GLAM GREAT LAKES – ST. LAWRENCE RIVER ADAPTIVE MANAGEMENT COMMITTEE

Annual Work Plan

Fiscal Year

2022

Annual Work Plan in support of a long-term adaptive management strategy for the on-going review and evaluation of the regulation plans and the expedited review of Plan 2014.

Covering
October 1, 2021 to September 30, 2022

November 22, 2021

WORK PLAN

Project Name:	Great Lakes-St. Lawrence River Adaptive Management (GLAM) Committee Annual Work Plan for 2022		
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Blue text identifies other International Joint Commission Board and Committee affiliations

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NOTE: The Great Lakes-St. Lawrence River Adaptive Management (GLAM) Committee was established by the International Joint Commission (IJC) and is comprised of an equal number of members from the United States and Canada. Members of the Committee serve at the pleasure of the IJC and are expected to be full participants in all activities of the Committee. As with all IJC Boards and Committees, the GLAM Committee members serve in their personal and professional capacity, not as a representative of their agencies or employers.

Purpose

This work plan identifies the priority activities to be carried out or initiated by the GLAM Committee in the period covering October 1, 2021 through September 30, 2022. While these activities generally support the long-term adaptive management strategy (on-going review and evaluation) of regulation plans for the outflows of Lake Superior and Lake Ontario, they are primarily designed to address an IJC priority request to undertake an expedited review of Plan 2014.

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Introduction

On January 16, 2015 the International Joint Commission (IJC) issued a Directive establishing the Great Lakes-St. Lawrence River Adaptive Management (GLAM) Committee which reports to the three Great Lakes-St. Lawrence River Boards (Superior, Niagara and Lake-Ontario-St. Lawrence (Boards)). The GLAM Committee is to carry out the required monitoring, modelling and assessment related to on-going evaluation of the regulation plans and address other questions that may arise due to changing conditions, in consultation with the Boards.

In the summer of 2019, the IJC requested the GLAM Committee begin planning for an expedited review of Plan 2014 with the goal of further moderating flooding that occurred because of record water supplies to the Lake Ontario-St. Lawrence River system in 2017 and 2019. The GLAM Committee proposed a two Phase approach. Phase 1 of this expedited review is 20 month effort officially launched by the IJC in February 2020 and ending at the end of October 2021 that focuses on information to support the International Lake Ontario – St. Lawrence River Board when they must make high water deviation decisions. Phase 2, beginning in the fall of 2021, will more closely evaluate options over a longer period to determine whether changes can be made to Plan 2014 or its limits and is scheduled for completion by the end of 2024.

This document presents the seventh annual work plan of the GLAM Committee covering Fiscal Year 2022 (FY22) from October 1, 2021 through September 30, 2022 and coinciding with the United States fiscal year for federal agencies. It prioritizes GLAM Committee requirements for initiating Phase 2 of the expedited review of Plan 2014 and associated funding for ongoing review of recent deviation approaches for Plan 2012, the outflow strategy for Lake Superior.

Purpose and Objectives

As outlined in the January 2015 GLAM Committee Directive, the objective of the GLAM Committee is to provide information to the Boards and advise them and the IJC regarding the effects control structures (approved in the Commission's Orders of Approval and Directives) have on the flows and levels in boundary waters and the impacts the regulation plans have on the affected interests. This includes the on-going review and evaluation of regulation plans related to:

a) the effectiveness of the existing regulation plans in managing outflows in the Lake Ontario-St. Lawrence River system and Lake Superior.
b) examining how the system may be changing over time and whether any modifications to the regulation plan(s) may be warranted; and

c) any other questions requested by the Boards and/or IJC that may affect the Boards' water management decisions over the long-term.

The 2015 Directive tasks the GLAM Committee to design a work plan for review and approval by the Great Lakes Control Boards and the IJC that supports long-term efforts to address the following questions:

1. How well are the impacts of flows and water levels represented by current data and models used in the evaluation?
2. How will future water supplies differ from those used to test the current management of outflows?
3. How are other physical, chemical, biological, and/or socio-economic conditions of the system changing over time?
4. How can the management of outflows benefit other physical, chemical, biological and/or socio-economic conditions?

