Mississippi Valley Conservation Authority

Board Meeting

By Zoom | 1:00 pm | April 20, 2022
https://us06web.zoom.us/j/82176921816
1-647-558-0588
Meeting ID: 821 7692 1816

AGENDA

ROLL CALL

Declarations of Interest (written)

Agenda Review (incl. Consent Agenda)

Business Arising

1. Amendment to Finance & Administration Advisory Committee Minutes dated February 8, 2022, Page 2 (note edits to the motion under Item 4.)

Main Business

2. Approval of Minutes: Board of Directors, March 16, 2022, Page 6
3. Receipt of Draft Minutes:
   a) Executive Committee – November 12, 2021, Page 11
   b) Policy & Priorities Advisory Committee – February 17, 2022, Page 15 (refer to highlighted sections when considering Item 6, below.)
   c) Finance & Administration Advisory Committee – April 11, 2022, Page 21
4. Watershed Conditions Report, Report 3216/22, J. North, Page 26
5. Offer to Purchase K&P, Report 3212/22 (S. McIntyre & R. Fergusson), Page 27
6. Deferred item - Review of Committee Structure, Report 3204/22 (S. McIntyre), Page 37
7. Lower Mississippi Flood Plain Mapping Update, Report 3217/22 (J. Cunderlik), Page 50
8. Management of Reserves, Report 3213/22 (S. McIntyre & A. Millar), Page 136

Information Items

9. Managing Stress in the Workplace, Report 3218/22 (S. McIntyre), Page 146
10. Staff Presentation – Planning Department (D. Reid & E. Ogden)
11. General Manager Update, Report 3219/22, (S. McIntyre) Page 148

Consent Agenda

12. Insurance Inspection, Report 3214/22, (S. McIntyre), Page 152
13. Grants, Report 3215/22, (S. McIntyre), Page 155

ADJOURNMENT

FINANCE AND ADMINISTRATION ADVISORY COMMITTEE

Via Zoom **MINUTES** February 8, 2022

MEMBERS PRESENT:	C. Lowry, Chair P. Sweetnam, Vice-Chair J. Atkinson J. Mason B. King P. Kehoe A. Tennant J. Atkinson
MEMBERS ABSENT:	E. El-Chantiry
STAFF PRESENT:	S. McIntyre, General Manager A. Millar, Treasurer E. Levi, Recording Secretary
GUESTS PRESENT:	G. Street, Cross Street Professional Corporation

C. Lowry called the meeting to order at 1:00 PM.

FAAC02/08/22-1

MOVED BY: **P. Sweetnam**
SECONDED BY: **P. Kehoe**

Resolved, That the Agenda for the February 8, 2022 Finance & Administration Advisory Committee meeting be adopted as presented.

"CARRIED"

BUSINESS

1. Approval of Minutes

FAAC02/08/22-2
MOVED BY: **J. Atkinson**
SECONDED BY: **A. Tennant**
Resolved, That the Minutes of the Finance & Administration Advisory Committee meeting held December 9, 2021 be received and approved as printed.

"CARRIED"

FAAC02/08/22-3
MOVED BY: P. Kehoe
SECONDED BY: J. Mason
Resolved, That the Minutes of the Finance & Administration Advisory Committee meeting held November 18, 2021 be received and approved as printed.

"CARRIED"

FAAC02/08/22-4
MOVED BY: B. King
SECONDED BY: P. Sweetnam
Resolved, That the Minutes of the Finance & Administration Advisory Committee meeting held November 25, 2021 be received and approved as printed.

"CARRIED"

2. 2021 Draft Financial Statements

G. Street Reviewed the Authority's financial position as outlined in the 2021 draft Financial Statements.

J. Mason commented on the reserve balances and projected year end balances. She expressed that the Authority should be able to have a better understanding of discrepancies between projections and actual figures by November/December to avoid needless concern when final figures are provided shortly after that time.

3. 2021 Audit Findings Letter

G. Street presented the 2021 Audit Findings Letter.

4. 2022 Per Diem and Mileage Rates

A. Millar reviewed staff report 3190/22. She commented that numerous emails were received looking to further discuss per diems and mileage rates proposed in the report.

B. King suggested eliminating per diems as it is part of the responsibility of being a council representative. He also proposed adopting the mileage rates set out in the provincial *"Travel, Meal and Hospitality Expenses Directive"*.

