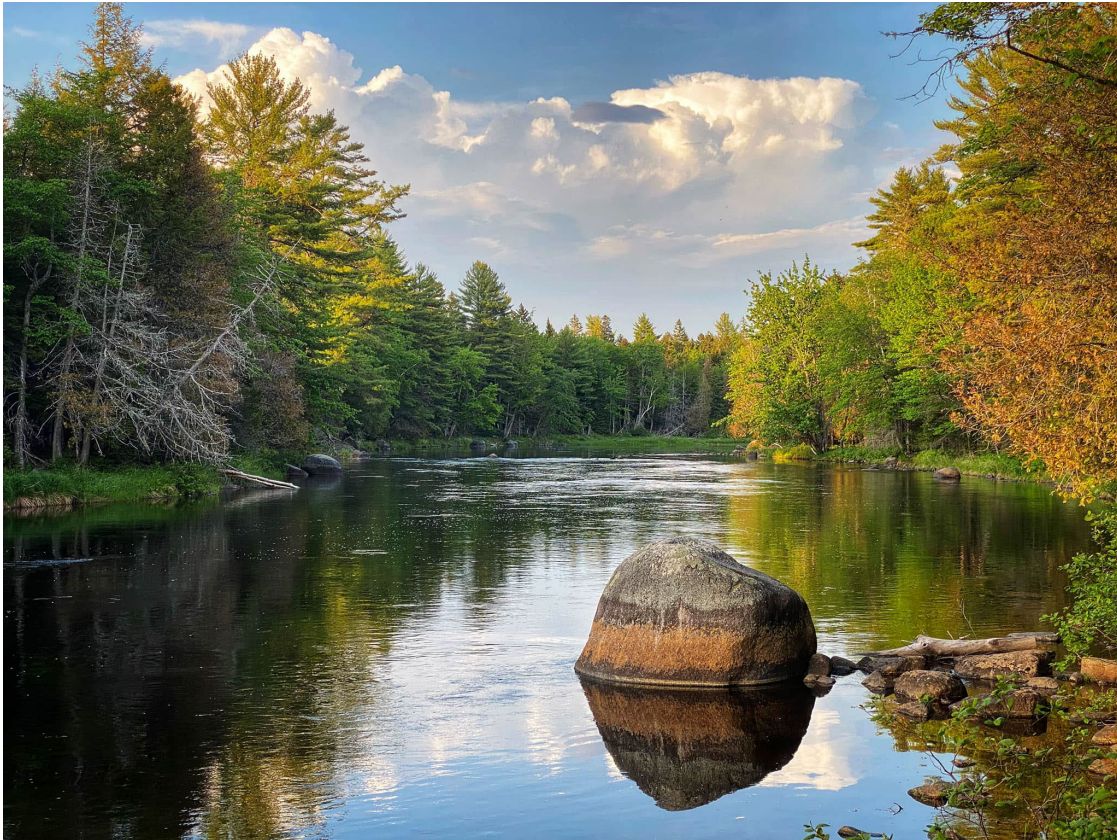


St. Croix River, New Brunswick: 2012-2022 Monitoring Report

Decade Three



Looking upstream from Scott Brook Provincial Park, Upper St. Croix River

Report Prepared for The Canadian Heritage Rivers System

Report Prepared by The St. Croix International Waterway Commission

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Executive Summary

The St. Croix River in New Brunswick was first designated as a Canadian Heritage River in January 1991, becoming the first river in Atlantic Canada to earn this designation. The designation area extends from the New Brunswick side of the headwaters of the East branch (International branch) of the St. Croix watershed at Monument Brook, to the mouth of the St. Croix estuary. The Canadian Heritage Rivers System (CHRS) management area technically comprises the river and lakes on the New Brunswick side of the international border, and a corridor of 75 meters wide along the shoreline.

This report is the third ten-year monitoring report and comprises the period from 2012-2022. Throughout this period the St. Croix retained many of the original natural, recreational, and cultural values for which it was designated as a heritage river. The St. Croix remains a critically important river for both residents who live along the waterway, and those who come to experience its near wilderness solitude in the upper parts of the river and headwater lakes, and significant cultural historic sites located near the towns of St. Stephen and Saint Andrews. For these reasons, the St. Croix warrants the continued designation as a Canadian Heritage River.

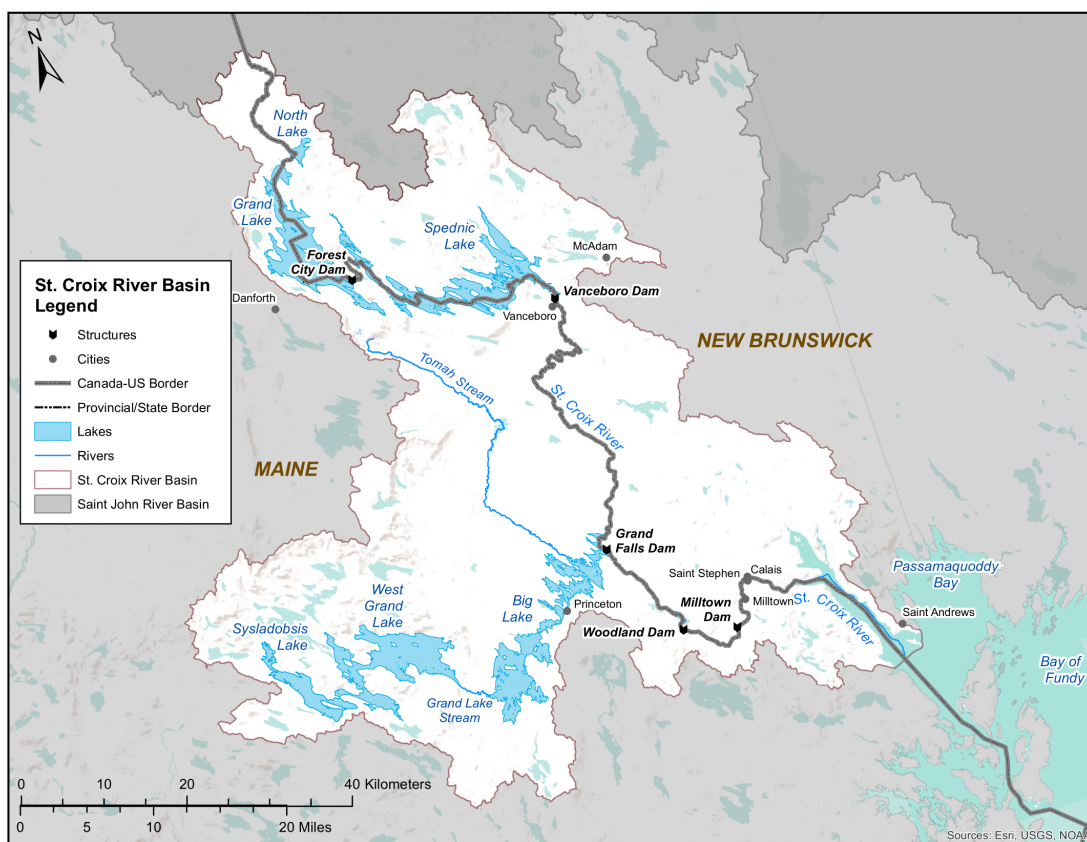


Figure 1 Map of the St. Croix Watershed. The CHRS designation corridor extends from Monument Brook (North of North Lake) to Navy Island in Saint Andrews, New Brunswick.



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Introduction

The St. Croix River is a 185km long waterway that separates the United States and Canada along the midsection of its lakes and river. The St. Croix is an example of a working river and consists of a series of conservation lands and wilderness corridors, populated communities, working forest lands, and historical features. It is a culturally significant river, being the ancestral homeland of the Peskotomuhkati people, as well as the location of the first European settlement in eastern North America located at the international historic site at St. Croix Island.