The 2022 GLAM Committee work plan builds on activities undertaken since the committee was formed in 2015 and addresses new requirements resulting from the request in February 2020 by the IJC for an expedited review of Plan 2014 and the associated FY22 funding that has been identified. The committee has developed its short-term and long-term strategy (covering 1 to 15 years, consistent with the requirements of the updated Orders), to deliver on the requirements in the directive and the expedited review.

Through its strategy document, the GLAM Committee has identified various components of the broader adaptive management framework to support review of the regulation plans (Figure 1). The core components relate to

(1) hydroclimate conditions;
(2) calculating water levels and flows (regulation plan simulation);
(3) developing and using predictive models to assess outcomes:
(4) evaluating plan performance, and;
(5) supporting the IJC and boards in making decisions based on the available information.

The feedback aspects of these core components include monitoring and testing changes, validating and improving impact models, and re-considering assessments of plan performance if key objectives change.

Overarching components that apply to all aspects of the framework (6) include broader engagement and outreach, peer review, information management, institutional arrangements, and project management.

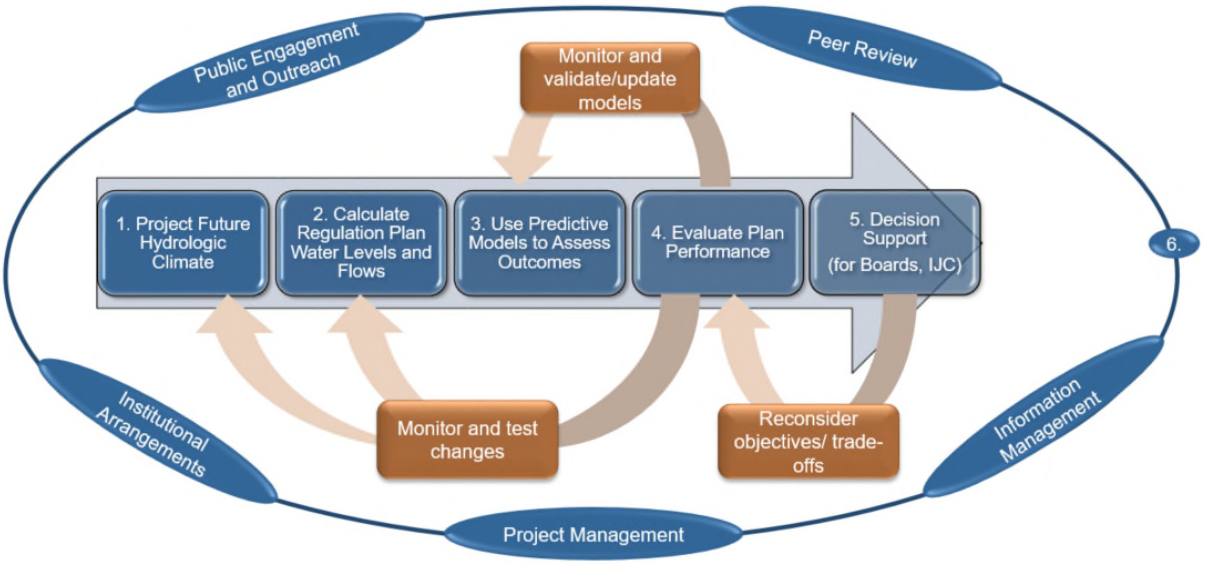

Figure 1: Illustration of the GLAM Committee's adaptive management framework

Scope and Timeline

The adaptive management process undertaken by the GLAM Committee is part of a long-term and on-going effort that recognizes the dynamics of the large and complex Great Lakes – St. Lawrence River system. This includes the regulation plans for Lake Superior (Plan 2012) and Lake Ontario (Plan 2014) outflows. Within this long-term context, the GLAM Committee must also address the immediate requirements of the expedited review of Plan 2014 as requested by the IJC in response to the 2017 and 2019 flood events on Lake Ontario and the St. Lawrence River. Following the high water events, the IJC asked the GLAM Committee to work with the International Lake Ontario – St. Lawrence River Board to undertake an expedited review of Plan 2014 with the goal of further reducing future high water impacts.

