Ontario Power Generation Inc., EO Generation LP (Dba Portage Power), Enerdu Power Systems Ltd., Mississippi River Power Corporation, Mississippi Valley Conservation Authority

Implementation Report

Five Year Term January 2020 – December 2024

Mississippi River Water Management Plan (MRWMP)
Mississippi River, Ontario

Date: March 2025

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Implementation Report

Mississippi River Water Management Plan

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1 Introduction

On February 16th, 2018, the Ministry of Natural Resources (MNR), under the authority of Section 23.1(6) of the *Lakes and Rivers Improvement Act* (LRIA), amended the Mississippi River Water Management Plan (MRWMP or WMP). The amendment was completed to align the MRWMP with the approved 2016 Maintaining Water Management Plans Technical Bulletin.

The newly amended MRWMP includes the requirement for the plan Co-Proponents to undertake a review of the WMP components and prepare and submit an Implementation Report to the MNR, after every five years of operation. The MRWMP is a complex plan involving five Co-Proponents, four of whom are generators, and this implementation report has been produced to represent all plan proponents.

The Co-Proponents were tasked with undertaking a review for the second term (2020 until 2024) of the WMP and prepare an Implementation Report which:

- Summarizes all amendment activity during the term.
- Reports on the status of the Standing Advisory Committee (SAC).
- Outlines the results and conclusions of the effectiveness monitoring program (EMP), if applicable; and,
- Reports on the status and results of the data collection program, if applicable, and determine if revisions to the program are required.

It is important to note that during this second term of reporting for this system, the Appleton Generating Station and the Galetta Generating Station facilities operated were sold by Trans-Alta Corporation and are now operated by EO Generation LP (Dba Portage Power).

This report, which summarizes the findings, has been developed based on the contributions of key WMP plan Co-Proponents:

- Mississippi Valley Conservation Authority (MVCA),
- Ontario Power Generation (OPG),
- EO Generation LP (Dba Portage Power),
- Enerdu Power Systems Ltd. (Enerdu) and.
- Mississippi River Power Corporation (MRPC).

In addition, portions of this report have been directly authored by MNR.

For information or questions related to facility operations, including incidents and annual reporting, please contact the appropriate facility operator.

2 Amendment Requests

The following section outlines all amendment requests received, including a rationale for any completed amendments and how proposed amendments that did not proceed were addressed.

2.1 Summary of Amendment Requests

2.1.1 Community (Public or Indigenous)

No amendment requests were submitted.

2.1.2 Mississippi Valley Conservation Authority

No amendment requests were submitted.

2.1.3 Ontario Power Generation – Crotch Lake Dam

No amendment requests were submitted.

2.1.4 Ontario Power Generation – High Falls GS

No amendment requests were submitted.

2.1.5 EO Generation LP – Appleton GS

No amendment requests were submitted.

2.1.6 Enerdu Power Systems Ltd. – Enerdu GS

Enerdu prepared a minor amendment request in accordance with guidance from MNR and submitted their final amendment proposal on September 14, 2020. Please see Section 2.2.2 of this report for further details.

2.1.7 Mississippi River Power Corporation – Brian J. Gallagher (Almonte) GS

In 2019, MRPC contacted MNR to request a signed copy of a minor amendment they had prepared and submitted to the Ministry for final approval in 2011. The Ministry could not find any record of the amendment obtaining MNR approval; and the changes were not incorporated into the MRWMP during the last interim reporting period (2007-2019).

In September 2020, MNR reviewed the previously submitted MRPC amendment materials in consultation with MRPC to ensure their accuracy and consistency with the

current requirements for a minor amendment. Please see Section 2.2.3 of this report for further details.

2.1.8 EO Generation LP – Galetta GS

No amendment requests were submitted.

2.2 Summary of Amendments Completed and Approved

2.2.1 MNR

No amendment requests were submitted.

2.2.2 Enerdu Power Systems Ltd. – Enerdu GS

A minor amendment was approved on October 13, 2020, to incorporate updates based on the redevelopment of the Enerdu G.S., into the existing water management plan. The amendment was categorized as a minor amendment in accordance with the 2016 Maintaining Water Management Plans Technical Bulletin. No changes to the Mississippi River Water Management Plan's existing approved water levels and flows were proposed as part of the amendment, and the amendment was in keeping with the objectives of the water management plan. The changes to the facility descriptions in the plan allow for increased consistency and accuracy with the current state of the Enerdu Generating Station.

The minor amendment resulted in changes to the following sections of the plan:

Description of Existing Waterpower Stations and Water Control Facilities	**Figure 3.3** has been **revised** to incorporate updates to the Enerdu Generating Station.
Hydro-electric Generation	**Section 5.1** has been **revised** to reflect the increased capacity of the Enerdu Generating Station.
Reach 18 – Appleton to Almonte (Enerdu and Mississippi River G.S.)	**Section 7** descriptions of the Enerdu Generating Station have been **revised** to reflect information about the redeveloped facility.
Revised Compliance Ranges for Compliance Monitoring	**Figure 9.2** has been **revised** to incorporate updates to the Enerdu Generating Station.
High and Low Water Indicators	**Section 9.2.3** has been **revised** to reflect the redeveloped Enerdu Generation Station.