P. Kehoe supported B. King's proposal for mileage and further suggested capping per diems at $50 per day.

A. Tennant, J. Atkinson and C. Lowry were opposed to the proposal. A. Tennant commented that when council members have full-time jobs, they have to miss work hours in order to accommodate meeting attendance. If the meetings occurred in the evenings, that would change matters.

P. Sweetnam commented that the Authority would only be saving a modest amount by the elimination of per diems, and that members can always choose to donate the funds back to the authority if they feel strongly about it.

J. Atkinson suggested looking at alternate options with the upcoming new term of council. C. Lowry agreed a review would be an option and added that looking at meeting structure and timing would also be of benefit.

J. Mason suggested a compromise to freeze current per diems, use the provincial mileage directive and to review per diems prior to the next term of council.

FAAC02/08/22-5
MOVED BY: J. Mason
SECONDED BY: P. Sweetnam
Resolved, That the F&A Committee recommend that the Board of Directors:

a) **Approve maintenance of current (2020/2021) per diem and honorarium rates for 2022.**
b) **Approve an increase in the corporate mileage rate for staff to $0.57/km effective January 1, 2022.**
c) **Direct that mileage rates set out in the provincial *"Travel, Meal and Hospitality Expenses Directive"* be used for Board member mileage effective January 1, 2022.**
d) **Direct staff to conduct a review of per diems and honorariums and to table results for consideration before municipalities commence recruitment of Board members for the 2022-2026 term of council.**

"CARRIED as amended"

5. Draft 2022 Budget – Comments and Adjustments

A. Millar noted there were no municipal comments received after circulation of the draft budget as presented in Staff Report 3191/22.

6. Update – City of Ottawa Loan for Shabomeka Lake Dam

A. Millar reviewed report 3192/22. She commented that the loan agreement between the City and Authority was being drafted and should be received shortly. She advised the authority would be borrowing will be half of cost of the project at 3% calculated bi-monthly over a 30-year term.

7. Programs & Services Inventory and Cost Recovery

S. McIntyre presented Staff Report 3193/22. The report outlined a simplified listing of what programs and services are carried out at MVCA and how they fall into O.Reg. 687/21 categories. She advised the newly released *Consultation Guide* issued by the province is now setting out cost recovery based on categories and was very clear about what is required for cost-apportionment services.

ADJOURNMENT

The meeting was adjourned at 2:33 pm.

FAAC02/08/22-6

MOVED BY: **B. King**
SECONDED BY: **P. Sweetnam**
Resolved, That the Finance and Administration Advisory Committee meeting be adjourned.

"CARRIED"

"E. Levi, Recording Secretary C. Lowry, Chair"

MINUTES

Via Zoom | Board of Directors | March 16, 2022

MEMBERS PRESENT
J. Atkinson, Chair
J. Mason, Vice-Chair
F. Campbell
E. El-Chantiry
G. Gower
B. Holmes
J. Karau
P. Kehoe
C. Kelsey
B. King
C. Lowry
C. Rigelhof
P. Sweetnam
A. Tennant

MEMBERS ABSENT
R. Darling
J. Inglis
K. Thompson

STAFF PRESENT
S. McIntyre, General Manager
J. Cunderlik, Director, Water Resource Engineering
C. McGuire, Water Resource Engineer
E. Levi, Recording Secretary

J. Atkinson called the meeting to order at 1:02pm

B03/16/22-1
MOVED BY: P. Sweetnam
SECONDED BY: F. Campbell
Resolved, That the Agenda for the March 16, 2022 Board of Directors Meeting be adopted as amended.

"CARRIED"

BUSINESS

1. Watershed Conditions Report

C. McGuire spoke to current water level conditions in the watershed outlined in Staff Report 3207/22. There are no specific indicators at this time for flooding, however rainfall will be closely monitored. Current weather conditions are allowing for sublimation and slow snow melt.

2. Approval of Minutes – Board of Directors

An amendment to the February 16, 2022 minutes was requested to reflect J. Atkinson's status as Chair.

B03/16/22-2
MOVED BY: C. Rigelhof
SECONDED BY: J. Karau
Resolved, That the Minutes of the Mississippi Valley Board of Directors Meeting held on February 16, 2022 be received and approved as amended.

"CARRIED"

3. Review of Committee Structures

S. McIntyre reviewed Report 3204/22 identifying options and clarifying roles to MVCA committee structures and to recommend potential amendments.