Practically speaking, the expedited Plan 2014 review reflects an adaptive management approach for ensuring the effectiveness of Lake Ontario outflow management, albeit at a shorter time frame from the 15 year review outlined in the updated 2016 Orders of Approval. As part of the committee's short and long-term strategy, a phased expedited review process was outlined:

> Expedited Review Phase 1 - An 18-24-month (20 month) effort specific to Lake Ontario – St. Lawrence River-, ending October 2021, focused on flow releases under **board**

deviation authority recognizing recent conditions and high inflows in the foreseeable future. *Phase 1 was funded and is largely wrapping up*.
Expedited Review Phase 2 – An additional 3-5 year assessment of the regulation plan(s) under **many possible extremes**, both high and low, and combinations of extremes, to assess the risk and implications of changes to limits, triggers and Board deviations decisions over the longer term (beyond the current/near term conditions). *Phase 2 activities are dependent on future funding*. *Funding has been made available for the first year of Phase 2, starting fall 2021*

This FY22 work plan, therefore, is based both in the context of the long-term initiative and the 15 year reporting period within the IJC Orders for Lake Superior and Lake Ontario, which run through years 2030 for Plan 2012 (Superior) and 2032 for Plan 2014 (Ontario), and also in the context of the immediate requirements of the expedited review.

This is the seventh work plan prepared by the GLAM Committee and it builds on work initiated and information gained through implementation of the 2016 through 2021 work plans with a focus on Phase 2 of the expedited review. Individual work plan tasks contribute to a particular aspect of the GLAM Committee's overall Directive and the six components of the adaptive management framework (see Figure 1) as they relate to the long-term requirements as well as the short-term needs of the expedited review. Tasks specific to the Lake Ontario – St. Lawrence River basin are generally being done in support of Phase 2 of the expedited review or as follow up to recommendations from the Phase 1 report. Lake Superior specific tasks as well as basin-wide tasks generally support the long-term adaptive management needs. Many hydroclimate and cross-cutting tasks apply more generally basin-wide.

For both Lake Ontario and Lake Superior tasks, the FY22 work plan includes some carry over items (i.e. tasks from a previous work plan that have not yet been completed) as well as newly identified tasks. Information on progress related to past work plan tasks can be found in the GLAM Committee's past semi-annual reports. ***The tasks in the work plan are based on the resources that are expected to be available over the October 1, 2021 to September 30, 2022 period based on approved IJC Phase 2 expedited review funds as well as in-kind agency support. Actual resources (particularly in-kind) can vary throughout the year based on operational requirements in support of IJC regulation boards and may impact overall delivery.***

Fiscal Year 2022 Work Plan - Product Descriptions, Timelines and Resources

The primary focus in FY22 is on initiating Phase 2 of the expedited review for Plan 2014 and building on findings and recommendations from the Phase 1 report while also moving forward on a review of the recent deviation strategy employed for Plan 2012, the regulation plan for Lake Superior outflows. An immediate priority is ensuring an overarching and coordinated plan of study to support delivery on these objectives over the coming years. The goal is to define a clear roadmap for Phase 2 that operationalizes the adaptive management framework. This will occur through a series of workshops and planning activities, specifically falling under FY22.1.1, FY22-2.1, FY22-3.1, FY22-4.1 and FY22-5.1. The planning effort will bring together the working teams to ensure a common vision. Some aspects of this work plan may be refined as the plan of study is further refined based on those workshops.

This work plan categorizes individual tasks based on the six components outlined in the committee's adaptive management framework (Figure 1). Tasks in support of components 1-5 represent the technical work of the committee. Some of these tasks are undertaken annually in support of long-term adaptive management requirements, but most are short-term tasks targeting immediate data and information gaps identified by the committee. Tasks in support of component 6 represent cross-cutting oversight and administration tasks.