2.2.3 Mississippi River Power Corporation – Brian J. Gallagher (Almonte) GS

A minor amendment was approved on October 13, 2020, to incorporate updates based on the redevelopment of the Brian J. Gallagher G.S. into the existing water management plan. The amendment was categorized as a minor amendment in accordance with the 2016 Maintaining Water Management Plans Technical Bulletin. No changes to the Mississippi River Water Management Plan's existing approved water levels and flows were proposed as part of the amendment, and the amendment was in keeping with the objectives of the water management plan. The changes to the facility descriptions in the plan allow for increased consistency and accuracy with the current state of the Brian J. Gallagher Generating Station.

The minor amendment has resulted in changes to the follow sections of the plan:

Description of Existing Waterpower Stations and Water Control Facilities	**Figure 3.3** has been **revised** to incorporate updates to the Brian J. Gallagher Generating Station.
Hydro-electric Generation	**Section 5.1** has been **revised** to reflect the increased capacity of the Brian J. Gallagher Generating Station.
Reach 18 – Appleton to Almonte (Enerdu and Mississippi River G.S.)	**Section 7** descriptions of the Brian J. Gallagher Generating Station have been **revised** to reflect information about the redeveloped facility.
Revised Compliance Ranges for Compliance Monitoring	**Figure 9.2** has been **revised** to incorporate updates to the Brian J. Gallagher Generating Station.
Change of facility name throughout the Mississippi River Water Management Plan	All references to the Almonte or Mississippi River Power Corp. Generating Station have been **replaced** with its new name, the Brian J. Gallagher Generating Station. References to the owner/operator of the Generating Station remain as Mississippi River Power Corp.

2.3 Summary of Amendments Pending Approval

There are no amendments pending approval.

3 Standing Advisory Committee Status

The role of the SAC was to advise, review and assist in the implementation of the WMP and to promote public engagement during the implementation of the plan. The SAC enabled collaboration of the various stakeholders of the WMP through such tasks as assessing operations, reviewing plan amendment requests, and representing and communicating with the public on water management issues.

The MNR letter dated November 18th, 2017, was issued to SAC members informing them of changes to the WMP because of the October 2016 Maintaining Water Management Plans Technical Bulletin issued by MNR. These changes include the fact that SACs are no longer a mandatory requirement of WMPs; however, they remain a recommended best practice. The MRWMP SAC has not met since the initial Implementation Reporting period, however, the public and Indigenous communities are kept well informed of the river conditions and activities through:

- Active websites (MVCA, OPG), where the public can access water levels, public notices and warnings, reports, maps, and other records, etc. (described in Sections 4.1.4 and 4.2.1 of the IR))
- Information centres where the public and Indigenous communities are invited in to observe operations and learn about the facility history and current operations (described in Section 4.2.4 of the IR)

For these reasons, re-establishing the SAC at this time is not considered necessary. Information on historical SAC meetings can be obtained from the Kemptville District MNR office.

4 Effectiveness Monitoring Plan (EMP)

The following section outlines the status and results of the effectiveness monitoring projects mandated to be undertaken in the WMP (Table 9.1) as part of EMP since January 1st, 2007. The monitoring program included monitoring requirements related to both environmental and socio-economic components, which may be affected by the operations of the waterpower facility or the requirements of the WMP.

4.1 Environmental Monitoring

Environmental effectiveness monitoring on the river was to be undertaken by MVCA and MNR (Bancroft and Kemptville Districts) to ensure that the assumptions used to develop and select the approved operating plan were appropriate. The collected environmental data can be used by MVCA and MNR to identify if, and if so, where impacts to fisheries and the overall ecosystem health may be occurring.

4.1.1 Environmental Objective – Maintain or Improve Aquatic Ecosystem Health Throughout the System (MNR and MVCA)

MNR Walleye Assessment – Walleye Spawning and Population Assessment is also tied to this Plan Objective (See Status and Results Summary of the Data Gaps and Information Collection Program, Section 5.7 (Walleye Assessment), below).

There were no other related MNR projects that were achieved and tied to this Plan Objective for the second IR reporting period (2020-2024).

4.1.2 Environmental Objective – Improve Lake Trout Spawning Success on Shabomeka and Mazinaw Lakes (MNR and MVCA)

MNR (former Bancroft District) and MVCA were assigned a series of effectiveness monitoring strategies associated with the ecosystem health of these two lakes, such as.

- Assess Lake Trout (*Salvelinus namaycush*) population for natural recruitment (MNR - Bancroft District with Co-Proponent MVCA support).
- Assess spawning activity (MNR - Bancroft District with Co-Proponent MVCA support).
- Monitor water levels throughout the winter (MVCA).
- Complete a survey of structures on the lakes (MVCA).