The St. Croix River has three distinct geographic zones:

- The Chiputneticook Chain of Lakes (North, East Grand, Mud, Spednic, and Palfrey Lakes), which include the headwaters of the St. Croix River, beginning in Monument Brook.
- The main stem of the St. Croix River, beginning in earnest at the outlet of Spednic Lake, and flowing down through to the town of St. Stephen, New Brunswick.
- The estuary, which extends to Saint Andrews, New Brunswick before emptying into Passamaquoddy Bay, and the broader Bay of Fundy.

The St. Croix was designated by the Canadian Heritage Rivers System (CHRS) for its combination of natural, cultural, and recreational heritage features including:

- Abundant bald eagle and osprey populations.
- Provincially significant fossil deposits in the St. Croix Estuary.
- Rock formations exhibiting signs of uplifting, folding, and faulting, and the effects of glaciation.
- Thirteen rare and significant plant species including the cardinal flower, and high bush blueberry.
- Significant archaeological sites showing evidence of at least 4,000 years of first-nations settlement.
- The internationally significant St. Croix Island, which was the location of the first European settlement in Northern North America.
- The River's importance as a waterway for the area's significant lumber industry in the 19th and 20th centuries.
- The St. Croix's role as a political boundary.
- The area's role in the development of significant railways, as evidenced by the designation of the McAdam Railway Station as a National Historic Site.
- Excellent navigable canoe and kayak paddling on large lakes and river sections with white-water rapids.
- Provincially significant sport-fishing opportunities, particularly for smallmouth bass and landlocked salmon.
- Significant wildlife populations including moose, black-bear, bobcat, and the Canadian lynx.
- Cross-country skiing, backpacking, snowshoeing, and winter-camping.
- Many provincially and nationally designated heritage/historic sites.

The St. Croix River was originally designated by CHRS in January of 1991 under the first version of a long-term management plan titled *Preliminary Plan for Long-Term Cooperative Management of the St. Croix International Waterway*. A subsequent management plan finalized in 1993, *St. Croix International Waterway: A Heritage – A Future*, was adopted as the official designation document under CHRS. Originally designated for its natural heritage, cultural, and recreational values, under the current CHRS *Natural Integrity Guidelines* the St. Croix would be ineligible for designation due to its water storage/hydropower impoundments. Despite



this the St. Croix retains its natural values based upon prior guidelines from its original designation. The St. Croix International Waterway Commission (SCIWC) has maintained the CHRS designation since inception and operates under a management plan that encompasses five management goals.

- 1) To protect and enhance the Waterway’s natural heritage; its scenic landscapes and waterscapes; its fish, wildlife, forest and plant resources, and its quality of air, land, and water.
- 2) To preserve and realize additional benefits from the Waterway’s cultural heritage; its significant history; its traditional economic and recreational bases; and its rural quality of life.
- 3) To identify and nurture new avenues for recreational and economic development, compatible with the Waterway’s natural and cultural values.
- 4) To establish priorities and a balance for growing demands on limited land and water resources along the Waterway, for the greatest long-term public benefit.
- 5) To strengthen government and public/private partnerships for effective planning and management to more equitably share the benefits and responsibilities of Waterway stewardship.

These management goals directly align with the designation of the St. Croix under the CHRS, and as such have allowed the St. Croix to continue to flourish as one of New Brunswick’s crown jewels of outdoor recreation and cultural heritage.

Section 1: Chronology of Significant Events, Actions, Research, and/or Studies

Numerous significant events, studies, and research has taken place on the St. Croix over the past decade. One of the most significant events was the reopening of the fishway at the Grand Falls dam to river-herring in 2013, an anadromous fish species. This was a major milestone in moving forward from an international fisheries conflict that had existed for over twenty (20) years. All significant events, actions, and research are highlighted in the table below.

Table 1 Significant events, actions, research, or studies that occurred on the St. Croix River from 2012-2022.

Year	Significant Events, Actions, Research, or Studies Since 2012
2012	• State of Maine releases a new recreational management plan for lands and waters encompassing the Spednic Lake and upper St. Croix River to Grand Falls Flowage following consultations and planning with key communities and stakeholders. The management plan prioritizes recreational values for which the St. Croix River was first designated for by the CHRS.
2013	• A bill introduced to the Maine legislature passed by majority to grant river-herring unimpeded passage at both Woodland and Grand Falls dams. On April 22nd, 2013, the law came into effect. This ended a 26 year international fisheries conflict stemming from the closures of fishways at Vanceboro dam (Spednic Lake outlet), Grand Falls dam (confluence of East and West branches of the St. Croix River), as well as at the Woodland dam (second impoundment on the river). The precipitous decline of river-herring from these closures nearly resulted in the extirpation of river-herring from the St. Croix River. • Statement of cooperation signed by the Peskotomuhkati Nation, and four federal US agencies to restore sea-run fish to Passamaquoddy Bay and the St. Croix River. • The town of St. Stephen, New Brunswick completes repairs to its historic wharf, located downtown.



	• The St. Croix International Waterway Commission (SCIWC) add signs and commences public education efforts to create awareness of low-impact camping methods at recreation facilities located along the International Waterway.
2014	• The United States Geological Survey (USGS) publishes their online, publicly accessible real-time water flow stations at Vanceboro and Baring, Maine. This makes recreational users of the St. Croix River aware of up-to-date information on water flows at two key locations within the recreational river corridor. • The SCIWC partners with Leave No Trace, an internationally recognized non-profit organization, to promote low-impact camping along waterway recreation sites. • The St. Croix Estuary Project (SCEP) completes a study of bacterial contamination in relation to stormwater/sewage outfalls in the town of St. Stephen. Study identifies six stormwater outfalls contributing to lessened water quality in the St. Croix Estuary.
2015	• American shad recorded at the Milltown Dam fishway; the first time this species has been recorded ascending the St. Croix River since 1999. • The Oak Bay Campground converts its sewage system to a drainage field system. The new system no longer discharges to the St. Croix River Estuary.
2016	• Woodland Pulp LLC files a surrender application to the Federal Energy Regulatory Commission (FERC), a federal United States government entity regulating hydropower facilities, for their dam at Forest City. The dam straddles Forest City Stream, between Forest City, Maine, and Forest City New Brunswick, at the outlet of East Grand Lake, a headwater lake to the St. Croix River. The proposal involves removing the two American gates under FERC jurisdiction, which would result in the water levels of East Grand, and North Lakes to drop by up to 6 feet. The surrender application elicits an international response, and concern from property owners, state and provincial governments, tribal organizations, and fishing guides on both sides of the border of East Grand and North Lakes. • FERC issues a new 30-year license for continued operation of the Vanceboro Project, a water storage dam at the outlet of Spednic Lake.
2017	• Canada 150 celebrations celebrating confederacy were held in St. Stephen, with activities and presentations highlighting the significance of the St. Croix River, and the heritage river designation.
2018	• The Milltown Dam removal project is announced publicly by NB Power Corporation and begins community consultations. The Milltown dam is the oldest operating hydropower facility in Canada and is the first dam impoundment located on the St. Croix River, just upstream from the head of tide. Removal is expected to begin in July of 2023. • The Woodland Pulp Mill in Baileyville, Maine discharges 530,000 gallons of primary treated wastewater to the lower St. Croix River because of a rupture to a main treatment line. The line was replaced several months later. • The Peskotomuhkati Nation at Skutik acquires Camp Chiputneticook along the banks of the St. Croix River, near Scotch Ridge. The property encompasses 2,500 acres and is of cultural significance to the nation.
2019	• Beausoleil nature preserve acquired by the Nature Trust of New Brunswick along the St. Croix River. The parcel is 75.4 hectares and is across the river from the Moosehorn National Wildlife Refuge in Maine.
2020	• Travel restrictions stemming from the onset of the global Covid-19 pandemic constrain normal cross-border recreational access of the St. Croix River. • The first 1.4km of the Coastal Link off-road paved trail was completed. This section of trail runs along the St. Stephen waterfront, providing scenic views of the St. Croix River and Estuary.