Specific tasks identified in the work plan represent activities the GLAM Committee has identified as priorities in consultation with the Boards and which the GLAM Committee believes can be resourced with one of the following options:

1) Available committee membership (e.g. USACE and ECCC), IJC staff and/or assigned agency resources given current expectations for the coming year, or
2) Financial support through expedited review funding made available by the US and Canadian government through the IJC, or
3) Financial support through the IJC's International Watershed Initiative (IWI)

Table 1 shows expected resources available to the GLAM Committee in FY22. The resources are primarily based on Phase 2 expedited review funding (approximately $1.3 million for both the Canadian and US side), plus $300K on both sides towards tasks supporting the review of Plan 2012 for the outflows of Lake Superior. Note the US funding was confirmed in winter 2021, but will primarily be spent starting at the end of 2021 and into 2022. Table 1 does not include agencies in-kind staff contributions. Typically, in-kind ECCC and USACE contributions average around 3 FTE, but are expected to be higher in the coming year due to the expedited review requirements.

Table 1: Summary of currently identified resources ($) for GLAM Committee activities in FY22 (includes new funding identified for the initiation of Phase 2 of the expedited review and priority Lake Superior tasks)**

PHASE 2 By Working Group	FY22 LOSLR		FY22 Upper Great Lakes	
	US	CAN	US	CAN
Component 1 - Hydroclimate	100	100	50	50
Component 2 - Plan Simulation	In-kind	In-kind	In-kind	In-kind
Component 3 - Impact Assessment	700	775	125	125
Coastal Interests (shoreline property, rec boating and tourism, M&I, indigenous communities)	450	400	100	100
Ecosystem	150	275	25	25
Hydropower				
Commercial Navigation	100	100		
Component 4 - Plan Review (integrated models)	150	100	75	25
Component 5 - Decision Support	50	25		
Component 6 - Cross Cutting (Project management, communications, peer review, information management)	300	300	50	100
Total	**1300**	**1300**	**300**	**300**

The GLAM Committee has organized priority FY22 tasks based on each component of the adaptive management framework identified in Figure 1. These tasks are further separated as ones that apply to Lake Ontario outflows, Lake Superior outflows or broadly across the full basin (i.e. both). As mentioned previously, individual tasks may be supported through in-kind resources, identified funding, or a combination. The work plan briefly highlights the key tasks.

Component 1 – Project Future Hydrologic Climate (Hydroclimate Team)

Component 1 is designed to understand and model the full range of hydroclimate conditions that should be considered when evaluating the performance of the regulation plans or alternatives to them. It includes tasks that help to reduce uncertainties in the modelling of the water balance and tasks that help better project future water supply conditions to support outflow regulation decisions.

Theme	Task	Description	Status		Superior	Ontario – St. Lawrence
			New	Carry-Over		
Understanding Water Supplies	**FY22-1.1**	In coordination with the working group leads of the other adaptive management framework components and particularly the Plan Evaluation team (Task FY22-4.1), undertake planning effort to identify and align outcomes of GLAM Committee hydroclimate priorities with plan review and decision support requirements for both Lake Ontario and Lake Superior outflow reviews. The intent is to ensure information on hydrologic conditions are directly linked to Phase 2 plan review requirements. **(NOTE: This task is an immediate priority and will guide execution of other FY22 hydroclimate tasks identified below.)**	☒	☒See FY21-2.3	☒	☒
	FY22-1.2	Prepare routine hydroclimate assessment for the 2018 through 2020 period to support tracking of hydroclimate conditions within the Great Lakes Basin as they relate to outflow management plans.	☐	☒ See FY21-1.1	☒	☒
	FY22-1.3	Complete project to assess whether improved forecasts can support improved regulation plan outcomes over a wide range of possible hydroclimate conditions as illustrated through stochastic water supplies.	☐	☒ See FY21-2.2	☐	☒

	FY22-1.4	Initiate analysis of trends in recent water supply components using Regional Deterministic Reforecast System (RDRS) developed by the Canadian Meteorological Centre covering 1980 to 2017 to better understand drivers of recent water balance changes in the Great Lakes.	☒	☐	☒	☒
	FY22-1.5	Continue development of new stochastic (statistical) water supply sequences for the Great Lakes Basin with a focus on inclusion of the Ottawa River to support IJC outflow regulation decisions.	☒	☐	☒	☒
Projecting Future Water Supplies	**FY22-1.6**	Update climate change sequences for use in undertaking Lake Superior and Lake Ontario regulation plan forecasts and longer-term (decade) plan simulations to compare alternative plan and deviation strategies.	☒	☐	☒	☒
	FY22-1.7	Based on guidance from FY22-1.1, initiate effort to characterize the influence of global climate patterns on regional climate to inform medium term (seasonal) forecast improvements to support real-time regulation decisions by improving confidence in upcoming conditions over the coming months.	☒	☐	☒	☒
	FY22-1.8	Work with key partners (e.g. Ottawa River Regulation Board and Hydro-Quebec) to identify existing and available Ottawa River hydrological models (e.g. runoff and regulation/routing) that could support GLAM Committee efforts related to climate change and stochastic analyses in the context of plan evaluation requirements.	☒	☐	☐	☒