There was discussion regarding Public Advisory Committees and their role. Concerns were raised regarding the amount of input and decision making they may have as well as accountability given members would not be elected officials. J. Karau asked the Board to reflect on the positive relationship had with the Public Advisory Committee when dealing with the watershed plan. Similar PACs would not impact the ability of the Board to make their own decisions. S. McIntyre advised that the PAC would not be advising on corporate policies.

J. Karau reviewed the discussion held at the Policy and Priority Advisory Committee regarding his concern for the Finance & Administration Committee to advise on all human resource activities as it's a very broad subject. When dealing with health of staff, such as current issues identified further in the agenda, he felt the Board of Directors at large should be involved. Additionally, he felt that the legislative agenda should be addressed at the Board level as opposed to Executive Committee only.

J. Mason commented that the report was not reflective of changes and discussion held at the advisory committee level and the importance of those changes being communicated to the Board when asked to make decisions.

E. El-Chantiry proposed deferring decision on this item until more clarity was provided at a later date.

B03/16/22-3
MOVED BY: E. El-Chantiry
SECONDED BY: G. Gower
Resolved, That this item be deferred.

"CARRIED"

4. Corporate Strategic Plan

S. McIntyre reviewed the implementation plan proposed for the *2021-2025 Corporate Strategic Plan* as outlined in Staff Report 3206/22. A list of priority projects / performance indicators was provided that demonstrates how MVCA will make progress towards achieving its corporate goals and objectives. S. McIntyre noted the long-list of projects attached to the report and the need to prioritize. As well, she highlighted a proposed change in the way annual reports will be prepared to minimize effort while capturing essential year over year changes at the Authority. She noted that the the timeline for Indigenous Consultation would be extended as needed to meet the needs of the communities affected.

J. Karau thanked the General Manager for the concise annual reports and commented that printed copies should be available.

J. Atkinson commented on the benefit of having simplified annual reports and having a more comprehensive one at the end of one term/beginning of the next for new members joining the Authority.

B03/16/22-4
MOVED BY: F. Campbell
SECONDED BY: J. Karau
Resolved, That the Board of Directors approve the Draft Implementation Plan as set out in report 3206/22, as presented.

"CARRIED"

5. Kashwakamak Lake Dam Structural Findings

J. Cunderlik presented Staff Report 3208/22. He noted the most important thing to highlight is the result of the assessments indicate that the Hazard Potential Classification (HPC) for the dam should be increased from current classification of LOW to HIGH on the basis of visual inspections and a preliminary dam break and inundation mapping. He advised that the design will now have to incorporate the higher classification, however the higher HPC, the more likely it will receive provincial funding.

P. Sweetnam asked whether refurbishment would be considered in addition to a new build and whether a change in the structure location could be considered, if required? J. Cunderlik advised

that there is a location immediately downstream from current structure that is ideal. He commented that a refurbishment of this magnitude would be more substantial than what was done previously and may be a viable option. A new structure would provide a service life close to 100 years however repairs would be required after 50 years. E. El-Chantiry commented that he believed best practice states that a new build should get a minimum 50 years of service life.

A. Tennant stated he was eager to see cost benefit analyses as this type of work is a moving target for pricing. Final numbers when actually tendering in 2030 will be very different than the current figures.

When asked about potential storage capacity to adapt to climate change, J. Cunderlik advised a new structure would be larger and designed for a much higher flood event. Similarly, a major refurbish would also require larger structure to allow for increased freeboard.

6. Carp River Conservation Area Master Plan Background Report

S. McIntyre reviewed Staff Report 3205/22 and a Background Report for the Carp River Conservation Area. The report includes history of the site, its current state, and potential for future use.

S. McIntyre confirmed that the project falls within the scope of the Natural Heritage Systems Unit at the City of Ottawa.

S. McIntyre advised the intention of this report was to review next steps with the City and to return to the Board with consultation reports.

B03/16/22-5
MOVED BY: J. Mason
SECONDED BY: E. El-Chantiry
Resolved, That the Board approve finalization of the Background Report in partnership with the City of Ottawa and release to the public as part of a coordinated public engagement process; and to report back to the Board with details.

"CARRIED"

7. COVID – Return to Work Update

S. McIntyre presented Staff Report 3209/22 and provided a high level overview of proposed reintegration processes and lifting of policies that the Board has approved in terms of vaccination, screening for staff and visitors. The Authority is aiming to align with provincial recommendations unless the Board suggests otherwise. It is anticipated to open to the public effective May 2, 2022.