	• The International Joint Commission (IJC) completes a study of fish passage at dams on the lower St. Croix River. The goal of the study was to identify opportunities for improvements to fish passage, specifically at the Woodland and Grand Falls dams.
2021	• SCIWC in collaboration with various other stakeholders, produces and makes available for purchase, a recreation map of the entire International Boundary Waterway of the St. Croix River, highlighting publicly available campsites, public recreation access points, protected lands, and more. This is map is an update of the 2010 waterway recreation map.
2022	• Designation of 2,940 hectares of new protected land in the Chiputneticook Lakes area of the St. Croix Watershed by the New Brunswick provincial government. This new protected land was part of the Nature Legacy Protected Areas campaign, and connects and expands the existing Spednic Lake, North Lake, Monument Brook, and Hay Brook Protected Natural Areas. These areas are under permanent land protection from industrial use, including forestry. • Over 712,000 river-herring counted at the Milltown dam, a stark increase from the 16,677 that were counted in 2013, which was the year that the fishways at Woodland and Grand Falls dams (second and third impoundments from head-of-tide) were reopened allowing access to the majority of available spawning habitat found within the watershed. • SCIWC in collaboration with the Peskotomuhkati Nation begins a project assessing fish passage on the St. Croix River by using PIT telemetry equipment to assess passage efficiency of river-herring at impoundments along the St. Croix river. • Statement of cooperation renewed and signed by the Department of Fisheries and Oceans Canada, the Peskotomuhkati Tribe in both Maine and New Brunswick, the State of Maine, and several federal United States departments to work towards the restoration of sea-run fish in the St. Croix River. • The Maine Department of Marine Resources alongside other partners announce approximately \$20 million US dollars of funding to install a state-of-the-art fish lift at the Woodland dam (second river impoundment), with construction slated to begin in 2024. This project will coincide with the removal of the Milltown dam, slated to begin in July of 2023, to work towards major diadromous fish passage improvements in the St. Croix River. • The Province of New Brunswick officially reopens North Lake Provincial Park to the public for day-use and overnight camping. This park had previously been privately leased since 2006.

Section 2: Changes and Threats to Natural, Cultural, and Recreational Values

Natural Values

Over the previous decade there have been many positive changes to the natural values for which the St. Croix was originally designated. The St. Croix is currently subject of one of the largest river-restoration initiatives in North America with a focus on restoring native sea-run fish populations. This has been embraced by agencies and departments from the US and Canada, as well as the Peskotomuhkati Nation in Maine and New Brunswick. The river restoration efforts are led by the slated removal of the Milltown Dam, the first impoundment on the river, and efforts to replace the aging denil fishways found at the other two large mainstem dams at Woodland (Baileyville), and Grand Falls. If current fish passage issues at these mainstem dams improved, the potential exists for the St. Croix to



support the largest spawning population of river-herring (alewife and blueback-herring, commonly known as gaspereau in New Brunswick) in North America, as well as potential to support large populations of American shad, American eel, rainbow smelt, sea run brook trout, and possibly the return of species such as the Atlantic salmon. With funding secured to build a new, state of the art fish lift at the Woodland Dam, which is set to become the first impoundment on the river, following the removal of the Milltown Dam, the stage is set for a surge in sea-run fish populations. This in turn will help to support recreational fisheries, sustenance fisheries, tribal fisheries, provide forage to terrestrial animals such as mink, otters, bears, and birds like the bald eagle and osprey, and boost the marine environment found in Passamaquoddy Bay and the broader Bay of Fundy/Gulf of Maine. Water quality improvements, particularly in the wastewater treatment plants of the towns of St. Stephen, Calais, McAdam, and Baileyville have all contributed to a healthier environment found within the St. Croix watershed. Other notable changes have been the establishment of largemouth bass in the St. Croix, with the species quickly moving to different connected waterbodies, and now are found almost throughout the entire watershed. Bald eagle populations have anecdotally been increasing, especially seasonal populations during the spring river-herring upstream migration. Moose populations continue to decline in the watershed, with tick populations rising due to climate change.

MILLTOWN DECOMMISSIONING



Figure 4 Conceptual drawing showing what the St. Croix River would look like following the Milltown Dam decommissioning.

Table 2 Changes to the natural values for which the St. Croix was originally designated for from 2012-2022.

Natural Value	Description of Change in Value	Reason for Change	Actions Taken in Response	Change/Threat Still Present?
Hydrology				
Drainage Basins: Atlantic Ocean Basin, Stream Order 1	No change	-	-	-
Seasonal Variation: high flow – April,	Variation between high and low water periods is more	Climate change/extreme weather events	Municipalities at St. Stephen and St. Andrews incorporate climate change	Yes



low flow May-September	extreme. Flows also controlled by dams with strict licensing water management regulations		planning into infrastructure decisions	
Water Content	Improvement in water quality: chemical properties	Improvements to municipal wastewater systems and recovery of the lower mainstem river from historic pollution	Improvements continue to be made to several municipal wastewater treatment plants, limiting combined sewer overflow events	Yes, improvements are ongoing, and the river is still recovering from historic pollution by the pulp and paper industry
River Size: <500km	No change	-	-	-
Physiography				
Physiographic Regions: Appalachian Acadian Uplands	No change	-	-	-
Geological Processes	No change	-	-	-
Hydrogeology	No change	-	-	-
Topography	No change	-	-	-
River Morphology				
Valley Types	No change	-	-	-
Channel Types	No change	-	-	-
Channel Profile	No change	-	-	-
Fluvial Landforms	No change	-	-	-
Biotic Environments				
Aquatic Ecosystems	Lower watershed potentially experiencing higher nutrient loading	Possibly related to increasing returns of sea-run fish, changes to industrial and municipal wastewater treatment, increased frequency of droughts, or other causes that are unknown	Environment and Climate Change Canada and the SCIWC undertake a study to determine sources of nutrient loading	Yes, continued monitoring in the lower watershed will potentially discover causes of nutrient loading, and lead to remediation
Terrestrial Ecosystems	Expansion of existing New	New Brunswick is committed to	Launch of the Nature Legacy Program adds lands	Yes, more areas in the St. Croix



	Brunswick Protected Areas in the Chiputneticook Lakes region	permanently protecting 10% of its landmass	to the existing Spednic Lake Protected Natural Area, and also adds new protected lands near East Grand Lake, Mud Lake Falls, and North Lake/Monument Brook	Watershed may be permanently protected in the future under this program
Vegetation				
Significant Plant Communities	Beausoleil Nature Preserve acquired by Nature Trust of New Brunswick	Additional lands protected in the lower St. Croix mainstem	This 75.4 hectare parcel provides ideal habitat for many plant species such as sweet wood reed grass, lowland yellow loosestrife, and more	Yes, additional lands along the St. Croix River may be protected for plant communities in the future
Rare Plant Species	No change	-	-	-
Fauna				
Significant Animal Populations: Fish	River-herring and sea-run fish populations continues to increase Largemouth bass establish themselves within the St. Croix watershed	Reopening of fishways at Woodland and Grand Falls dams allows for access to 98% of spawning grounds for river-herring within the St. Croix watershed, other sea-run fish species may also benefit Largemouth bass illegally introduced to Grand Falls Flowage system circa 2010-2012	Additional studies on fish passage by a number of organizations/governmental entities continues Increased awareness via public outreach of impacts of aquatic invasive species	Yes, river-herring populations are expected to continue to increase following the removal of the Milltown dam and improved fish passage designs at Woodland and Grand Falls dams in the future Yes, largemouth bass have readily moved throughout the watershed, and now reside from Milltown in the lower watershed to Spednic Lake in the upper watershed.
Significant Animal Populations: Mammals	Moose populations declining due to	Research suggests winter tick populations increasing due to	Provincial government led studies to determine moose and tick abundances	Yes, moose populations are expected to continue to



	habitat loss and tick infestations	climate change is causing a reduction in moose populations in Southern New Brunswick		decline, increases to average air temperatures in Southern New Brunswick expected to continue due to climate change
Significant Animal Populations: Birds	Resident and non-breeding bald eagle and osprey populations increase	Following an upward trend of increasing river-herring populations, the populations of bald eagles and ospreys documented in the St. Croix River basin continues to increase	Monitoring by government agencies continues	Yes, bald eagle and osprey populations are expected to continue to increase as several populations of sea-run fishes increase
Rare Animal Species: Fish	Atlantic sturgeon (COSEWIC: threatened) and/or shortnose sturgeon (COSEWIC: special concern) now seen in the St. Croix Estuary	Possibly related to improving environmental conditions in other river systems that support spawning populations of sturgeon species near to the St. Croix	None	Yes, not much is known about the status of sturgeon movements within the St. Croix Estuary and broader Bay of Fundy
Rare Animal Species: Mammals	No change	-	-	-
Rare Animal Species: Birds	No change	-	-	-