4.1.2.1 Findings of Effectiveness Monitoring

To reduce overlap with partner agencies MVCA does not conduct lake fish population assessments, or spawning habitat assessments as part of our natural systems

monitoring programs. MVCA conducts surface water quality monitoring on and near Mazinaw Lake through two programs:

1. Lake water quality assessments through the Lake Monitoring program which has a focus on total phosphorus concentrations as well as lake dissolved oxygen and water temperature assessments. This work is currently conducted every two years at Mazinaw Lake.
2. We also collect surface water samples from the outlet of Mazinaw Lake for the Provincial Water Quality Monitoring Network. This sampling is conducted monthly during the ice-free season (April – November).

Our findings from these programs are that Mazinaw Lake is holding steady over the long term as a deep, cold, clear, oligotrophic (low nutrient) lake. In recent years the invasive aquatic plant Eurasian watermilfoil has been identified within the lake. This is of concern to lake ecosystem health as it may crowd out native aquatic plants altering the nearshore habitats. The decomposition of this additional dense plant matter within the lake over the winter ice-on season may reduce dissolved oxygen levels and stress resident fish populations including the Lake Trout. The Mazinaw Properties Owners Association are currently researching methods to manage the Eurasian milfoil to mitigate these negative impacts it poses to the lake.

There was no further progress by the MNR on this Plan Objective for the second IR reporting period (2020-2024).

4.1.2.2 Requirement for Proposed Changes to Operations or EMP

No adjustment to operations or the EMP is required.

4.1.2.3 Adaptive Management

No adaptive management is required.

4.1.3 Environmental Objective – Maintain Spring Spawning for Key Species (pike, walleye, bass); Minimize Water Level Fluctuations; Emulate Natural Flow Regime and Maintain Flow (MVCA)

MVCA was to conduct monitoring of flow, water levels, precipitation and dam operations across the system during critical spawning periods and provide an annual summary of this activity to determine if spring flow regime is beneficial to the sustainability of key species in the system.

4.1.3.1 Findings of Effectiveness Monitoring

Level, flow, precipitation and operating records are available for the period of record that demonstrate that all reasonable efforts were made to maintain spring spawning

conditions per the WMP. No annual report is prepared except under exceptional circumstances.

4.1.3.2 Requirement for Proposed Changes to Operations or EMP

No adjustment to operations or the EMP is required.

4.1.3.3 Adaptive Management

No adaptive management is required.

4.1.4 Environmental Objective – Ensure Abundance of Wild Rice is not reduced (MVCA and MNR)

MVCA and MNR were assigned two effectiveness monitoring strategies associated with the wild rice beds throughout the system:

- Continue to monitor water levels, flow, precipitation and dam operations during critical periods (MVCA);
- Continue to maintain communications with First Nations (MNR and MVCA).

MVCA completed a Watershed Plan in 2021 that identified wild rice as a matter to be monitored and managed. Consequently, during the environmental assessment for replacement of the Kashwakamak Lake Dam, MVCA required assessment of the project on downstream rice fields. As well, MVCA engaged with First Nations during all archeological field investigations and provided opportunities to comment on all technical studies in advance of their finalization.

MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

4.1.4.1 Findings of Effectiveness Monitoring

MVCA has operational records that document spring operations in relation to stream flows and water levels and can demonstrate that all reasonable efforts were made to protect wild rice habitat per the WMP.

MVCA publishes a newsletter and manages a web page specifically for engagement with First Nations and has seen an increased level of interest and participation in MVCA activities in the past two years. Most recently, a member of Hiawatha First Nation sat on the Public Advisory Committee for replacement of the Kashwakamak Lake Dam.

4.1.4.2 Requirement for Proposed Changes to Operations or EMP

No adjustment to operations or the EMP is required.

4.1.4.3 Adaptive Management

Areas requiring improvement in order to meet WMP objectives:

1. Data management and analysis of shoreline impacts during flood events (MVCA, First Nations); and
3. First Nations engagement (MNR and MVCA).

4.2 Socio-Economic Monitoring

Socio-Economic effectiveness monitoring on the river was to be undertaken by MVCA, MNR and Co-Proponents to ensure that the assumptions used to develop and select the approved operating plan were appropriate. The collected data can be used to identify if, and if so where, social, cultural and economic impacts to users in the system may be occurring.

4.2.1 Socio-Economic Objective – Public Safety and Property Damage (MVCA)

MVCA was assigned two monitoring indicators to assess the effectiveness of flooding and ice damage controls throughout the system:

- Assess impact during flood conditions (MVCA);
- Assess impact on shoreline and shoreline structures (MVCA).

Over the MRWMP reporting period (2020-2024) MVCA has undertaken activities related to the strategic goals and actions developed through the Mississippi River Watershed planning process. The Mississippi River Watershed Plan (2021) outlines strategic goals, objectives and actions to support mitigation of flooding and drought conditions and associated public safety and property damage impacts. The Reader is invited to review these details in the Watershed Management Plan Report by visiting the Mississippi Valley Conservation Authority website.

4.2.1.1 Findings of Effectiveness Monitoring

MVCA's jurisdiction has not experienced significant flooding or associated impacts since the 2019 event which was documented in the last monitoring report. MVCA received an above average number of permit applications to facilitate restoration and rebuilding in 2020 and 2021.