S. McIntyre advised that many staff found it advantageous to work from home and there was a desire have some flexibility moving forward. Currently, staff have been asked to attend the office

2 days a week with the plan to move to 3 days a week within the month. Alternative work arrangements are being explored on a trial basis concurrent to seeking legal counsel and tracking the approach of other CAs regarding health and safety and related matters.

8. Section 28 Permit Activity Report

Staff Report 3210/22 summarizing permits issued September 1, 2021 – Mach 1, 2022 was received for information.

9. General Manager Update

Staff Report 3211/22 was provided to the Board for information.

J. Karau asked if there was any further information regarding agricultural representative being appointed to the Board. S. McIntyre advised there was no update as of yet. She commented that she was unsure how the Province would handle the representatives as not all jurisdictions have agricultural lands.

ADJOURNMENT

The meeting was adjourned at 2:50p.m.

B03/16/22-15
MOVED BY: C. Rigelhof
SECONDED BY: A. Tennant
Resolved, That the Board of Directors meeting adjourned.

"CARRIED"

"E. Levi, Recording Secretary **J. Atkinson, Chair"**

EXECUTIVE COMMITTEE

Via Zoom **MINUTES** November 12, 2021

MEMBERS PRESENT: J. Atkinson, Chair
J. Mason, Vice-Chair
F. Campbell
C. Lowry

STAFF PRESENT: S. McIntyre, General Manager
E. Levi, Recording Secretary

OTHERS PRESENT:

J. Atkinson called the meeting to order at 3:05 p.m.

EC11/12/21-1
MOVED BY: C. Lowry
SECONDED BY: J. Mason
Resolved, That the Agenda for the November 12, 2021 Executive Committee meeting be adopted as presented.

"CARRIED"

BUSINESS:

1. Psycho-social Survey Results and Action Plan

S. McIntyre reviewed attached Staff Report 3177/21 and the Psycho-Social Stress Assessment Survey Results provided by Occupational Health Clinics for Ontario Workers Inc (OHCOW). There was 100% staff participation in the survey and the following five key issues were identified requiring redress:

- Emotional demands
- Work pace
- Predictability of work
- Role conflicts
- Vertical trust

She advised that Management recently presented a *Workforce Plan* to the Board of Directors and obtained approval to prepare a 2022 Budget to meet workload needs. However, there are other operational matters that need to be resolved to achieve desired improvements in workplace and workforce health.

S. McIntyre advised that a consultant will be retained to facilitate a series of small focus groups to help flesh out the five key issues and identify specific actions that will help to reduce or resolve workplace stress and points of friction. Confidential email and phone support will also be provided to employees wishing to share issues or ideas privately. Ultimately, a report is to be completed that identifies specific issues and potential remedies that staff believe will improve their work environment. Terms of Reference for the consultant assignment have been issued and work is hoped to be completed by the end of February.

J. Atkinson commented that he has previously reviewed the results with the General Manager and was concerned about the amount of red flagging and dissatisfaction. He was glad to see the work done to date with the workforce plan and is looking forward to the next phase being completed so the results and a plan to proceed can be presented to the Board of Directors.

J. Mason stated that the results of the survey were consistent with input she has received from staff over the past two years. She commented she was glad the survey was undertaken and the consultant hired so staff can feel their concerns are being addressed.

J. Atkinson noted the importance that staff are aware they can approach the Chair if need be. Getting to the bottom of the violence and harassment claims, whether new or old, will certainly be addressed, as will the bullying. He noted it's challenging in a small office but confidentiality is utmost importance.

The committee discussed having the results of the working group sessions presented to the Finance and Administration committee for review and recommendation prior to tabling it at the Board of Directors in March.

C. Lowry commented that some steps within the workplan will form part of the answer to some of the areas of concern in the survey, however the justice and respect pieces and recognizing if the issues are current or longstanding is important. She stated the importance of giving staff the opportunity to share to gain a better understanding, while also being aware that there could be difficulty obtaining comments from people depending on the make-up of the focus groups and lack of vertical trust identified.

S. McIntyre advised that the focus groups are to consist of five groups of 5-6 staff, and a separate group for the managers so everyone feels they have a safe space to share. The General Manager will not participate in any of the groups.

2. <u>Transition to Hybrid Meetings</u>

The committee discussed whether MVCA meetings should continue to be held remotely of if consideration should be given to having in-person meetings with the option to attend remotely, if required.

J. Mason stated she liked the option of participating remotely for larger meetings, given that masking is still required and booster shots may not start happening until January.

S. McIntyre confirmed that the MVCA boardroom can house 13 people with social distancing in place and that the audio system has been tested and works well for hybrid meetings with people in the room or connecting virtually.