Component 2 – Calculate Regulation Plan Water Levels and Flows (Plan Simulation Team)

To simulate the effects of a regulation plan, it is imperative that the GLAM Committee be able to accurately model how water travels through the system and how regulation rules, water supplies and weather conditions (e.g. ice factors) impact water levels and flows. This is a complicated system and calculating water levels and flows requires simulations that include certain assumptions about how the system works. This efforts aims to reduce the uncertainty in those assumptions and improve simulation modelling tools so that they can readily be used to undertake evaluations of alternatives.

Theme	Task	Description	Status		Superior	Ontario – St. Lawrence
			New	Carry-Over		
Calculate Regulation Plan Water Levels and Flows	**FY22-2.1**	In coordination with the working group leads of the other adaptive management framework components and particularly the Plan Evaluation team (Task FY22-4.1), undertake planning effort to identify and align outcomes of GLAM Committee water level and flow simulation priorities with plan review and decision support requirements for both Lake Ontario and Lake Superior outflow reviews. The intent is to ensure regulation plan water level and flow activities are directly linked to Phase 2 plan review requirements. **(NOTE: This task is an immediate priority and will guide execution of other FY22 regulation plan tasks identified below.)**	☒	☐	☒	☒
	FY22-2.2	Finalize development of regulation plan simulations within the new binationally coordinated regulation and routing model for the Great Lakes Basin.	☐	☒ See FY21-2.28	☒	☒
	FY22-2.3	Undertake annual updates to input databases and datasets required to include water supply conditions from the most recent years in simulations of outflows under a range of alternative regulation strategies, including establishing basis of comparison conditions to support simulations. For Lake Ontario outflows, this includes assumptions about simulated releases when outside H14 trigger levels. Coordinate with hydroclimate team to link efforts and priorities.	☐	☒ On-going	☒	☒
	FY22-2.4	Ensure Plan 2014 simulation code (from LOSLR Study) is operational to allow for multi-year plan simulations and ensure baseline simulation is defined.	☒	☐	☐	☒

	FY22-2.5	Recode Plan 2012 simulation tools to accept varying side channel capacity and include deviation strategy to determine if deviations met intended Plan 2012 goals.	☒	☐	☒	☐
	FY22-2.6	Simulate alternative outflow strategies for review of Plan 2014 performance. This will include coordination with the Plan Review and Decision Support Teams to determine what alternative triggers and limits should be tested.	☒	☐	☐	☒

Component 3 – Use Predictive Models to Assess Outcomes (Impact Assessment Team)

This component relates to the development, monitoring and modelling of performance indicators. The aim of this component is to improve and reduce uncertainties inherent in the models that relate water levels and flows associated with regulation plans to socio-economic and environmental impacts (using performance indicators). These tasks help the GLAM Committee in determining whether monitoring shows a need to redesign the models of performance indicators and select which of these performance indicators should be used in an update of the integrated modelling framework (Shared Vision Model or SVM).

Theme	**Task**	**Description**	**Status**		**Superior**	**Ontario – St. Lawrence**
			New	**Carry-Over**		
Overarching	**FY22-3.1**	In coordination with the working group leads of the other adaptive management framework components and particularly the Plan Evaluation team (Task FY22-4.1), undertake planning effort to identify and align outcomes of GLAM Committee impact assessment priorities with plan review and decision support requirements for both Lake Ontario and Lake Superior outflow reviews. The intent is to ensure impact assessment activities are directly linked to Phase 2 plan review requirements. **(NOTE: This task is an immediate priority and will guide execution of other FY22 impact assessment tasks identified below.)**	☒	☐	☒	☒