Shoreline damage can occur over time or result from a significant event. The following table shows the number shoreline permits issued within the Mississippi River watershed since 2020. Not all permits are indicative of damage, in some cases people request permits to support landscaping and dock objectives.

Year	Shoreline Permits Issued (Mississippi Watershed)
2020	30
2021	60
2022	19
2023	23
2024	20

MVCA has carried out related studies and data analysis as part of their commitments and requirements related to the Mississippi River Watershed Plan (2021) during the MRWMP's implementation reporting period that in MVCA's professional opinion indicate the following trends for the watershed:

- Increased risk of flooding due to more frequent and/or intense rainfall events and extratropical storms. These events cause saturation of soils and plants and the inability of natural and manmade systems to uptake and store surplus moisture.
- Increased risk of earlier or multiple spring thaws that could:
    - destabilize winter ice and poses risk to winter recreation activities (ice fishing, skating etc.)
    - increase shoreline erosion/damage prevent achievement of target water levels on lakes that could undermine individual surface water intakes of waterfront properties
- Increased risk of low flow periods and droughts that could undermine:
    - water quality and quantity available to Carleton Place
    - individual surface water intakes of waterfront properties
    - lake levels and recreational tourism or groundwater recharge
    - irrigation systems used by farmers and golf courses
- Increased risk of hazardous and nuisance algae blooms due to changes in water temperatures and levels which may increase:
    - risks to water quality
    - risk to boating and swimming activities
- Increased risk of frazil ice formation clogging municipal and private surface water intakes and water control structures.
- Increased risk of forest cover loss due to invasive species. Depending on scope and location this could exacerbate heating effect, reduce shade access, increase wet weather run-off and soil erosion.
- Increased risk of forest fires with potential loss of private and public assets, and increased runoff and risk of localized flooding.

These statements concerning trends are related to MVCA's internal studies and work which did not include OPG, or the other Co-Proponents. The reader should be aware that the other Co-Proponents were not part of this EMP work and therefore, the resulting prediction/forecast statements are solely made by MVCA.

MVCA's assessment of the results of the Mississippi River Watershed Management Plan studies informs their recommendation to revise the Effectiveness Monitoring Plan (EMP) related to this objective within the MRWMP. To revise the EMP, MVCA will need to formally apply for an amendment of the MRWMP to include a study of the potential impacts of climate change on the watershed.

4.2.1.2 Requirement for Proposed Changes to Operations or EMP

Facility operators have endeavored to respond as appropriate to earlier and multiple peaks in the spring freshet and to maintain target summer levels on all headponds under a wide range of weather conditions. Thus far, adaptations have been accomplished within the existing operating parameters. No changes in operating parameters are recommended at this time.

4.2.1.3 Adaptive Management

There were no changes to the operating plan made in the reporting period.

As mentioned above, the Reader may refer to the Mississippi River Watershed Plan (2021) and reach out to MVCA for any recommended adaptive management strategies developed through the Mississippi River watershed planning process.

4.2.2 Socio-Cultural-Economic Objective – Maintain water Levels for Navigation, Recreation, Cultural and Social Opportunities (MVCA and MNR)

MVCA and MNR were assigned two effectiveness monitoring strategies to maintain water levels for recreational navigation including boat access to properties and the Pictographs and access to wild rice beds for harvesting during the critical seasons throughout the system, including.

- Continue to monitor flow, water levels, precipitation and dam operations during critical periods (MVCA and MNR);
- Continue to maintain communications with First Nations (MVCA and MNR).

MNR continues to monitor and maintain flows and water levels through ongoing dam operations to achieve this Plan Objective.

4.2.2.1 Findings of Effectiveness Monitoring

As mentioned above, water flows, levels, precipitation, and dam operations are all recorded daily by MVCA and available for the planning period.

MVCA publishes a newsletter and manages a web page specifically for engagement with First Nations and has seen an increased level of interest and participation in MVCA activities in the past two years. Most recently, a member of Hiawatha First Nation sat on the Public Advisory Committee for replacement of the Kashwakamak Lake Dam.

4.2.2.2 Requirement for Proposed Changes to Operations or EMP

Effectiveness monitoring will continue.

MVCA has expressed interest in completing further work on enhancing awareness and understanding amongst property owners of how the watershed functions and the physical limits to what can be done to mitigate flooding, and drought conditions and impacts on navigation, recreation, cultural and social opportunities.

4.2.2.3 Adaptive Management

No adaptive management is required.

4.2.3 Socio-Economic Objective – Recognize Power Generation Values from the System (Co-Proponents)

It is well recognized that the positive attributes of hydroelectric generation generally include environmental benefits (low carbon emissions) as well as socio-economic benefits such as local job creation and direct revenues, as well as water (level, flow) control to support recreational use and tourist business opportunities. For these benefits to be sustainable, it is apparent that the hydroelectric businesses themselves must be appropriately profitable.