The committee agreed to poll the Board after the December meeting to gain a better understanding of member meeting preference.

3. 2022 Watershed Tour

J. Atkinson proposed the possibility of moving ahead with a watershed tour in 2022, recognizing that this will take staff time and resources. He commented that he missed having the tour as it was a great opportunity to learn about the conservation authority, socialize with members and the community as well as interact with staff outside of the office dynamic. He raised the possibility of putting an Indigenous focus on the tour to provide the opportunity to meet people in person and have conversations about what is important to that community.

J. Mason commented that the work being done on Shabomeka and Kashwakamak water control structures would be a good combination of elements with the Indigenous Peoples focus.

The committee noted that transportation would be one area of difficulty, but that bus groups were running and members/staff could use their own vehicles as well if need be.

The committee agreed to proceed with the tour. J. Atkinson will reach out to RoxAnne Darling to see if she would be able to provide some insight into ways to best approach communication with the Indigenous community given her status as Mohawk.

4. Review of General Manager 2021 Increment

EC11/12/21-2
MOVED BY: J. Atkinson
SECONDED BY: F. Campbell
Resolved, That the committee move to in-camera session for discussion of the following matter:

- **Personal matters about an identifiable individual, including employees of the Authority**

"CARRIED"

EC11/12/21-3
MOVED BY: J. Atkinson
SECONDED BY: J. Mason
Resolved, That the Committee move out of in-camera discussions.

"CARRIED"

The Executive Committee provided instruction to the Chair how to proceed regarding Agenda item #4 (Review of General Manager 2021 Increment).

ADJOURNMENT

The meeting was adjourned at 4:37 p.m.

EC11/12/21-4

MOVED BY: F. Campbell
SECONDED BY: C. Lowry
Resolved, That the meeting be adjourned.

"CARRIED"

"E. Levi, Recording Secretary J. Atkinson, Chair"

Mississippi Valley Conservation Authority

POLICY AND PRIORITIES ADVISORY COMMITTEE

Via Zoom **MINUTES** February 17, 2022

MEMBERS PRESENT:
F. Campbell, Chair
J. Inglis, Vice-Chair
B. Holmes
J. Karau
C. Kelsey
J. Mason
K. Thompson

MEMBERS ABSENT:
J. Atkinson
R. Darling
C. Ridgelhof

STAFF PRESENT:
S. McIntyre, General Manager
E. Levi, Recording Secretary

OTHERS PRESENT:

F. Campbell called the meeting to order at 10:05 a.m.

PPAC02/17/22-1
MOVED BY: J. Mason
SECONDED BY: K. Thompson
Resolved, That the Agenda for the February 17, 2022 Policy and Priorities Advisory Committee meeting be adopted as presented.

"CARRIED"

BUSINESS:

1. Minutes – Policy & Priorities Advisory Committee Meeting – October 19, 2021

PPAC02/17/22-2
MOVED BY: J. Karau
SECONDED BY: B. Holmes
Resolved, That the Minutes of the Policy & Priorities Advisory Committee meeting held

on October 19, 2021 be received and approved as printed.

"CARRIED"

2. Election of 2021 Officers

PPAC02/17/22-3
MOVED BY: G. Gower
SECONDED BY: K. Thompson
Resolved, That Sally McIntyre be appointed as Chair for the Election of Chair for 2021.

"CARRIED"

S. McIntyre declared all offices vacant. B. Holmes nominated Faye Campbell for the position of Chair of the Policy & Priorities Committee for 2022. S. McIntyre asked three times for further nominations. No further nominations were received.

PPAC02/17/22-4

MOVED BY: K. Thompson
SECONDED BY: J. Karau
Resolved, That nominations for the position of Chair be closed.

"CARRIED"

F. Campbell agreed to let her name stand for the position of Chair. She was duly elected by acclamation.

F. Campbell nominated John Inglis for the position of Vice-Chair of the Policy & Priorities Committee for 2022. F. Campbell asked three times for any further nominations. No further nominations were received.

PPAC02/17/22-5

MOVED BY: G. Gower
SECONDED BY: B. Holmes
Resolved, That nominations for the position of Vice-Chair be closed.

"CARRIED"

J. Inglis agreed to let his name stand for the position of Vice-Chair. He was duly elected by acclamation.

3. Review of Committee Structures

S. McIntyre presented Staff Report 3204/22 that identifies options for amending MVCA committee structures and recommends potential amendments. Table 2 was reviewed proposing clarifications to existing committee mandates, and the scope of a new Public Advisory Committee for watershed planning and implementation was also discussed.

