to increase transparency and improve public understanding about the importance and value of IWI projects to boards and the watersheds where they work.

"The International Rainy-Lake of the Woods Watershed Board's Aquatic Ecosystem Health Committee has experienced challenges with time and resources for contracting and project management of IWI proposal processes in the past. To overcome these issues the IRLWWB has worked to involve other Board and committee members on projects to share the workload. In addition, the IJC Advisors have been extremely helpful in assisting the project leads with the process."

— MIKE HIRST, IRLWWB U.S. MEMBER

IJC Commissioners' Strategic Priorities

Caption: Gravel Island Provincial Park, St. Croix River. Credit: IJC.

Since its inception, the IWI has played an important role in supporting the IJC's strategic priorities. The IWI's watershed-based framework enables it to translate these priorities to provide local, measurable benefits. In doing so, the IWI furthers the Boundary Waters Treaty goal of preventing and resolving disputes over transboundary waters, a duty on which Commissioners place high importance.

Progress on 2019–2023 Commissioners' Priorities

In the IWI 5th report to governments, the IJC identified strategic priorities for the period of December 2019–July 2023.

As outlined in the IWI 5th Report to Governments, the 2019–2023 strategic priorities most relevant to the IWI were: climate change and adaptive management, transboundary water quality, and First Nations, Métis and Tribal governments, organizations and citizens. Progress has been made in all of these priorities, as documented below.

1. Climate Change and Adaptive Management

During the reporting period, Commissioners were focused on the extent to which changing climatic patterns have begun to impact the IJC boards and their work. The IJC identified the need to continue to adapt its approach to the management of water levels and flows and to the advice it provides to governments to support their efforts to maintain and restore water quality in transboundary watersheds, in light of these dynamics. Since the fifth IWI report, the IWI has helped IJC boards that span the transboundary region move ahead on numerous projects in this regard. Examples include:

- In the Rainy – Lake of the Woods watershed, the IRLWWB's Adaptive Management Committee (AMC) is leading implementation of the CCGF. Recent work has largely focused on embedding climate change performance indicators into an enhanced model platform and making recommendations for water quality alerts and objectives with a focus on reduction of harmful algal blooms.
- The IRLWWB's AMC is also developing an inundation visualization tool that will provide a means of visualizing lands / properties that are at high risk for flooding under a variety of water levels management scenarios and precipitation regimes associated with climate change.
- The International Kootenay Lake Board of Control's climate change vulnerability assessment (see *IWI projects by Board* section)
- The International Souris River Board is collaborating with universities to develop inputs and outputs for climate modeling. This will provide information on potential future impacts to the Board's responsibilities so it can make informed decisions and recommendations to the IJC.
- The International St. Croix River Watershed Board's review of water management requirements (see *IWI Projects by Board* section)

The continuing hydrologic variability associated with climate change has increased workloads for IJC boards and, in turn, increased demand for IJC funding support. Such support is necessary for hydrologic analysis, modeling and related public engagement activities. The IWI has continued to assist boards through support and direct assistance for board projects.

2. Transboundary Water Quality

Human Health and Mining

- the IRLWWB's project, in partnership with the Health Professionals Advisory Board, to assess the vulnerability of the waters in the RLOW watershed to mining (see Accomplishments section).

Eutrophication, Harmful Algal Blooms and Nutrient Loading

- The International St. Croix River Watershed Board's project to better understand stressors affecting water quality within the river and to undertake enhanced water quality monitoring (see Accomplishments section)

Monitoring and Modelling

- The IRLWWB's project to determine causes of island erosion on Lake of the Woods (see Accomplishments section)
- The International Souris River Board's two projects to improve understanding of water quality and ecosystem health so as to update WQOs (see Accomplishments section)
- The Red River Watershed Board's project to support improvements at wastewater utility point sources (see Accomplishments section)

Adaptive Management for Water Quality

- In January 2017, the IJC provided a report to governments on the status of water quality objectives (WQOs) and alert levels (ALs) for four boards with water quality mandates outside of the Great Lakes: the International Souris River Board, the International Red River Watershed Board, International Rainy-Lake of the Woods Watershed Board, and the International St. Croix River Watershed Board. In the 2017 report, the IJC identified the need to review the WQOs and ALs for the four boards listed. Since that 2017 report, the IWI has revisited the WQOs and ALs, collaborated with boards to better track these objectives and levels, and is working towards understanding their effectiveness.