Ecosystem Indicators	**FY22-3.2**	Work with ecosystem experts to review existing performance indicators, identify ecosystem research being carried out externally to GLAM Committee that could support the expedited review, and prioritize indicators for ongoing monitoring, modelling, and use in comparison of regulation plan alternatives.	☒	☐	☐	☒
	FY22-3.3	Continued evaluation of existing Meadow Marsh Algorithm using recent Lake Ontario and upper St. Lawrence River monitoring data. This task builds on previous GLAM Committee monitoring and modelling efforts and will include testing and verification of new modelling approaches for a subset of Lake Ontario wetland sites.	☐	☒ See FY21-2.6	☐	☒
	FY22-3.4	Further develop priority ecosystem indicators for Lake St. Lawrence that are sensitive to critical Board operational decisions, particularly winter outflow adjustments, and low water levels in later summer and early fall during periods of high outflows.	☐	☒ See FY21-2.9	☐	☒
	FY22-3.5	Develop a flow change smoothness Performance Indicator for the St. Marys Rapids. This Performance Indicator should provide a numerical representation of benefits of smooth flow changes that can be integrated into the SVM or other acceptable method.	☐	☒ See FY21-2.26	☒	☐
	FY22-3.6	Lake Ontario and upper St. Lawrence River coastal wetland monitoring. The intent is to undertake monitoring, using previous methods, at a suite of sites on both the Canadian and US shoreline of Lake Ontario and the upper St. Lawrence River.	☒	☐	☐	☒
	FY22-3.7	Review and develop strategy for updating and improving the lower river IERM2D to support Phase 2 and longer-term adaptive management requirements.	☒	☐	☐	☒
Shoreline Riparian Indicators	**FY22-3.8**	Consolidated baseline datasets of shoreline characteristics and vulnerabilities for Lake Ontario and the St. Lawrence River as well as a data visualization framework. These datasets would include public and private infrastructure at risk of impact under various water level and flow sequences.	☐	☒ See FY21-2.14	☐	☒
	FY22-3.9	Complete documentation of initial process for seeking First Nation, Tribal Nation, and Métis People impacts from changing Lake Ontario and St.	☐	☒ See FY21-2.12	☐	☒

		Lawrence River water levels and consider potential implications for performance indicator development.				
	FY22-3.10	Development of initial flooding performance indicator for the Whitefish Island.	☐	☒ See FY21-2.25	☒	☐
	FY22-3.11	Coordination of shoreline riparian indicator development and integration within the evaluation framework developed for Phase 2 of the expedited review. Indicators should reflect broad range of items identified through Phase 1. This includes identification of both high and low water indicators.	☒	☐	☐	☒
	FY22-3.12	Ongoing development and refinement of water level impacts zones and associated Story Maps within the Phase 1 Decision Support Tool. This includes seeking feedback and input on prototype versions.	☒	☐	☐	☒
	FY22-3.13	Flood impact model validation and improvement for both Lake Ontario and the St. Lawrence River downstream to Trois Rivières through data collection, model validation, model refinement (including economic metrics), and visualization of model output to support improvements to the Phase 1 Decision Support Tool and development of the Phase 2 Shared Vision Model.	☒	☐	☐	☒
	FY22-3.14	Initiate development of shore protection failure predictive tool, starting with updated inventory of shoreline protection assets and a review of failure modelling approaches and critical data needs to support model development and initiate model development.	☒	☐	☐	☒
	FY22-3.15	Improve predictive capacity for Lake Ontario shoreline bluff recession associated with changing water level conditions by testing applicability of new approaches for monitoring bluff recession and undertaking a review of existing cohesive sediment erosion tools.	☒	☐	☐	☒
	FY22-3.16	Continued implementation of GLAM Committee shoreline impacts questionnaire, processing of all results from previous years, and development of a visualization product.	☒	☐	☐	☒
	FY22-3.17	Undertake detailed data collection and consolidation for Lake St. Lawrence impact zone refinement, including detailed database for priority metrics.	☒	☐	☐	☒