It is therefore incumbent upon the MRWMP Co-Proponents and other stakeholders to understand whether the WMP itself is impacting the net revenues of the generating station. Net revenues could be impacted, for instance, by changes in the amount of water available to the facility for generation, or by changes to the operating costs of the facility caused by administrative, reporting, or other requirements imposed by the WMP.

Since the time of implementation of the MRWMP, the generators on the river have continued to monitor and collect information on water levels, flows and dam operations on a continuous basis throughout the period. Upon review, the generating Co-Proponents do not have any suggestions for modification to their existing operating regimes. The current operational structure has provided adequate power generation for the facilities and as such there are no proposed changes to enhance power generation currently.

4.2.3.1 Findings of Effectiveness Monitoring

Many of the generation facilities have been used for waterpower in different iterations for well over 100 years. Although the WMP was only formally implemented on January 1st, 2007, the water management regime described therein for most of the facilities has essentially been in place for a long-established timeframe and therefore were adopted into the WMP. As a result, negative or unintended impacts have not occurred because of the WMP requirements over the period of this Implementation Report.

4.2.3.2 Requirement for Proposed Changes to Operations or EMP

No proposed changes to operations or EMP for any of the facilities are required.

4.2.3.3 Adaptive Management

No adaptive management is required. Co-Proponents will continue to gather generation and cost data.

4.2.4 Social Objective – Develop Public Awareness on Current Conditions (MNR and Co-Proponents)

Over the term of the Implementation Report the Co-Proponents that are generators have established public awareness programs to improve communications with the public. For instance, generators often participate in the Ontario Heritage Trust communities' "Doors Open Ontario" events to raise awareness of waterpower and its' unique cultural heritage within Ontario's communities. In addition, most are members of the Ontario Waterpower Association (OWA), which acts as the voice for waterpower in the province. The OWA website is, "the central hub for high quality information and education on waterpower in Ontario."

OPG has participated in various stakeholder meetings and public engagement sessions through the years as it relates to the Mississippi River watershed. Going forward OPG will continue to participate in these sessions as they are designed to promote education and awareness of OPG facilities and overall operation within the river system. OPG recently launched a new web portal (https://water.opg.com/) to communicate daily elevations and flows at OPG facilities across the province, including Crotch Lake and High Falls GS on the Mississippi River. OPG is an active member of the Ontario Waterpower Association.

Portage Power participates in "Doors Open Ontario" events. Portage Power is also an active member of the Ontario Waterpower Association.

Enerdu Power Systems Ltd. (Enerdu) occasionally invites community groups to tour their facility. Enerdu is also an active member of the Ontario Waterpower Association.

MRPC holds an Annual General Meeting, where members of the public are invited to learn about the operations, finances, and history of the organization. The corporation also has a Facebook page and Twitter account, which are used to release information on flows, generation, events, and other relevant information. In addition to their participation in “Doors Open Ontario” events, MRPC also conducts regular tours for members of the public, which are advertised on the MRPC website. MRPC is also an active member of the Ontario Waterpower Association.

MVCA manages Flood Forecasting and Warning for the Mississippi River watershed. The MVCA issues Watershed Conditions Statements to media, municipalities, co-proponents, and a long-list of property owners who have registered for e-notifications. These Watershed Conditions Statements are designed to provide timely updates regarding existing and projected water levels and areas at risk; and to recommend actions to mitigate impacts from those risks.

4.2.4.1 Findings of Effectiveness Monitoring

At the time of reporting, the Co-Proponents have not identified any negative or unintended impacts attributed with the operation of each of their facilities within the Mississippi River watershed. Ongoing monitoring, data collection and established public awareness programs will continue throughout the following reporting period to assess negative impacts as required.

4.2.4.2 Requirement for Proposed Changes to Operations or EMP

No proposed changes to operations or EMP for any of the facilities are required.

4.2.4.3 Adaptive Management

No adaptive management is required. Co-Proponents will institute, if required, improvements to their record-keeping for all communications (complaint or otherwise) and will continue to monitor with their established public awareness programs and respond to public comments and concerns.

5 Data Gaps and Information Collection Programs

Section 8.2 (Figure 8.3, pg.109) of the MRWMP (amended February 2018) outlines several data gaps and the information collection programs developed to be undertaken by MNR, Ministry of Environment Conservation and Parks (MECP), Fisheries and Oceans Canada (DFO) and the MVCA. The following information collection programs were developed within the original WMP (2006) and remained within the amended 2018 version:

1. Eels;
2. Instream Flow Requirements;
3. Status of Amphibian, Reptile, Mammal and Invertebrate Populations;
4. Lake Trout Spawning;
5. Waste Assimilation;
6. Hydro-meteorological Network;
7. Walleye Assessment;
8. Socio-economic data;
9. Literature Review;
10. Bathymetric Mapping (Kashwakamak Lake, Gull Lake, Mississagagon Lake, Dalhousie Lake and Mississippi Lake);
11. Species at Risk Monitoring;
12. Water Taking Permits;
13. Other Spawning;
14. Mazinaw Lake Rehabilitation;
15. Wild Rice Research;
16. Dam Safety Assessment of Shabomeka Lake Dam.