Cultural Heritage Values

The cultural heritage values for which the St. Croix was designated have largely remained unchanged over the previous decade. The most notable change was the announcement of the Milltown Dam removal, which is the oldest operating hydropower dam in Canada.



Table 3 Changes to the cultural values for which the St. Croix was originally designated for from 2012-2022.

Cultural Value	Description of Change in Value	Reason for Change	Actions Taken in Response	Change/Threat Still Present?
Resource Harvesting				
Commercial Fishing	Historic herring weirs no longer used in the estuary	Declines in inshore Atlantic herring populations and other pelagic fish species	Commercial herring quotas much reduced in the Atlantic Ocean by both US and Canadian agencies	Yes
Collection of Shellfish	No change	-	-	-
Industrial Water Extraction	No change	-	-	-
Water Transport				
Powered Commercial Freight	Increased commercial boat traffic at Bayside Marine Terminal	Continued development of the commercial aquaculture industry in the Bay of Fundy, as well as using the terminal to transport wind turbines to New Brunswick and other commercial goods	-	Yes
Surface Bulk Transportation	No change	-	-	-
Navigational Improvements	St. Croix International Waterway recreation map updated in 2021	Increased recreational use of the waterway, primarily for canoeing and fishing	Improvements to various access points, improved boat/canoe launches, and campsites	Yes
French Exploration	No change	-	-	-
Riparian Settlement				
Permanent Shoreline Aboriginal Settlements	No change	-	-	-
River Industry-Based Communities	Announcement of Milltown dam removal in St. Stephen, NB.	Aging facility no longer economical to operate with	NB Power begins consultations with stakeholders and local communities	Yes, decommissioning expected to commence in



		structural improvements and fish passage needs cited	with plans to begin full decommissioning of the facility in July of 2023	July of 2023, and cease in Spring of 2024
River-Influenced Roads and Railways	Pandemic related restrictions hamper routine cross-border travel	Onset of Covid-19 global pandemic	Various government restrictions have since ceased for cross-border travelers	Yes, future international incidents could again hamper cross-border travel
Culture and Recreation				
River-Related Museums, Art Galleries, Commemorative Structures	No change	-	-	-
River-Based Cultural Landscapes	No change	-	-	-
Early Recreational Boating	No change	-	-	-
Early Recreational Angling	No change	-	-	-
Jurisdictional Use				
European Internecine Conflict	No change	-	-	-
International Boundaries	Cross-border travel restrictions between Canada and the US as a result of the Covid-19 global pandemic hamper recreational access for many users of the St. Croix	Global pandemic	Several restrictions including proof of vaccination, use of ArriveCAN application, and non-essential cross border travel limited	Yes; although many restrictions have eased, some remain and could be implemented in the future
Water Management	Upgrades to water management/monitoring	Federal departments in US/Canada upgrade their real-time monitoring systems for impoundment levels/discharge	Increased public awareness of these upgrades/websites	Yes; upgrades will continue to be monitored



Aquatic Ecosystem Management	Increased awareness of interconnectedness between freshwater and marine environments in the St. Croix	Importance of sea-run fishes in the St. Croix highlighted by ongoing work in the watershed by various governmental, NGO's, and tribal organizations	Many scientific and cultural studies on fish passage at various impoundments and the importance of restoring sea-run fishes to the St. Croix by the Peskotomuhkati Nation	Yes; Milltown dam removal expected to improve connectivity and fish passage, further improvements at next mainstem impoundments at Woodland and Grand Falls planned
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Recreation Heritage Values

The St. Croix River and the Chiputneticook Lakes region represent a significant recreational corridor for both the Province of New Brunswick and the State of Maine. Changes to these values are highlighted by increases to protected lands found within the CHRS corridor in New Brunswick along the shores of Spednic and East Grand Lakes, as well as outside the corridor in Maine. Outdoor recreation over this period has certainly increased within the CHRS corridor, owing to the outstanding natural beauty found within, the well managed recreational campsites, provincial parks, navigable waters, and near-wilderness of the upper St. Croix region. Canoeing, kayaking, and camping remain very popular, especially on Spednic Lake and the Upper St. Croix River corridor. The Upper St. Croix offers users a variety of recreational activities, from canoe camping, sport fishing, nature viewing.



Figure 5 The Spruce Point campsite on East Grand Lake.

Table 4 Changes to the recreation heritage values from 2012-2022 for which the St. Croix was originally designated for.

Recreational Value	Description of Change in Value	Reason for Change	Actions Taken in Response	Change/Threat Still Present?
Boating	No change	-	-	-
Camping	Increasing in popularity North Lake Provincial Park reopens for public use	Increases to outdoor recreation and tourism in the region	Continued and increased inspections and management of river and lake access campsites, portages, and boat launches working alongside the New Brunswick Department of Energy and Natural Resources	Yes, outdoor recreation and nature-based tourism are expected to continue to increase over the next several decades
Angling/Clamming	Largemouth bass fishing gaining in popularity	Invasive largemouth bass population establish in the St. Croix watershed following illegal introduction	Invasive species impacts are made aware through public engagement sessions	Yes, populations will become more established over time and may push out other more favored species



Hiking	Increased popularity in hiking along the waterway	Completion of the coastal link trail portion along the St. Stephen waterfront	-	Yes, further opportunities to link hiking trails in St. Stephen to other trails in Southwest NB planned
Natural Heritage Appreciation	Expansion of existing New Brunswick Protected Areas in the Chiputneticook Lakes region. This will provide additional habitat for wildlife within the designation area	New Brunswick is committed to permanently protecting 10% of its landmass	Launch of the Nature Legacy Program adds to the Spednic Lake Protected Natural Area, and also adds new protected lands near East Grand Lake, Mud Lake Falls, and North Lake/Monument Brook	Yes, additional land may become protected within the designation area
Cultural Heritage Appreciation	Increased awareness of the St. Croix River to early european and first-nations human heritage in the region	Greater demand and interest in the early human heritage of the St. Croix watershed	SCIWC publishes an online resource library of historic maps, archives, and files Local museums, NGOs and tribal organizations offer a variety of programs aimed at the early human heritage values of the St. Croix watershed	Yes
Recreational Heritage Appreciation	Increases in outdoor recreation within the designation area	Regional and generational changes in interest in outdoor recreation	SCIWC publishes new outdoor recreation map for the St. Croix International Waterway Increased campsite maintenance and care	Yes, management of outdoor recreation resources will continue to be carefully monitored



Section 3: Integrity Guidelines

Natural Integrity Guidelines

Minimal changes to integrity values took place over the previous decade on the St. Croix. Noted improvements in water quality from wastewater treatment plant upgrades and fish passage at impoundments via reversal of a Maine state law are noted, as well as an increase in the amount of shoreline under permanent protection from the New Brunswick Nature Legacy Program.