3. First Nations, Métis and Tribal governments, organizations and citizens

The IJC has revised the RFPI process (in collaboration with the IJC Indigenous Collaboration Team) to encourage IWI projects with First Nations, Métis and Tribal government collaboration and has made it easier for boards to highlight that aspect of their projects.

Specific projects that have included Indigenous collaboration within the reporting cycle include:

In the St. Croix River Watershed:

- Study to Explore Upstream and Downstream Fish Passage Improvements on the St. Croix River, 2019. Indigenous partners: Passamaquoddy Tribe, Peskotomuhkati Nation
- Supporting Alewife Restoration in the St. Croix Watershed – Anadromous Fish Counts at Milltown Dam, 2021 Indigenous partners: Peskotomuhkati Nation, Passamaquoddy Nation
- Anadromous Fish Counts in the St. Croix 2022, 2023 and 2024. Indigenous partners: Passamaquoddy Recognition Group Inc. (2022, 2023) and Sipayik Environmental Department (2024)

In the Rainy-Lake of the Woods Watershed:

- Project WET inclusion in Minnesota School Curriculum. Indigenous partners: Bimose Tribal Council, Anishinaabeg of Kabapikotawangang Resource Council, Kenora Métis Council
- Rainy-Lake of the Woods State of the Basin Report (SOBR) 2021. Indigenous partner: Grand Council Treaty #3.

In the Red River Basin:

- Building the foundations for Indigenous collaboration in the International Red River Basin – Phase I. Indigenous partners: Southern Chiefs Organization, Manitoba Métis Federation

- Phase 2 – Indigenous Collaboration Project – Advancing Engagement and Indigenous 101 – Cultural Competency Training. Indigenous partners: Tatanka Consulting Group, Lake Winnipeg Indigenous Collective, Manitoba Métis Federation (TBC)
- Integrating fish passage considerations into cultural and ecological connectivity in the Red River watershed. Indigenous partners: White Earth Nation, Rainy River First Nations

In the Osoyoos Lake basin:

- Osoyoos Lake Water Science Forum 2022. Indigenous Partners: Okanagan National Alliance, Confederated Tribes of the Colville Reservation

Lake Superior:

- Re-establishing a relationship between the Lake Superior Board of Control and Batchewana First Nation. Indigenous partner: Batchewana First Nation

The activities outlined above outline some key examples of work to support the 2019–2023 Commissioner Priorities and contribute to preventing and resolving disputes through continued work to maintain data and a common understanding of risks and challenges which helps prevent surprises and allows boards to work together and with partners in the basin to solve problems, communicate and collaborate with key interests and prepare for future conditions.

Looking Forward

The IWI will face significant challenges in the years ahead. Federal agency support for IWI work could be difficult to secure due to competing priorities for scarce funds. The uncertain budget outlook in both the U.S. and Canada will require the IJC to make an even stronger case that the IWI maximizes efficient use of funds and adds value by bringing people together to collaborate and prevent and solve problems efficiently. An equally significant challenge will be continuing historic changes to the transboundary hydrologic systems the IJC oversees, putting increased burdens on governments, communities and the IJC.

Against this backdrop, in August 2024, IJC Commissioners identified three key priorities for the upcoming years:

- enhance the IJC's transboundary watershed approach
- enhance the role of First Nations, Métis and Tribal Governments in collaborative governance, and
- enhance IJC efficiency.

The IWI will play an integral role as the IJC works towards fulfilling these priorities.

Enhance the IJC's Transboundary Watershed Approach

Achieving the IJC's mandate in the face of increasing climate change impacts necessitates an intensified and holistic watershed approach in Canada-United States transboundary watersheds. Such a holistic approach is important for considering issues like habitat loss and biodiversity, human health and water quality impacts. The IWI can support these efforts through:

- Facilitating learning for IJC boards on the watershed approach
- Developing action plans to help all boards apply the watershed approach to their work, consistent with their directives
- Intensifying the use of the watershed approach for all IJC boards, including considering the watershed approach in all basins where the IJC has responsibilities
- Developing tools to better understand watershed science and to enhance watershed governance and management practices such as the CCGF

Enhance the Role of First Nations, Métis and Tribal governments in Collaborative Governance

Collaborative governance is fundamental to the thorough decision-making that incorporates the concerns of local communities and ensures coordination, collaboration, and dialogue among local as well as regional transboundary institutions, and the national, provincial, state, and First Nations, Métis and Tribal governments.