In some cases, MNR has not fulfilled commitments identified in the approved WMP. Some commitments made in the WMP are being met through other initiatives that were implemented after approval of the WMP (such as Broadscale Monitoring (BsM)), are now the responsibility of another Ministry, or may be met based on future work planning. Over time and since the approval of the WMP, ministry priorities, structure and approaches have shifted including those for Water Management Plans. Work undertaken by MNR must always be considered relative to current established priorities, resourcing and workloads.

MVCA can support the province in addressing these gaps over the next reporting period on a cost-recovery basis where desired and feasible.

Where Ministry priorities and approaches have changed and Data Gaps/Information Collection commitments are now being met through other programs (such as Broadscale Monitoring (BsM)), are the responsibility of another Ministry/agency, or are complete, MNR may consider amending the WMP to reflect these updates.

For the purposes of this report the writer has adopted priority 'levels' for the following five overall goals of the MRWMP as described in Section 4, p. 24 of the MRWMP (amended February 2018) document.

"….. Water management within the Mississippi River has evolved to the point where the priorities are as follows (note the priorities vary on importance depending on the time of year, location and circumstances):

- Flood control;
- Low flow augmentation;
- Ecological integrity;
- Recreation / tourism; and
- Hydro-generation."

Therefore, in order to assign each data and information collection program to a priority level various statements made throughout the document were considered as demonstrated in the following table.

Priority Level	Value	Rationale	MRWMP Reference
High	Flood control and Low flow augmentation	*"the dams in the system are managed as a first priority to hold water and to control the release of water to downstream areas and reduce flooding as much as possible."*	Section 4.2.1, p. 23
Moderate	Ecological integrity	Default level based on high and low priority rationale.	N/A
Low	Recreation / tourism; and Hydro-generation	*"Hydro generation is the lowest priority because all the generating stations are "run of the river" and have limited impact on the*	Appendix 8, p. 211

Priority Level	Value	Rationale	MRWMP Reference
		overall operation of the system." *"Hydro-production and recreation are not mutually exclusive. While determining the exact values of hydro-production and recreation are difficult, hydro-production has minimal impact on recreational opportunities. The system is currently operated for the benefit of both."*	Section 4.2.4, p. 28

There is a variance to the above system in regards to the Lake Trout Spawning programs in Mazinaw and other natural lake trout lakes such as Shabomeka Lake which were elevated to a **HIGH** priority level due to the following statement made in Appendix 8, p. 178 of the MRWMP (amended February 2018), *"Recent genetic sampling of Mazinaw lake trout has shown that the native population belongs to a newly identified, rare genetic strain of lake trout, unique to the Addington Highlands area. Preservation of this unique strain is a priority in Bancroft District."*.

5.1 Eels (MNR)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Keep informed of broader research being done on eels."*

As noted in the original IR Report (dated 2020), this program has been discontinued at the MNR. The provincial responsibility for Species at Risk and the Ontario Endangered Species Act has now been transferred to the Ministry of the Environment, Conservation and Parks (MECP), and as such, related inquiries should be directed to them at SAROntario@ontario.ca.

5.2 Instream Flow Requirements (MNR and DFO)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Specific minimum flows through each of the control structures is required to maintain ecological integrity. The specific minimum flows need to be established through current research on in-stream flow requirements. Implementation of this research will be addressed in future amendments to this plan."*

Priority: Moderate

Information Collection Program: MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

Responsibilities: MNRF and Fisheries and Oceans Canada (DFO)

Interim or Final Results: Not applicable.

Describe any proposed changes to the sampling program and rationale: Not applicable.

Adaptive Management: Not applicable.

5.3 Status of Amphibian, Reptile, Mammal and Invertebrate Populations (MNR)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Keep informed of research being undertaken on the impact of lower winter water levels on the abundance of amphibians, reptiles, mammals and invertebrate populations."*

Priority: Moderate

Information Collection Program: MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

Responsibilities: MNRF

Interim or Final Results: Not applicable.

Describe any proposed changes to the sampling program and rationale: Not applicable.

Adaptive Management: Not applicable.

5.4 Lake Trout Spawning (MNR and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Little baseline information exists on the impacts of water levels on the long-term sustainability of the naturally reproducing lake trout. The status of the population needs to be assessed on an on-going basis to measure the population response to the new operating regime."*

Priority: High (for Bancroft district MNRF office)

Information Collection Program: MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

Responsibilities: MNRF

Interim or Final Results: Not applicable.

Describe any proposed changes to the sampling program and rationale: Not applicable.

Adaptive Management: Not applicable.

5.5 Waste Assimilation (MECP and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Confirm waste assimilation requirements on the lower river system during low flow periods."*

Priority: Moderate

Information Collection Program: To MVCA's knowledge, assimilative capacity is monitored by MECP through ECA approvals and compliance programs. For information about existing guidelines and programs related to waste assimilation, please contact MECP through their webpage at https://www.ontario.ca/page/ministry-environment-conservation-parks.