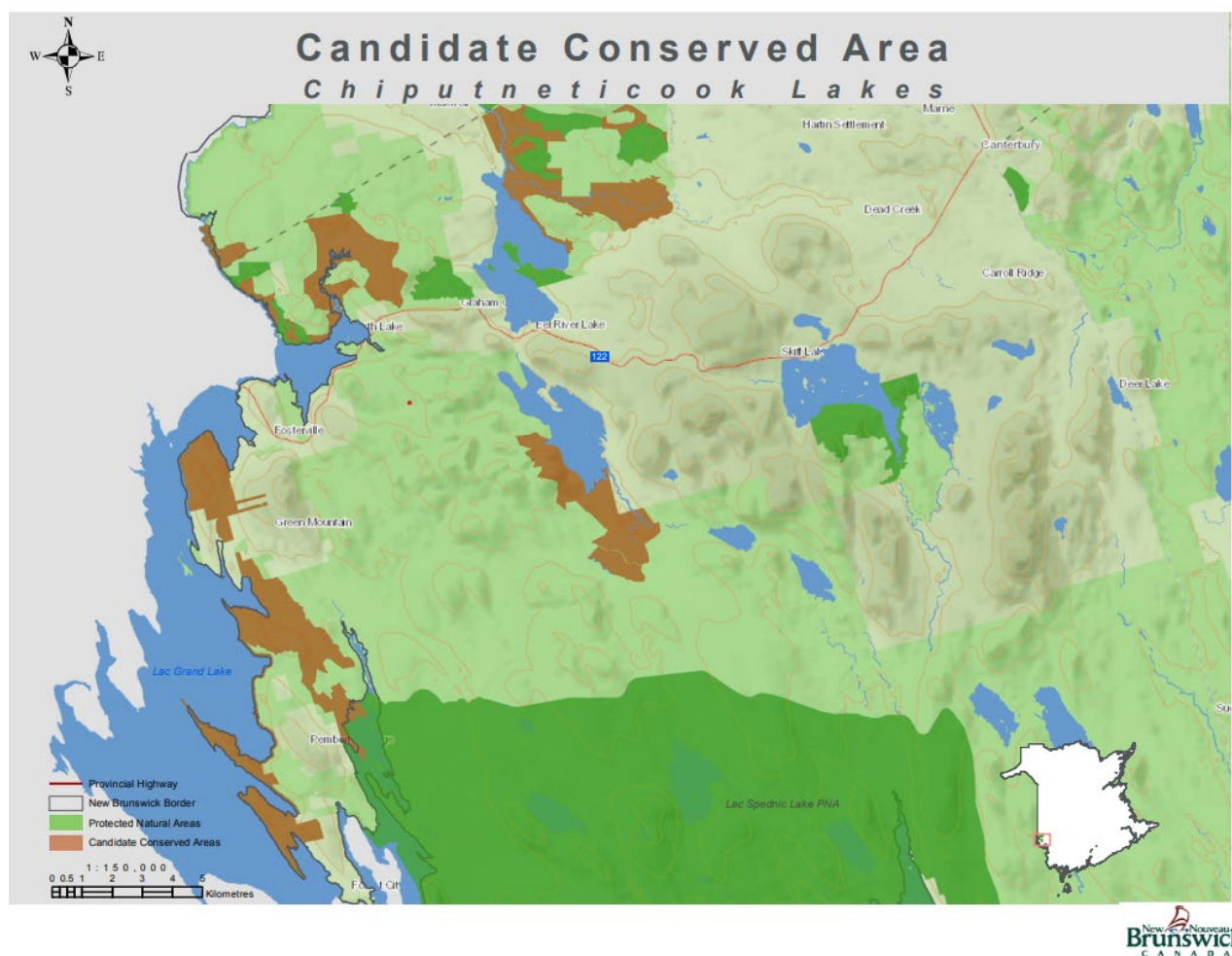


Figure 6 New permanent protected areas from the New Brunswick Nature Legacy Program highlighted in brown that directly abut the CHRS designation corridor along the shores of East Grand Lake and Mud Lake Falls.



Table 5 Changes to the natural integrity values from 2012-2022 for which the St. Croix was originally designated for.

Natural Integrity Value	Change in Integrity Value	Threat or Stressor	Action(s) Taken to Address Threat	Threat Still Present?
The nominated area is of sufficient size to include significant representations of all of the natural processes, features, or other phenomena which give the river its outstanding natural value	This guideline continues to be met. In 2012 New Brunswick designates 2,940 hectares of new protected land in the Chiputneticook Lakes which adds to the Spednic Lake protected natural area, and directly abuts the CHRS designation corridor.	-	-	-
The nominated section includes those ecosystem components which contribute significantly to the provision of habitat for species in need of protection	In 2013 the State of Maine overturns a law that blocked the passage of river-herring, an anadromous fish species native to the St. Croix. River-herring and other anadromous fish are now able to pass freely at all fishways within the CHRS designation corridor	Unilateral enforcement of a law that affects both sides of the border	Fishways reopened at Woodland dam in 2008, and at Grand Falls dam in 2013	No; major foundational steps by both Canadian and American federal governments, the State of Maine, and the Peskotomuhkati Nation have been taken along with signed statements of cooperation to restore sea-run fish to the St. Croix River
There are no human-made impoundments within the nominated section	Designation preceded this guideline.	-	-	-
All key elements and ecosystem components are unaffected by	Designation preceded this guideline.	-	--	



impoundments located outside the nominated section				
The water in the nominated section is uncontaminated to the extent that its natural aquatic ecosystem is intact	Improvements to water quality in the lower part of the designation corridor resulting from continued improvements to the wastewater treatment facilities of the towns of St. Stephen, NB, Baileyville, ME, and Calais, ME	-	Combined sewer and stormwater lines in the aforementioned towns continue to be replaced, with more improvements eyed into the future	Yes, however improvements are ongoing
The natural aesthetic character of the nominated section is free of, or not adversely affected by, human developments	Limited development of the shorefront of the CHRS designation area occurs during the ten-year period of this report	Residential/Commercial development	Additional land including shorefront; particularly on the Maine side of the corridor have been conserved through fee purchase and easements to limit development Additional lands in the Chiputneticook Lakes region have been permanently protected through the New Brunswick provincial governments Nature Legacy Protected Area's campaign	Yes, very limited land exists that can be developed within the CHRS designation corridor. Much of the Chiputneticook Lakes region and the Upper St. Croix River Corridor is under some form of permanent land conservation which protects it from development. Additional development may occur in the lower watershed and estuary

Cultural Integrity Guidelines



Minimal changes to the cultural integrity guidelines for which the St. Croix was designated took place over the previous decade.



Figure 7 The McAdam Railway Station, a national historic place located in the village of McAdam.

Table 6 Changes to the cultural integrity values from 2012-2022 for which the St. Croix was originally designated for.

Cultural Integrity Value	Change in Integrity Value	Threat or Stressor	Action(s) Taken to Address Threat	Threat Still Present?
The nominated section is of sufficient size to include significant representations of all of the features, activities or other phenomena which give the river its outstanding cultural value	This guideline continues to be met	-	-	-
The visual character of the nominated section	This guideline continues to be met; ongoing	-	-	-



enables uninterrupted appreciation of at least one of the periods of the river's historical importance	upgrades to the historical McAdam Railway Station allow it to be open for public use			
The key artifacts and sites comprising the cultural values for which the river is nominated are unimpaired by impoundments and human land uses	Designation preceded this guideline.	-	-	-
The water quality of the nominated section does not detract from the visual character, or the cultural experience provided by its cultural values	No change: ongoing monitoring continues to show high water quality within the CHRS designation corridor except for highly localized locations near municipal/industrial sites	-	-	-

Recreational Integrity Guidelines

Minimal changes to the recreational integrity guidelines for which the St. Croix was originally designated for took place over the previous decade. One notable unresolved issue is the future and uncertainty surrounding ownership of the Forest City Dam, which is located at the outlet of East Grand Lake.