> "I appreciate the IWI looking at and protecting the quality of life in Osoyoos Lake and the Okanagan Valley through sustainable water management- water quality, water quantity and aquatic ecosystem health. The Okanagan Similkameen Collaborative Leadership Table, made up of mayors, chairs and chiefs, has just unanimously passed the Terms of Reference which explains the need to work together to protect and restore water in the Okanagan and Similkameen watersheds, now and for future generations. It is important to use the expertise of the IJC/IOLBC, the Okanagan Basin Water Board and Indigenous Knowledge to protect our future"
>
> **— SUE MCKORTOFF, IOLBC CANADIAN MEMBER**

While great progress has been made in several watersheds regarding collaborative governance, there are opportunities for enhancement of understanding and application of this concept regarding Canada-United States transboundary watersheds, especially as it relates to building relationships with First Nations, Métis and Tribal governments. The creation of the Indigenous Collaboration Team in 2020 played a significant role in moving this forward and the IWI program will be an important supportive collaborator.

The IJC will continue to encourage the submission of IWI project proposals that incorporate First Nations, Métis and Tribal collaboration as a central element. The work of watershed boards will further reinforce collaboration, based on their membership and participation. Similarly, the IJC will encourage the submission of IWI project proposals that provide opportunities for partnerships with Indigenous and Western science.

IJC efficiency

The nature of the IWI inherently promotes efficiency. By considering ecosystem problems of water management and water quality through a holistic lens, the IWI brings relevant resources to bear on a given transboundary watershed. This eliminates duplication and fosters greater coordination of IJC and federal government priorities. It also serves the Boundary Waters Treaty's purpose of preventing and resolving disputes by building a common understanding of boundary watersheds on both sides of the Canada-US border.

The IWI also promotes efficiency by bringing members of boards from across the transboundary region together for knowledge sharing and collaboration. One of the three IWI objectives is in fact collaboration. The IJC has supported numerous forums within IWI projects that promote efficiency through the sharing of lessons learned and will continue to do so while also streamlining the processes to maximize the utility of collaboration opportunities.

Efficiency is also served by IWI communications activities. The IWI website (International Watersheds Initiative | International Joint Commission) is a communication tool useful to all boards as well as the public. It is also useful to all levels of government, stakeholders and those in the field of water management. The site includes IWI project summaries including project information, products, and partners, and an IWI project dashboard, and a story map with IWI project highlights. Additionally, IWI staff and Commissioners provide information on the IWI program at IJC board public meetings, and conferences; these also act as excellent opportunities for collaboration.

Leveraging additional local resources with IWI funding is a prime value of the IWI. This not only makes efficient use of funds but also expands the benefits of the IWI and helps the IJC fulfill its mandate from governments. IWI funded projects leverage both external monetary contributions from other agencies, organizations and communities as well as in-kind support. IJC boards that submit IWI project proposals through the RFPI are encouraged to leverage external monetary and in-kind resources and are required to specify the amounts in their proposals. The IWI continues to look for opportunities to improve the program and its efficiencies including the RFPI process, external partner engagement on IWI projects, project tracking and assessment and other essential aspects of the IWI program.

In addition, the IWI 25th Anniversary Showcase Report (2023) considered options for how the program could continue to help the Commission prevent and resolve transboundary water disputes in the future. Several forward-looking concepts from that report are integrated within the strategic priorities listed above and the IWI's 2025–2030 Plan for activities in the coming years.

Figure 33: International St. Croix River Watershed Board meets with basin partners. Credit: IJC.

Closing Thoughts

Caption: Passamaquoddy Bay, St. Croix River Watershed. Credit: IJC.

Since the 1998 reference from the governments of Canada and the United States with respect to international watershed boards, what is now known as the International Watersheds Initiative has proven vital in assisting governments and the IJC in preventing and resolving disputes involving the boundary waters. Perhaps most importantly, it has fostered public participation and problem-solving capacity at the community level within transboundary watersheds. The prudent investment of resources in building this capacity has built a foundation that will endure over time.