Responsibilities: MECP

5.6 Hydro-meteorological Network (MNR and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Enhance hydro-meteorological monitoring across the Mississippi watershed."*

Priority: Moderate

Information Collection Program: Since 2006, MVCA has been addressing this data gap. The MVCA-WSC Hydrometric Monitoring Network now has over 40 stations across the watershed. The network is primarily dedicated to the collection of Stage

(calibrated water level) and Discharge (volumetric flow) data; additional instrumentation at select stations collects water temperature, air temperature, and precipitation. Other monitoring programs include snow monitoring, ice monitoring, and several climate stations. These programs are under continuous improvement and advancement.

Responsibilities: MNR and MVCA

Interim or Final Results: Work in progress.

Describe any Proposed Changes to the Sampling Program and Rationale: Not applicable.

Adaptive Management: Not applicable.

5.7 Walleye Assessment (MNR)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Crotch Lake: walleye spawning assessment, including upstream, in the lake and downstream; effect of 2 major drawdowns in all 3 locations and effect of low flow downstream."*

(These assessments are also tied into Plan Objective: Maintain or improve aquatic ecosystem health throughout the system, see Section 4.1, above).

Priority: Moderate

Information Collection Program:

- Population Assessments - Broad-scale Monitoring (BsM)

Responsibilities: MNR

Interim or Final Results:

BsM on Crotch Lake in 2023:

A total of 13 fish species were captured in the large mesh nets. Walleye represented 12% of the total catch, with a mean total length (TL) of 401 mm (size range of 203 to 517 mm). Approximately 50% of the catch was in the 400 – 490 mm TL size class.

Describe any proposed changes to the sampling program and rationale:

No changes have been proposed at this time. Crotch Lake will continue to be monitored through the BsM program.

Adaptive Management: No adaptive management has been recommended at this time.

5.8 Socio-economic Data (MNR and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": "*Additional information on the socio-economic conditions for the river system, particularly data on the economic value of tourism and recreation."*

Priority: Low

Information Collection Program:

MNR:

MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

MVCA:

Backgrounder 2, produced for the Mississippi River Watershed Plan identifies how the local economy depends upon natural resource management within the watershed, and can be accessed by accessing the document on the MVCA website.

Responsibilities: MNR and MVCA

Interim or Final Results:

MNRF: Not applicable.

The Reader may refer to the Mississippi River Watershed Plan document found on the MVCA website.

Describe any proposed changes to the sampling program and rationale: According to MVCA, no proposed changes are recommended to the current monitoring programs. The MVCA recently commenced work on a Watershed Plan that may identify information gaps and the need for changes in the monitoring program of the CA and partner organizations.

Adaptive Management: Not applicable.

5.9 Literature Review (MNR)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Impact of drawdown on fish and fish habitat."*

Priority: Moderate

Information Collection Program:

1) Literature Review;
2) Local academic research.

Responsibilities: MNR

Interim or Final Results: A literature review was initiated by summer staff at the Kemptville Work Centre during the summer of 2024. Topics included 'Changes in Fish Habitats,' 'Drawdown Effects on Aquatic Food Webs,' 'Drawdown Species-specific Effects,' and 'Best Practices and Mitigation of Effects.' However, there was not sufficient time to complete the review, and this Plan Objective will be re-initiated and continued as opportunities arise.

Describe any proposed changes to the sampling program and rationale: Not applicable.

Adaptive Management: Not applicable.

5.10 Bathymetric Mapping (MNR)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Bathymetric mapping of the following lakes: Kashwakamak, Gull, Mississagagon, Dalhousie and Mississippi."*

Priority: Moderate-Moderate to Low

Information Collection Program: MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

Responsibilities: MNRF

Interim or Final Results: Not applicable.

Describe any proposed changes to the sampling program and rationale: Not applicable.

Adaptive Management: Not applicable.

5.11 Species at Risk Monitoring (MNR)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Monitoring the species at risk and keep informed of broader research being completed (i.e. Blanding's turtle)."*

As noted in the original IR Report (dated 2020), the provincial responsibility for Species at Risk and the Ontario Endangered Species Act has now been transferred to the Ministry of the Environment, Conservation and Parks (MECP), and as such, related inquiries should be directed to them at SAROntario@ontario.ca.

5.12 Water Taking Permits (MECP and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": ***"Confirm the number and volume of water taking permits issued on the river system."***

Priority: Moderate

Information Collection Program: No known collection program has been established. However, this action could easily be completed using the MECP GIS database, if required.

Responsibilities: MECP

Interim or Final Results: MVCA records indicate that one Permit to Take Water (PTTW) was issued for the reconstruction of Bridge Street in Carleton Place and there was one inquiry for potential water taking on Palmerston Lake.

Inquiries regarding the number and volume of water taking permits that have been issued on the river system may be directed to MECP at https://www.ontario.ca/page/ministry-environment-conservation-parks and may be viewed here; https://www.ontario.ca/environment-and-energy/map-permits-take-water.