Recreational Boating and Tourism Indicators	**FY22-3.18**	Development of recreational boating and tourism spatial database to represent the location of critical assets, their functional elevations, and metrics related to the extent of activity under varying water level conditions to support the development of a recreational boating performance indicator.	☒	☐	☐	☒
Hydropower	**FY22-3.19**	Liaise with OAG hydropower representatives to ensure critical hydropower thresholds and constraints are included in any updates to the Phase 1 Decision Support Tool as well as the design of the new Phase 2 Shared Vision Model.	☒	☐	☐	☒
Commercial Navigation	**FY22-3.20**	Establish coordinated commercial navigation technical team, representing Canadian and US interests, and through that team undertake the development of a framework for developing at navigation model that can be used to support both Plan 2014 (both Seaway and the lower St. Lawrence) and Plan 2012 regulation decisions.	☒	☐	☒	☒
Integrating Impact Assessment Information Into Decision Support Tools	**FY22-3.21**	Ensure ongoing coordination between all impact assessment tasks and decision support efforts including updates to the Phase 1 Decision Support Tool and the Phase 2 Shared Vision Model.	☒	☐	☒	☒

Component 4 – Evaluate Plan Performance (Plan Evaluation Team)

This component allows for the testing of changes to both the deterministic rules of Plan 2012 and Plan 2014 and protocols for deviations from these rules, by integrating the results from the simulations of various alternatives with results from the outcomes of impacts through the impact assessments allowing for the visualization of outcomes and comparison of those to the current rules and protocols (known as the base case). This includes the development a unified computer model or tool of the lake(s) and river system that integrates the impact of water levels and flows on interests – a shared vision model (SVM).

Theme	Task	Description	Status		Superior	Ontario – St. Lawrence
			New	Carry-Over		
Evaluate Plan Performance	**FY22-4.1**	Lead the visioning and design of Phase 2 LOSLR Shared Vision Modelling in coordination with the Decision Support, Impact Assessment, Hydroclimate, and Plan Review teams. This should include design regarding priority metrics and the use of economics vs. other metrics to compare within interests and across geographies (see Tasks FY22-1.1, FY22-2.1, FY22-3.1 and FY22-5.1) **(NOTE: This task is an immediate priority and will guide execution of other FY22 work plan tasks identified below.)**	☒	☐	☐	☒
	FY22-4.2	Improve the structure and function of the Phase 1 LOSLR Decision Support Tool to operationalize and make it more efficient and robust. This likely includes converting to a new platform.	☒	☐	☐	☒
	FY22-4.3	Prioritize potential deviation options identified through Phase 1 effort for assessment over long-term simulations (including limits and triggers). An objective would be to ensure we identify what plan changes should be considered and in turn the type of tool that's needed to support that evaluation.	☒	☐	☐	☒
	FY22-4.4	Create working SVM from IUGLS using existing data to verify outputs match results created during IUGLS.	☒	☐	☒	☐
	FY22-4.5	Generate SVM results using recoded Plan 2012 (inclusive of the deviation strategy used during side-channel reductions). Compare original Plan 2012 SVM results to recoded Plan 2012 SVM results to ensure goals of Plan 2012 were met.	☒	☐	☒	☐
	FY22-4.6	Integrate new and updated performance indicators (PIs) into SVM. This includes Whitefish Island PI, St. Marys Rapids PI, and St. Marys River PI. Generate SVM results using updated NBS (NBS from recent years, climate	☒	☐	☒	☐

		change scenarios, NBS schedules generated by Hydroclimate Technical Working Group, etc.).				
	FY22-4.7	Create separate Shared Vision Model or Decision Support Tool for St. Marys Rapids area. Upon completion of all PIs related to the Rapids (including Whitefish Island), compile data into cohesive tool to support Board when making deviation decisions. A separate tool for the Rapids would aid in making gate change decisions over the course of a season; likely include a forecast component.	☒	☐	☒	☐

Component 5 – Decision Support (Decision Support Team)

This component provides the visualization and presentation of an array of performance evaluation data to assist the Board in understanding and weighing trade-offs and support its efforts to make recommendations for possible changes to the plans or deviation strategies. This includes an iterative process of practice decisions to improve the decision making process. This team works closely with the other teams and is an extension of the Plan Evaluation team.