The committee discussed the Executive Committee role and how it should be used moving forward outside of emergency operations. J. Karau expressed concern over having the legislative agenda terminology used for the executive function.

J. Mason commented that she found the Executive Committee to be extremely valuable, however doesn't see the need to meet quarterly.

Staff was directed to change the first recommended role to indicate that the executive committee would hold meetings "as needed" to review items on the horizon and to support the GM in managing upcoming Committee and Board workloads.

Discussion was held regarding the Public Advisory Committee and the possibility of having two: one for the Mississippi watershed and one for the Carp watershed, however there are not currently resources to proceed two separate groups. J. Karau noted that two PACs would be preferable but understands there are different needs and different stages of development, so staged process is necessary. He commented that the Carp River needs ongoing monitoring and support and the PAC should be revisited within 2 years to see if Carp could benefit.

There was discussion regarding removal of the requirement to have the Committee Chair live within the watershed boundaries.

Staff took direction to form a Mississippi River PAC now, with a MVCA Board Member serving as Chair. A Carp River PAC will be considered at a later date, possibly following completion of new floodplain mapping and prior to completion of a new subwatershed plan.

G. Gower commented that the Terms of Reference and membership need to be completed and it made clear that the PAC is for advice and support only. S. McIntyre indicated that the proposed motion directs staff to return to the Board with proposed Administrative By-law amendments which would include a Terms of Reference for a Mississippi R. Watershed Plan PAC.

PPAC02/17/22-6

MOVED BY: J. Mason

SECONDED BY: G. Gower

Resolved, That the Policy & Priorities Committee recommend that the Board of Directors direct staff to draft and table amendments to MVCA's Administrative By-law to address the recommendations contained in Report 3204/22, as amended.

"CARRIED"

4. Carp River Conservation Area Master Plan

S. McIntyre summarized Staff Report 3205/22. The report includes the *Carp River Conservation Area Background Report* which summarizes the history and current state of the Carp River Conservation Area (CRCA) as well as opportunities for future use and enhancements. City staff have received the report and have been asked to provide comment so that the document can be finalized and shared with the public. Significant delays with the plan were noted and in order to mitigate further delays it is recommended that the Board direct staff to finalize the *Background Report,* and to finalize and implement a public engagement plan in partnership with the City and report back with details.

J. Karau commented on the importance of clarifying expectations of parties involved and to provide clear objectives for public consultation. Extra clarity should be provided in the workplan to aid in implementation focus. He also advised that there is likely to be heightened expectations associated with Ottawa's new official plan.

There was a discussion regarding Natural Heritage Systems within the City of Ottawa. G. Gower offered to reach out to Kanata North Councillor Cathy Curry to see if there is a way to assist in moving the plan along.

J. Mason acknowledged the efforts of MVCA staff working on the report, namely Erica Ogden, Julie Falsetti and Alyson Symon.

PPAC02/17/22-7

MOVED BY: J. Mason

SECONDED BY: G. Gower

Resolved, That the Policy and Priority Committee recommend that the Board approve finalization of the Background Report in partnership with the City of Ottawa and release to the public as part of a coordinated public engagement process; and to report back to the Board with details.

"CARRIED"

5. Corporate Strategic Plan

S. McIntyre discussed Report 3206/22 which provides an implementation plan with specific actions for assessing progress towards achieving goals and objectives set out in the Corporate Strategic Plan. Discussion included a review of new requirements per O. Reg. 686/21, and how cost recovery of Category 2 and 3 and associated agreements will need to be considered each term of council and the potential impacts on workforce planning.

J. Mason commented that most dates in the "output" column reference are 2022 and 2023. S, McIntyre agreed that the next two years would be busy in part because of the timelines of specific grants, and the need to complete works already in progress.

J. Karau commented that the document provides examination and better appreciation for how busy the MVCA agenda is. He also expressed concern as J. Mason did about timelines seeming ambitious. He suggested some items may need further review to determine if they are actually time sensitive, citing completion of the Indigenous Engagement Plan as an item that may necessitate more time.

J. Karau commented on the value of annual reports as a record and legacy of accomplishments which help outline corporate cycles and trends. Staff took direction to continue to implement annually using a simplified format.

PPAC02/17/22-8

MOVED BY: B. Holmes
SECONDED BY: C. Kelsey
Resolved, That the Policy & Priorities Advisory Committee recommend that the Board of Directors approve the Draft Implementation Plan as set out in Report 3206/22.