Table 7 Changes to the recreational integrity values from 2012-2022 for which the St. Croix was originally designated for.

Recreational Integrity Value	Change in Integrity Value	Threat or Stressor	Action(s) Taken to Address Threat	Threat Still Present?
The river possesses water of a quality suitable for contact recreational activities, including	Ongoing water quality monitoring within the CHRS designation corridor continues to exhibit excellent	-	-	-



those recreational opportunities for which it is nominated.	water quality suitable for contact recreational activities			
The river's visual appearance is capable of providing river travelers with a continuous natural experience, or a combined natural and cultural experience, without significant interruption by modern human intrusions.	Continued efforts by governments and NGOs to conserve shorefront land along the designation corridor and the Maine side of the corridor continue	-	-	-
The river is capable of supporting recreational uses without significant loss of, or impact on, its natural and cultural values or its visual character.	No change; SCIWC continues to manage all remote-access campsites in both Maine and New Brunswick within the CHRS designation corridor	Forest City dam future uncertain; could have potential effects on water levels in East Grand and North Lake which reside within the CHRS designation corridor	State of Maine and the New Brunswick government are working together to seek a third party ownership of the facility which could see the dam remain in place	Yes, the Forest City Dam is still facing an active surrender application of the current FERC license, although recent correspondence on the FERC docket between New Brunswick and Maine governments allude to potential solutions

Section 4: Designation Document Recommendations and Current Status

Since the designation of the St. Croix in 1992, many of the management goals have received considerable attention and support. This includes the protection of large tracts of conservation lands in both Maine and New Brunswick, permanent protection of shorelines on Spednic Lake and the Upper St. Croix River, and ongoing recreation and water quality programs. Continual action on management plan goals is ongoing despite considerable obstacles in achieving them.



Table 8 Management recommendations and their status from the St. Croix International Waterway's 1992 Management Plan, *St. Croix International Waterway: A Heritage - A Future*, which serves as the CHRS designation document.

Policy	Recommendation or Key Action	Degree of Achievement	Comments
Develop the St. Croix's identity as an International Heritage Waterway	Establish an International Heritage Waterway	Not pursued	-
	Create a Waterway Image	Completed	St. Croix International Waterway Commission logo serves as the de-facto logo for the waterway
	Initiate an International Heritage Waterway information and interpretation program	Ongoing	Local tourism and community groups promote the St. Croix International Waterway's heritage in literature
	Incorporate the International Heritage Waterway concept into local awareness and planning efforts	Not pursued	-
	Develop a heritage resource inventory	Ongoing	Intermittently pursued by federal/state/provincial agencies
Establish Joint Water Quality Objectives	Set cooperative water quality goals	Largely completed	New Brunswick, Maine, and federal US/Canadian agencies continue to collaborate on water quality goals in the St. Croix basin
	Work towards consistent quality standards	Ongoing	New Brunswick is reconsidering its water quality classifications under a broader land and water management framework
Maintain Shoreland Character and Environmental Quality	Maintain a shoreland greenway	Largely completed	Work in both New Brunswick and Maine is completed to preserve shorefront from future development
	Take local action to maintain and restore natural shore areas	Ongoing	The Coastal Link Trail section in St. Stephen is completed, other shorefront parks are developed



Manage Pollution to Maintain Environmental Quality Under Increasing Resource Use	Maintain future pollution to reduce impacts	Ongoing	New Brunswick and Maine both continue to revise monitoring and reporting requirements for effluent
	Create an action plan to reduce present pollution	Ongoing	Continued upgrades to wastewater treatment plants that discharge into the St. Croix at McAdam, Baileyville, Calais, and St. Stephen are ongoing
	Enforce environmental regulations	Ongoing	New Brunswick, Maine, and federal agencies continue to enforce their respective regulations on the waterway
	Involve local interests in quality improvement	Ongoing	Volunteer organizations, NGOs, and municipal councils continue to monitor water quality throughout the watershed, many shorefront cleanups take place yearly
Maintain Biological Productivity and Diversity Within the Waterway	Monitor and help manage natural productivity	Ongoing	New lands are protected from development along the St. Croix Waterway will help increase natural productivity
	Monitor and support ecological diversity	Ongoing	Continued monitoring of the Milltown fishway demonstrates recovery of river-herring and other anadromous fish species to the St. Croix
Preserve and Interpret Waterway History and Culture	Establish facilities and programs to interpret St. Croix Island	Completed	US National Park Service employs full time staff to provide a visitor experience for the island. Canadian National Historic site and interpretive



			monuments present in Bayside, NB
	Expand interpretation of waterway history	Ongoing	Efforts by local municipalities, organizations, and tribal communities continue
	Study, interpret, and protect significant archaeological sites	Ongoing	Additional archaeological sites are protected by land conservation
	Maintain transborder cultural bonds	Ongoing	International festival between St. Stephen and Calais continues. Covid-19 global pandemic disrupts normal cross-border activities, although activity returns to normal
Preserve the Visual Landscape	Inventory visual resources	Not pursued	-
	Conserve visual character and scenic places	Ongoing	Conservation initiatives in both countries ongoing
Conserve and Interpret Natural Heritage	Protect rare and significant species and habitats	Ongoing	Conservation initiatives in both countries ongoing
	Expand natural heritage interpretation	Ongoing	Interpretative initiatives ongoing in both countries
Establish a Conservation Area Protecting the Resources of the Upper River and Spednic Lake	Protect the natural character of the waters, shorelands, and major views	Completed	Almost all shorelines along Spednic Lake and the Upper River corridor now permanently protected from development and forestry
	Protect and interpret heritage resources	Ongoing	Various organizations continue to protect, manage, and promote the heritage resources of the St. Croix
	Manage use to preserve environmental and recreational quality	Ongoing	Waterway Commission continues to maintain and manage the vast majority of recreational resources in the Spednic and



			Upper River conservation corridor
Develop Appropriate Public Land and Water Access	Develop a long term access plan	Partially completed	Maine's 2012 recreation plan accomplishes this for the Spednic/Upper River corridor. Waterway Commission works with both NB and Maine governments on access issues
	Maintain an inventory of public access lands within the Waterway corridor	Completed	Waterway Commission's recreation map defines different conservation lands and access points within
Develop a Coordinated Recreational Information Program	Develop transboundary recreational information	Ongoing	Waterway Commission's recreation map helps to display regulations pertaining to transboundary use
	Develop uniform recreational signage	Completed	Similar signage now exists at Maine/NB campsites and access points
	Use information to better manage recreation	Ongoing	Collection of usage information helps make informed recreation management decisions
Integrate Recreational Planning to Minimize Conflicts	Integrate recreational water needs	Ongoing	Water management needs modeled by the International Joint Commission. Dam owners in the watershed work to meet recreational needs of various user groups
	Identify and address potential conflicts	Ongoing	Expanded recreation facilities in NB and Maine maintained by the Waterway Commission
Manage Sport Fishing as a	Manage existing fisheries for a high quality fishing experience and sustainable yields	Ongoing	Research and management are