Special Note on Waterpower and PTTW: It is important to note that amendments to the Ontario Water Resources Act as part of Bill 132, Better for People, Smarter for Business Act received Royal Assent on December 10, 2019. The amendments exempt waterpower facilities from requiring a permit to take water. However, the Ministry of Natural Resources also created a new Minister's regulation under the Lakes and Rivers Improvement Act to ensure continued oversight reporting of methyl mercury impacts of waterpower facilities. Mercury-related requirements that were previously administered through permits to take water will continue to be addressed through the Lakes and Rivers Improvement Act, including:

- ***Monitoring and reporting.***

- ***Notification to local communities of fish consumption advisories.***

Despite this exemption, all existing permits for waterpower facilities remained in effect until being revoked by the Ministry of the Environment, Conservation and Parks on April 1, 2020.

Describe any proposed changes to the sampling program and rationale:

Not applicable.

Adaptive Management: Not applicable.

5.13 Other Spawning (MNR)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Spawning sites of other species should be assessed."*

Priority: Moderate

Information Collection Program: MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

Responsibilities: MNRF

Interim or Final Results: Not applicable.

Describe any proposed changes to the sampling program and rationale: Not applicable.

Adaptive Management: Not applicable.

5.14 Mazinaw Lake Rehabilitation (MNR and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Mazinaw Lake assessment of spawning bed rehabilitation project."*

Priority: High

Information Collection Program: MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

Responsibilities: MNR

Interim or Final Results: Not applicable.

Describe any proposed changes to the sampling program and rationale: Not applicable.

Adaptive Management: Not applicable.

5.15 Wild Rice Research (MNR and MVCA)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Conduct literature search and compilation of how changes in flows would impact the rice. May also include further consultation with First Nations."*

Priority: Moderate

Information Collection Program: MNR has not made further progress on this Plan Objective during the second IR reporting period (2020-2024).

Responsibilities: MNR

Interim or Final Results: Not applicable.

Describe any proposed changes to the sampling program and rationale: Not applicable.

Adaptive Management: Not applicable.

5.16 Dam Safety Assessment of Shabomeka Lake Dam (MVCA)

The following excerpt from the Water Management Plan describes the data gap:

"Data Gap": *"Proposed changes to the Shabomeka Lake Dam operating regime requires a structural review of loading conditions on Shabomeka Lake Dam."*

Priority: High

Information Collection Program:

A condition assessment carried out of the Shabomeka Lake Dam identified the need for reconstruction. The EA was completed, and supplemental biological and archeological work carried out; detailed design and permit applications were completed in 2020.

Responsibilities: MVCA

Interim or Final Results:

The earth embankments for the Shabomeka Lake Dam were reconstructed in the winter of 2021 as well as repairs of key structural components of the dam including new galvanized struts and new public safety measures such as safety boom, gates and new railing that were installed in the summer of 2022.

Describe any proposed changes to the sampling program and rationale:

This data gap has been fulfilled during this reporting period and MVCA recommends that this information collection program should be removed from the MRWMP through a formal amendment application process.

Adaptive Management: The work completed for the Shabomeka Lake dam did not change or alter the design of the control structure. There are no changes in the operating regime or operator safety.

6 Conclusion

The MRWMP came into effect on January 1st, 2007. Over the course of the last five years (January 2020 – December 2024) there have been two approved amendment requests brought to completion. All compliance monitoring and reporting requirements have been fulfilled in a timely and complete manner by the Co-Proponents and other parties as assigned. There are no outstanding issues. However, there are recommendations to some items within the MRWMP; these are,

- A recommendation by MNR to ensure abundance of wild rice beds throughout the system is not reduced. MVCA and MNR should ensure the following environmental effectiveness monitoring programs are continued:
    - Monitor water levels, flow, precipitation and dam operations during critical periods (MVCA);
    - Maintain communications with First Nations (MNR and MVCA).
- A recommendation by MNR to continue with the literature review initiated by summer staff at the Kemptville Work Centre during the summer of 2024. Topics included 'Changes in Fish Habitats,' 'Drawdown Effects on Aquatic Food Webs,' 'Drawdown Species-specific Effects,' and 'Best Practices and Mitigation of Effects.' This Plan Objective will be re-initiated and continued as opportunities arise.
- A recommendation by MVCA to revise the EMP associated with the socio-economic objective related to public safety and property damage to include monitoring and assessment of climate change on the watershed.
- A recommendation by MVCA to remove the data gap for a dam safety assessment (DSA) of the Shabomeka Lake Dam. The DSA and the successful reconstruction of the Shabomeka Lake Dam were completed during this reporting period.

Similarly, neither the Effective Monitoring Plans nor Data Gap and Information Collection Programs have any specific components applicable to the power producers, within the watershed, beyond the common requirement to gather and maintain operational data (water levels and flows) in areas of potential improvements and negative impacts and to voluntarily engage in public awareness efforts whenever possible. The practice of continuous operational data recording, as briefly summarized in this report, is of relevance for such baseline data considerations. At this time no complementary data or information on environmental and social conditions have been gathered by any power producers within the watershed.

Other sources of information and data needs from external agencies have been referenced where identified.

Overall, in review of the MRWMP and its governing objectives regarding the identified environmental and social implications of operations within the Mississippi River, no amendments of rating curves and system operations were recommended during this reporting period.

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