As the IWI continues to evolve, it will have the necessary flexibility to support governments and the IJC in meeting the expected dramatic changes in transboundary conditions in the coming decades. Changes in hydrological conditions, improvements in science, enhanced public engagement and a partnership with First Nations, Tribes and Métis are among those expected developments. The IWI is a tool to meet them all.

Appendix I

This list includes IWI projects completed between January 1st, 2020 and December 31st, 2024. For more details on each project, please visit the hyperlinks.

International Lake Ontario-St. Lawrence River Board and Great Lakes-St. Lawrence River Adaptive Management Committee

1. Review of potential ecological impacts from winter drawdown scenarios in Lake St. Lawrence (Internal IWI tracking #: AM-06-2019)
2. Monitoring of Lake Ontario coastal wetland habitat in support of adaptive management – 2019 (AM-02-2019)
3. Regulation documentary and video shorts (ILOSLRB-02-2019)
4. Substrate Classification of St. Marys River to Support Future Ecosystem Modeling (AM-08-2017)

International Lake Superior Board of Control

5. Re-establishing a relationship between the Lake Superior Board of Control and Batchewana First Nation (ILSBC-01-2023)

International St. Croix River Watershed Board

6. Study to Explore Upstream and Downstream Fish Passage Improvements on the St. Croix River (SCRWB-01-2019)
7. Supporting Alewife Restoration in the St. Croix River Watershed – Anadromous Fish Counts at Milltown Dam, Map and Document Library, and Youth Engagement Program – 2020 (SCRWB-01-2020)
8. Understanding Water Quality Stresses and Recent Trends in the St. Croix River Watershed (SCRWB-02-2020)
9. Supporting Alewife Restoration in the St. Croix Watershed – Anadromous Fish Counts at Milltown Dam (SCRWB-01-2021)
10. Supporting Alewife Restoration in the St. Croix Watershed – Anadromous Fish Telemetry Assessments (SCRWB-01-2022)
11. Supporting Alewife Restoration in the St. Croix Watershed Anadromous Fish Assessments in 2023 (SCRWB-02-2022)

International Rainy-Lake of the Woods Watershed Board

12. Project WET inclusion in Minnesota School Curriculum (LOWRR-03-2017)
13. Aquatic Invasive Species (AIS Risk Assessment for Rainy – Lake of the Woods Watershed: Phase I, Coarse Filter) (LOWRR-01-2019)
14. Rainy-Lake of the Woods State of the Basin Report (SOBR) 2022 (LOWRR-01-2020)
15. Assessing Vulnerability of Waters to Mining in the Rainy Lake of the Woods Watershed (HPAB-01-2022)
16. Lake of the Woods – Southern Shore Barrier Island Erosion Investigation (IRLWWB-01-2022)

International Osoyoos Lake Board of Control

17. Osoyoos Lake Climate Change Vulnerability: Phase 1 – Similkameen Basin Hydrologic Model (IOLBC-01-2019)
18. Bathymetry Mapping for U.S. Osoyoos Lake (IOLBC-01-2021)
19. Osoyoos Lake Water Science Forum 2022 (IOLBC-02-2020)

International Red River Watershed Board

20. Red River Telemetry Study – 2018 (IRRB-01-2018)
21. Building the foundations for Indigenous collaboration in the International Red River Basin – Phase I (IRRB-01-2021)
22. Supporting Wastewater Utility Nutrient Voluntary Performance Improvement Through Training and Technical Assistance in the Red River Basin (IRRB-02-2020)
23. Drought Risk Analysis of Stochastically Generated Streamflow for the Red River Basin (IRRB-01-2019)

Accredited Officers of the St. Mary and Milk Rivers

24. Understanding Recent and Historic Isotope Signatures in the Milk River (SMM-01-2021)
25. St Mary-Milk Rivers Consumptive Use Study – Remote Sensing Component (SMM-01-2019)

International Souris River Board

26. Souris River Trends Analysis (ISRB-01-2019)
27. Determination of factors affecting dissolved oxygen levels in the Souris River to inform operation decisions and assist with water quality objectives review (ISRB-01-2018)