"CARRIED"

J. Karau suggested that changes should be at the discretion of the GM and that any issues can be further addressed at the Board level.

ADJOURNMENT

The meeting was adjourned at 11:40 a.m.

PPAC02/17/22-9
MOVED BY: K. Thompson
SECONDED BY: J. Karau
Resolved, That the meeting be adjourned.

“CARRIED”

“E. Levi, Recording Secretary F. Campbell, Chair”

FINANCE AND ADMINISTRATION ADVISORY COMMITTEE

Via Zoom **MINUTES** April 11, 2022

MEMBERS PRESENT:	C. Lowry, Chair P. Sweetnam, Vice-Chair J. Atkinson E. El-Chantiry J. Mason B. King P. Kehoe
MEMBERS ABSENT:	J. Atkinson A. Tennant
STAFF PRESENT:	S. McIntyre, General Manager R. Fergusson, Operations Supervisor A. Millar, Treasurer E. Levi, Recording Secretary
GUESTS PRESENT:	G. & M. Bucci, Resident North Frontenac K. Greaves, County of Lanark R. Allen, County of Frontenac

C. Lowry called the meeting to order at 10:32 a.m.

FAAC04/11/22-1

MOVED BY: **B. King**
SECONDED BY: **P. Kehoe**

Resolved, That the Agenda for the April 11, 2022 Finance & Administration Advisory Committee meeting be adopted as presented.

"CARRIED"

BUSINESS

1. Approval of Minutes

After a brief discussion regarding mileage rate, the committee agreed there was conflicting intent of how the revised mileage rate was to be applied for Board members versus MVCA staff. The

committee agreed the motion in the minutes of February 8, 2022 should be amended to reflect use of the provincial "Travel, Meal, Hospitality Expenses Directive" for Board member mileage and approve an increase in the corporate mileage rate to $0.57/km effective January 1, 2022.

FAAC04/11/22-2
MOVED BY: P. Sweetnam
SECONDED BY: P. Kehoe
Resolved, That the Minutes of the Finance & Administration Advisory Committee meeting held February 8, 2022 be received and approved as amended.

"CARRIED"

2. Election of Officers

FAAC04/11/22-3
MOVED BY: B. King
SECONDED BY: J. Mason
Resolved, That Sally McIntyre be appointed as Chair for the Election of Chair for 2022

"CARRIED"

S. McIntyre declared all offices vacant. P. Kehoe nominated Christa Lowry for the position of Chair of the Finance & Administration Advisory Committee for 2022. S. McIntyre asked three times for further nominations. No further nominations were received.

FAAC04/11/22-4
MOVED BY: P. Sweetnam
SECONDED BY: J. Mason
Resolved, That nominations for the position of Chair be closed.

"CARRIED"

C. Lowry agreed to let her name stand for the position of Chair. She was duly elected by acclamation.

J. Mason nominated Phil Sweetnam for the position of Vice-Chair of the Finance & Administration Advisory Committee in 2022. C. Lowry asked three times for any further nominations. No further nominations were received.

FAAC04/11/22-4
MOVED BY: B. King
SECONDED BY: J. Mason
Resolved, That nominations for the position of Vice-Chair be closed.

"CARRIED"

P. Sweetnam agreed to let his name stand for the position of Chair. He was duly elected by acclamation.

3. Bucci Offer to Purchase

S. McIntyre reviewed Glen & Marthe Bucci's offer to purchase a segment of the K&P Trail as outlined in Staff Report 3212/22. She reviewed history of the property and interactions between MVCA and Bucci's to date, including court proceedings and Minutes of Settlement. Bucci's have yet to acknowledge the validity of the 2017 Reasons for Judgment, the Survey and the resulting Reference Plan, and to fulfill the terms of the Reasons for Judgment and Minutes of Settlement.

Sale of the land to Bucci's was not recommended as the Board has already approved, and the counties of Lanark, Renfrew and Frontenac are actively pursuing purchase of MVCA's section of the K&P Trail to facilitate a continuous ring trail in Eastern Ontario so that it remains in public hands, for public use. Additionally, precedent of a private sale could set negative feedback from a multitude of trail users and partner organizations.

K. Greaves and R. Allen both confirmed that they were actively working on files to acquire the entire parcel of K&P owned by MVCA to preserve this recreational asset.

G. Bucci spoke to the committee. He stated they were disappointed in the negative tone of the report just presented, that there was no discussion regarding the financial consequences of refusing the offer, and that they were offering twice the appraised value.