Recreational and Economic Asset			coordinated across the border for most fisheries
	Develop Spednic Lake smallmouth bass and St. Croix River Atlantic salmon stocks	Ongoing	Spednic Lake continues to be zero retention for smallmouth bass to support a high quality sport fishery. Atlantic salmon have been extirpated from the St. Croix River since 2006.
	Coordinate regulation, enforcement, and local licensing	Ongoing	Most boundary waterbody regulations are the same for retention and limits between Maine and New Brunswick
	Involve local interests in fisheries conservation and enhancement	Ongoing	Local NGOs, rod and gun clubs, and other groups assist resource agencies in surveys, enhancement initiatives, and stocking
Develop and Maintain Quality Opportunities for Back-Country Canoe Tripping and other Water Recreation	Monitor and manage canoe recreation on Spednic Lake and the Upper River	Ongoing	Most campsites and access points now managed by the Waterway Commission
	Manage water releases from impoundments for more uniform canoeing experience	Partially completed	Vanceboro dam now operated in a uniform manner throughout the summer recreation season. Water discharge information available publicly in real-time
	Expand canoeing and boating facilities and services	Partially completed	Most access points now managed and maintained by the Waterway Commission
	Encourage additional low-impact recreation	Ongoing	Kayaking both in the estuary and on the lakes has become popular. Stand up paddle boarding also increasing in popularity
Expand Land-Based Recreational Opportunities	Identify and develop outdoor recreation opportunities	Ongoing	The Waterway Commission alongside municipalities and other tourism NGOs



			continue to work together to develop nature based tourism initiatives
	Link with future trail and touring networks	Ongoing	The Coastal Link trail in St. Stephen links with the Calais Waterfront Walkway to link together these trails across the international border. Other cross border trails are in development
Incorporate Heritage Concepts in Economic Planning	Apply heritage values to development planning	Ongoing	The St. Croix Waterway Commission continues to advocate for setbacks and minimal shoreline aesthetic disturbances for proposed developments along the waterway
	Give shoreland priority to heritage and water-dependent uses	Ongoing	-
Capitalize on the Waterway's Economic Strengths	Manage for a sustainable forest product industry	Ongoing - Intermittent	Setbacks to New Brunswick forestry practices because of 2014 Crown Lands Forestry Agreements increase the cutting of crown lands within the St. Croix Watershed. Maine side forestry activities largely unchanged with smaller patch cuts and more selective harvesting
	Expand and diversify recreation and heritage tourism	Ongoing	Increases to visitors to the St. Croix Watershed spur economic development opportunities – mainly in hunting and fishing activities
	Develop marine shipping in balance with other users	Ongoing	The Bayside Marine Terminal expands



			berthage and volume. Liquid natural gas terminals proposed for the Maine side of the estuary are dismissed by FERC and not pursued further
	Develop border opportunities	Ongoing	St. Stephen and Calais continue to work together on cross-border tourism initiatives. The St. Croix – Vanceboro crossing experiences reduced hours of operation impacting residents
	Improve transportation and border crossings	Ongoing	Both Canada and the United States announce plans to upgrade the Ferry Point border crossing in downtown St. Stephen/Calais
Better Integrate, Interpret, and Exchange Information	Improve inter-agency communication	Ongoing	Maine and New Brunswick collaborate with SCIWC on the delivery of transboundary recreational planning. Federal Canadian and US departments continue to work together with the Peskotomuhkati Nation on diadromous fish restoration
	Improve public communication	Ongoing	The International Joint Commission continues to work on transboundary issues and initiatives. The SCIWC releases a new waterway recreation map, and hosts information sessions and events
	Centralize information services	Ongoing	The SCIWC continues to serve as the general



			entity for St. Croix related information
	Begin cooperative process for East Grand Lake planning	Ongoing	A conservation easement was completed by the State of Maine and the Conservation Fund to permanently conserve and protect East Grand Lake shoreline and surround forestland from development. Concurrently on the New Brunswick side of the lake, several crown land parcels were added to existing Protected Natural Areas to complement a broader conservation initiative
	Support cooperative environmental management for estuary	Ongoing	The St. Croix Estuary Project now manages the Ganong Nature Park. The SCIWC continues routine water quality in the estuary
Address Long-Term Management Issues on a Proactive, Inter-Jurisdictional Basis	Establish a process to coordinate International Heritage Development	Not pursued	-
	Establish a process to integrate water planning and management	Intermittent	The International Joint Commission continues to facilitate review and consultation on water levels and flows within the St. Croix watershed
	Establish a process to integrate fisheries planning and management	Ongoing	Regular meetings, conferences, and consultations are held between various governmental agencies, tribal governments, and stakeholders on fisheries activities and restoration efforts
	Establish a process to coordinate conservation area management	Ongoing	The SCIWC consults with various governments and



			stakeholders surrounding land conservation and stewardship activities within the watershed
	Address inter-jurisdictional issues through cooperation	Intermittent	Agencies and governments discuss issues on an as-needed basis
Maintain Coordination Through a Waterway Commission	Direct the commission to coordinate plan delivery	Ongoing	Waterway Commission facilitates plan delivery on an ongoing basis
	Identify the Commission's long-term role	Ongoing	Waterway Commission continues to work with the Province of New Brunswick and the State of Maine to guide its long term role
Regularly Review Management Progress and Direction	Monitor waterway programs	Ongoing	The SCIWC regularly reports on activities and programming with Provincial and State agencies
	Review the waterway plan every four years	Intermittent	Waterway Commission begins review of management plan in 2014, efforts are limited by resources

Section 5: Condition of Plaques

There are currently four (4) CHRS plaques placed at areas of significance along the St. Croix River corridor. In order of the most upstream location to the most downstream location they are:

- 1) Spednic Lake Provincial Park
- 2) Saint Croix, located at the canoe launch for the beginning of the Upper St. Croix River.
- 3) Milltown, located at John E. Jake Park, near the Milltown border crossing.
- 4) Saint Andrews, located in Market Square, near the wharf.

The condition of these plaques is noted in the tables below.



Table 9 Condition of the CHRS plaque at Spednic Lake Provincial Park

Condition of Plaque: Spednic Lake Provincial Park	
General Condition of Plaque	Good
Plaque Condition Description	Concrete pad with plaque mounted on a painted wood frame
Site Condition Description	Located near the entrance of Spednic Lake Provincial Park, the plaque sits a short distance from a communal space which leads to the water's edge. No adverse issues encountered at the site
Necessary Repairs Required	The wood panels will need to be repainted, and or possibly replaced with pressure treated lumber
Estimated Date of Completed Repairs	September 30, 2024.



Figure 8 CHRS Plaque located at Spednic Lake Provincial Park.



Table 10 Condition of the CHRS plaque at Saint Croix.

Condition of Plaque: Saint Croix Canoe Launch	
General Condition of Plaque	Good
Plaque Condition Description	Concrete pad with plaque mounted directly on pad
Site Condition Description	Located near the canoe launch for the Upper St. Croix River in Saint Croix, New Brunswick. Most canoe trips on the St. Croix begin here. No adverse issues encountered at the site
Necessary Repairs Required	Plaque could be mounted on a wooden platform, similar to the one at Spednic Lake.
Estimated Date of Completed Repairs	September 30, 2024.



Figure 9 CHRS plaque located at Saint Croix, located next to the canoe launch and picnic structure overlooking the Upper St. Croix River.

Table 11 Condition of the CHRS plaque at Milltown.

Condition of Plaque: Milltown at John E. Jake Park	
General Condition of Plaque	Good
Plaque Condition Description	Cut granite slab with plaque mounted directly on the cut face.
Site Condition Description	Located at a public park in the community of Milltown, on the banks of the St. Croix river mainstem, near the Milltown border crossing. No adverse issues encountered at the site.
Necessary Repairs Required	None
Estimated Date of Completed Repairs	-



Figure 10 CHRS plaque located at Milltown, New Brunswick, in the John E. Jake Park near the Milltown border crossing.



Table 12 Condition of the CHRS plaque at Saint Andrews.

Condition of Plaque: Saint Andrews at Market Square	
General Condition of Plaque	Good
Plaque Condition Description	The plaque is mounted on a wood frame. Plaque has begun to weather slightly, likely because of continuous exposure to the surrounding saltwater environment.
Site Condition Description	Located at Market Square in downtown Saint Andrews. The Plaque overlooks the harbour and the town wharf. No adverse issues encountered at the site.
Necessary Repairs Required	None
Estimated Date of Completed Repairs	-



Figure 11 CHRS plaque located at Saint Andrews, New Brunswick, in Market Square.



The CHRS plaques along the St. Croix corridor are all noted as being in good condition.