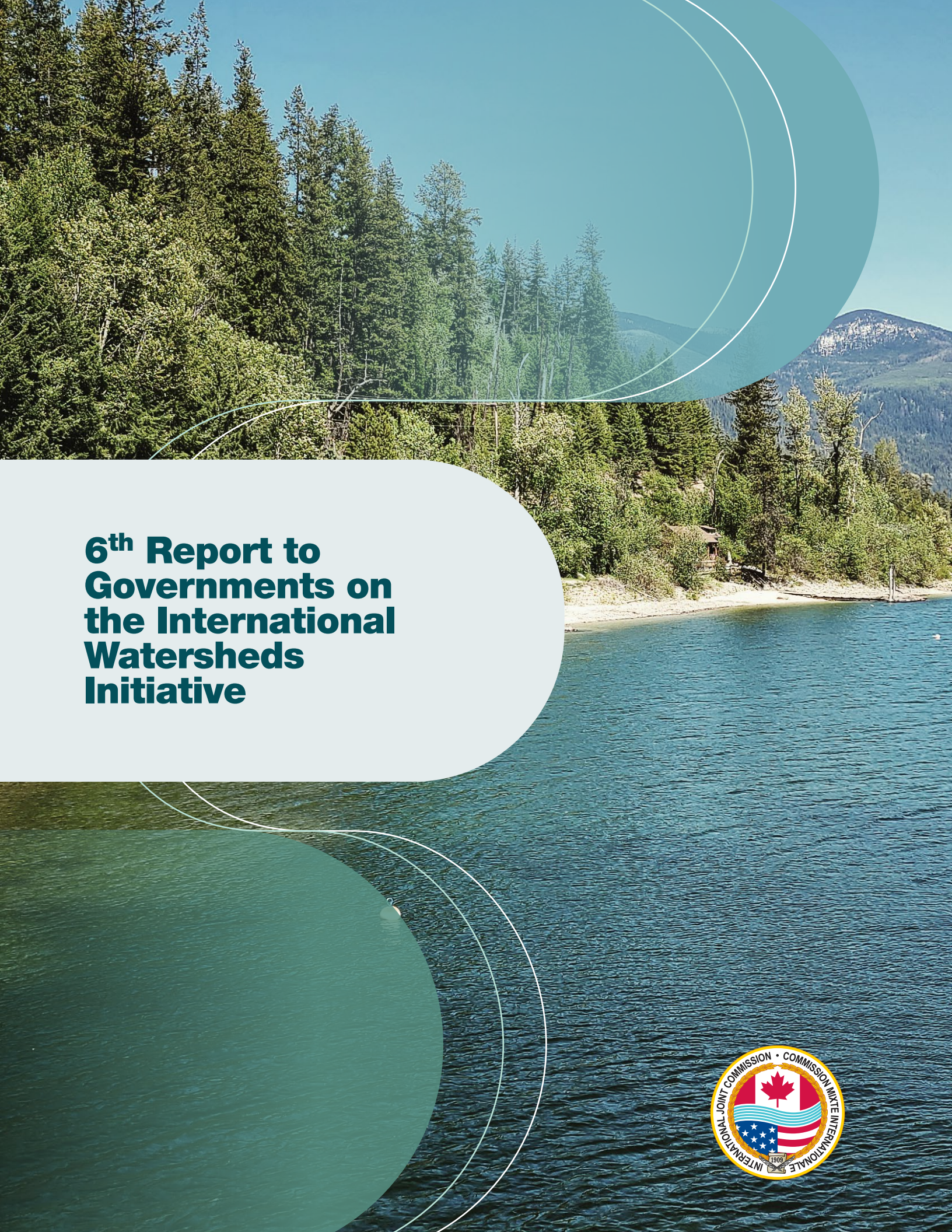
International Kootenay Lake Board of Control

28. Kootenay Lake Visualization Tool (IKLBC-01-2020)

References

Heathcote, I.W., 2009. Integrated Watershed Management: Principles and Practice (2nd Ed.) John Wiley & Sons, Inc. New Jersey, US.

Pollock, Michael S., et al. “Review of a species in peril: what we do not know about lake sturgeon may kill them.” *Environmental Reviews* 23.1 (2015): 30-43



6th Report to Governments on the International Watersheds Initiative