Theme	Task	Description	Status		Superior	Ontario – St. Lawrence
			New	Carry-Over		
Decision Support	**FY22-5.1**	In coordination with the working group leads of the other adaptive management framework components and particularly the Plan Evaluation team (Task FY22-4.1), undertake planning effort to identify and align outcomes of GLAM Committee decision support efforts with requirements for both Lake Ontario and Lake Superior outflow reviews. The intent is to ensure decision support activities are directly linked to Phase 2 requirements. **(NOTE: This task is an immediate priority and will guide execution of other FY22 Decision Support tasks identified below.)**	☒	☐	☒	☒

	FY22-5.2	Engage with the International Lake Ontario – St. Lawrence River Board (ILOSLRB) on defining the Phase 2 decision and their input on a new Shared Vision Model	☒	☐	☐	☒
	FY22-5.3	Continued practice decisions with the International Lake Ontario – St. Lawrence River Board (ILOSLRB) using the Phase 1 Decision Support Tool	☒	☐	☐	☒
	FY22-5.4	Summary Report on deviation analysis for Plan 2012	☒	☐	☒	☐

Component 6 – Cross-cutting Items (Project Management, Public Engagement and Outreach, Peer Review, Information Management)

These tasks include project management and all aspects that help support and build trust in the simulations, including stakeholder involvement, Indigenous engagement, peer review, information management, partner collaboration, and succession planning. This component is led by the GLAM secretariat.

Theme	**Task**	**Description**	**Status**		**Superior**	**Ontario – St. Lawrence**
			New	**Carry-Over**		
Project Management	**FY22-6.1**	GLAM Committee Coordination, Management, and Reporting	☐	☒ On-going	☒	☒
	FY22-6.2	Monitoring of Work Plan delivery	☐	☒ On-going	☒	☒

Information Management	**FY22-6.3**	GLAM Committee Information Management Needs to support expedited review and ongoing Adaptive Management, including the development of an information management strategy.	☐	☒ On-going	☒	☒
Communication and Engagement	**FY22-6.4**	Continue initial efforts to engage First Nations, Tribal Nations, and Métis People on impacts from changing water levels for Lake Ontario and the St. Lawrence River and initiate a complementary effort that would support the review of the Plan 2012 deviation strategy. Work with the IJC to better define how Indigenous Nations are considered in future plan evaluation processes and integrated with the development of the Phase 2 Shared Vision Model.	☐	☒ See FY21-2.12	☒	☒
	FY22-6.5	Development of communication products on the GLAM Committee and the Expedited Review, and support for the roll out of the Phase 1 report for public comment.	☒	☐	☐	☒
	FY22-6.6	Ongoing support for the engagement of the Public Advisory Group for Phase 1 roll out of the Plan 2014 expedited review report as well as initiation of a Public Advisory Group to support Phase 2 of the Plan 2014 review.	☒	☐	☐	☒
	FY22-6.7	Development and initial implementation of a strategy for public engagement in Plan 2012 deviation review.	☒	☐	☐	☒
Peer Review	**FY22-6.8**	Support the IJC in any peer review processes in support of GLAM Committee activities.	☒	☐	☒	☒
GLWQA Liaison	**FY22-6.9**	Maintain engagement with the IJC's Great Lakes Water Quality Agreement (GLWQA) activities including the Science Advisory Board and the Water Quality Board (per GLAM Committee Directive).	☐	☒ On-going	☒	☒

Work Plan Prerequisites and External Dependencies

Prerequisites required to ensure the success of this work plan include the on-going annual support of the agencies represented on the GLAM Committee along with additional staff support as identified by those agencies. It also requires that funds identified by the IJC for Phase 2 are made available to the GLAM Committee in a timely manner. It also assumes that necessary implementation and contract arrangements can be made for individual projects.

As this is an on-going effort, the priorities set and commitments made are estimates based on what the committee understands to be the resources available. The expertise available through the partner agencies continues to be evaluated relative to the priorities identified. There may in fact be a need to readjust proposed products depending on the expertise required and available to complete the task. These assessments will occur throughout the year as the work plan progresses. The GLAM Committee will keep the Boards aware of progress through semi-annual reporting.

Revision History

Date of next revision:

Revision Date	Previous Revision Date	Summary of Changes	Changes Marked