The St. Croix International Waterway Commission has in its possession four new CHRS plaques that are displayed in three languages: English, French, and Passamaquoddy. Plans are in the works to mount these plaques on cut stone/granite slabs to replace the current plaques and make the plaques consistent in presentation throughout the designation corridor. The Waterway Commission plans to seek additional funding to accomplish this. Additionally, the possibility exists to move the Milltown plaque to a new location. The Milltown dam removal may open a new parcel of public land, for which there have been talks about establishing a public park that would offer viewpoints of the restored Salmon Falls area. This plaque may be more appropriately placed at a new park located in Milltown. The Waterway Commission will continue to monitor the situation and advocate for the best placing of this plaque. The town of Saint Andrews also has plans to construct a new wharf structure. There have also been discussions around the modification of Market Square to protect this space and the new wharf from the effects of sea level rise and climate change. The Waterway Commission will continue to engage with the town to monitor if the location of the plaque could be placed somewhere more prominent following the release of design plans for a new wharf and market square.

Section 6: Summary of Benefits and/or Detrimental Effects Since Designation

Benefits of the designation of the St. Croix River are particularly noted in recreational planning aspects, as well as aiding in the management of the vast recreational facilities found along the St. Croix corridor. The designation has provided increased awareness of the importance of conservation initiatives along the river, particularly in land conservation, as the St. Croix corridor has some of the largest tracts of protected land along its shores of any watershed in New Brunswick.

Table 13 Summary of benefits since the original CHRS designation.

Type of Benefit	Description
Recreational Benefits	Awareness of the CHRS designation amongst recreational users, planners, and managing agencies has allowed the Waterway Commission to implement consistent cross border messaging and usage guidelines that pertain to recreation. This can be seen by consistent campsite signage between sites in Maine and New Brunswick. The CHRS designation also increases awareness amongst managing agencies about the importance of recreational activities along the St. Croix corridor
Stewardship/Monetary Benefits	The CHRS designation has allowed the Waterway Commission as river manager to enter into a recreational agreement with the Province of New Brunswick through their Department of Natural Resources and Energy Development. This agreement ensures proper stewardship of

	recreational campsites, parks, and facilities located along the corridor.
Environmental Benefits	The CHRS designation has contributed to land conservation initiatives on the New Brunswick side of the waterway, particularly in permanently protecting much of its shorelines in the Spednic Lake and Upper St. Croix River areas

Section 7: Overall Assessment

Over the past ten years many positive initiatives have occurred on the St. Croix leading to improvements in fish passage, water quality, land conservation, and more. The original values for which the river was first designated remain intact. The nature of the many water storage and hydropower impoundments found within the CHRS corridor would now make the St. Croix ineligible for designation, however given the rivers importance highlighted by its outstanding natural, cultural, and recreational values, the CHRS designation should remain in place. The St. Croix remains as a unique and storied river, and one that offers cultural significance for the working communities found along its banks, and the allure of its largely unspoiled shores attract visitors from across Canada and beyond. The designation as a heritage river is critically important for not just Canada, but for helping to highlight its importance to those beyond its shared border.

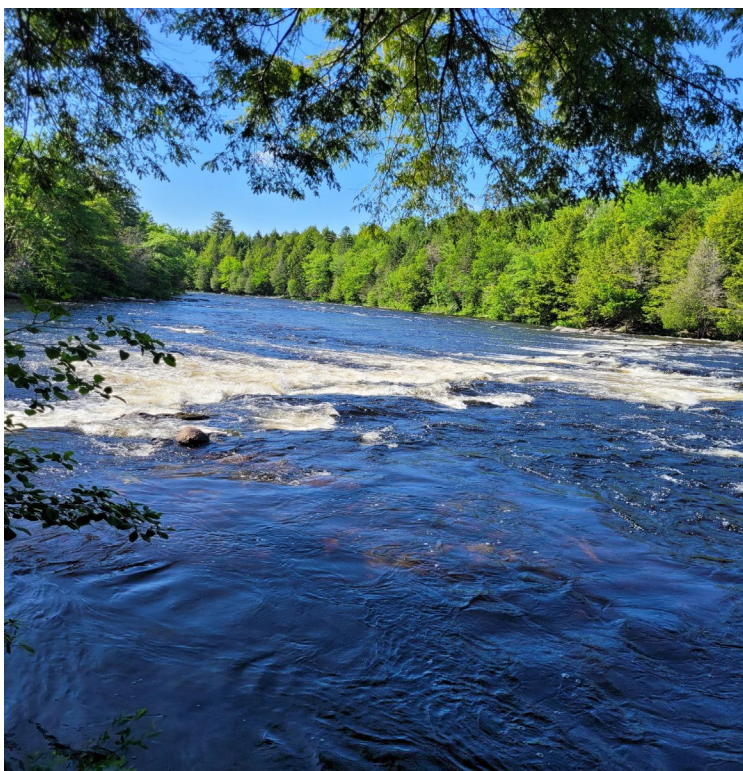


Figure 12 The Canoose Ledges looking downstream on the Upper St. Croix River. The Maine shoreline is seen on the opposite riverbank.



Bibliography

CBC News, May 23, 2022. Early research suggests winter ticks are killing young moose in New Brunswick. <https://www.cbc.ca/news/canada/new-brunswick/winter-ticks-moose-nb-mortalities-1.6461447>

CBC News, August 27, 2018. Spill from aging Maine pulp mill worries St. Croix conservationists. <https://www.cbc.ca/news/canada/new-brunswick/woodland-spill-worries-st-croix-conservationists-1.4799226>

Federal Energy Regulatory Commission, 2019. Woodland Pulp LLC's Forest City Project. P-2660-030, Technical Meeting. <https://www.ferc.gov/sites/default/files/2020-09/082819ForestCity.pdf>

Government of Canada, 2022. Statement of cooperation on the restoration of indigenous, sea-run fish in the Skutik/St. Croix River watershed along the U.S.-Canada border. <https://www.dfo-mpo.gc.ca/indigenous-autochtones/agreement-entente/skutik-cooperation-eng.html>

Government of New Brunswick. Nature Legacy Featured Areas. Chiputneticook Lakes. https://www2.gnb.ca/content/gnb/en/departments/erd/promo/nature_legacy/featured_areas.html

International St. Croix River Watershed Board, 2021. Exploring Upstream and Downstream Fish Passage Improvements on the Lower St. Croix River. <https://ijc.org/en/scrwb/exploring-upstream-and-downstream-fish-passage-improvements-lower-st-croix-river>

International St. Croix River Watershed Board. Alewife/Gaspereau. <https://www.ijc.org/en/scrwb/watershed/gaspereau>

Maine Department of Agriculture, Conservation, and Forestry: Division of Parks and Public Lands and Maine Department of Inland Fisheries and Wildlife. Spednic Lake/Upper St. Croix River Management Plan. https://www.maine.gov/dacf/parks/get_involved/planning_and_acquisition/management_plans/spednic_lake_upper_stcroix.html

Maine Department of Marine Resources, 2022. \$14.8 Million National Oceanic and Atmospheric Administration Grant Bolsters Fish Passage Work on St. Croix River. <https://www.maine.gov/dmr/news/wed-12142022-1200-148-million-national-oceanic-and-atmospheric-administration-grant-bolsters>

Nature Trust of New Brunswick. Beausoleil Nature Preserve. <https://www.naturetrust.nb.ca/en/beausoleil-nature-preserve>

NB Power. Milltown Decommissioning. <https://www.nbpower.com/en/about-us/projects/milltown-decommissioning/>

Peskotomuhkati Nation at Skutik, 2019. Skutik Watershed – Strategic Sea-Run Fish and River Restoration Plan.

St. Croix Estuary Project, 2013. Freshwater and Estuarial Monitoring in the St. Croix Estuary Area of New Brunswick: October 2012 – March 2013.

St. Croix International Waterway Commission, 2022. Milltown Dam Anadromous Fish Counts.



St. Croix International Waterway Commission, 1993. St. Croix International Waterway: A Heritage – A Future; Plan for long-term cooperative management of the St. Croix International Waterway.