G. Bucci stressed that they have stipulated on numerous occasions that it is not their intention to block the trail and they haven't done so for the past 60 years. He feels that the staff report is defamatory and bordered on slander. He noted that the draft easement document provided by MVCA was totally unacceptable.

J. Mason asked why they wish to purchase the property. G. Bucci advised that they wish to end the legal back and forth with MVCA which has been ongoing for 10 years. He stated if they aren't able to purchase the property, they will return to court to appeal the current judgement.

After 12 minutes, C. Lowry informed G. Bucci that he had been given more than double the allotted time and that the meeting would now move In Camera for discussion.

FAAC04/11/22-5
MOVED BY: P. Kehoe
SECONDED BY: P. Sweetnam
Resolved, That the Finance & Administration Advisory Committee move to in-camera discussion to address a proposed or pending acquisition or disposition of land by the Authority; and further
Resolved, That staff remain in the room.

"CARRIED"
5 in favour, 1 opposed

FAAC04/11/22-6
MOVED BY: E. El-Chantiry
SECONDED BY: B. King
Resolved, That the Finance & Administration Advisory Committee move out of in-camera discussion.

"CARRIED"

C. Lowry reported the committee was in closed session to discuss potential disposition of land.

FAAC04/11/22-7
MOVED BY: P. Kehoe
SECONDED BY: P. Sweetnam
Resolved, That the Finance & Administration Advisory Committee recommend that the Board decline the Bucci offer.

"CARRIED"
5 in favour, 1 opposed

4. Management of Reserves

S. McIntyre presented staff report 3213/22 regarding the current state of MVCA reserves, policies of other jurisdictions, and MVCA's Operating Reserve in particular. She reviewed a risk-based approach to setting a minimum Operating Reserve balance. Using this approach a targeted level of $700,000 was identified. Going forward the same approach to calculating the target would be used, with the actual value changing as the Authority's depending upon the outcome of the risk assessment. This minimum balance in the Operating Reserve combined with healthy capital reserve funds provide the Authority with good financial buffer against the most likely risks to face the organization.

E. El-Chantiry asked about timing to approach the Board with recommendation of the new strategy. S. McIntyre stated that staff would aim to table draft policies at the Committee and then to the Board in July.

P. Sweetnam commented that MVCA takes a very conservative approach when it comes to investment returns. He suggested looking at professional fund managers such as those used by the Ottawa Community Foundation.

FAAC04/11/22-8
MOVED BY: J. Mason
SECONDED BY: P. Sweetnam
Resolved, That the Finance and Administration Committee recommend that the Board direct staff to:

1. **Prepare and table draft policies governing the Operating Reserve and restricted Reserve Funds.**
2. **Report to the Board each Fall on the state of the Operating Reserve and Reserve Funds concurrent to seeking budget/levy direction.**

3. **Update the 5-year Capital Needs Assessment and assess the health of Reserve Funds.**
4. **Update the 10-year Capital Plan including a schedule of projected capital levies and reserve contributions.**

"CARRIED"

5. Insurance Inspection

S. McIntyre commented on Staff Report 3214/22 apprising the committee of key findings and opportunities for improvement based on the December 6, 2021 visit from Marsh Canada to Morris Island, the Mill of Kintail, and Purdon Conservation Areas.

S. McIntyre highlighted a table in the report referencing a plan to mitigate liability. She noted it will likely take 3-4 years to address all identified risks.

6. Grants

S. McIntyre discussed Staff Report 3215/22 reviewing the approach the Authority is going implement moving forward with respect to grants.

ADJOURNMENT

The meeting was adjourned at 12:23 pm.

FAAC04/11/22-9

MOVED BY: **B. King**
SECONDED BY: **E. El-Chantiry**
Resolved, That the Finance and Administration Advisory Committee meeting be adjourned.

"CARRIED"

"E. Levi, Recording Secretary C. Lowry, Chair"

REPORT 3216/22

TO:	The Chair and Members of the Mississippi Valley Conservation Authority Board of Directors
FROM:	Jennifer North, Water Resource Technologist
RE:	**Watershed Conditions**
DATE:	April 12, 2022

For Information.

There is currently no snow left on the ground over much of the eastern part of the watershed and the snow pack in the upper part of the watershed is diminishing quickly.

We have had multiple lower than average peaks this spring. Current flows have peaked from last week's rainfall and are beginning to drop on the main system as well as all major tributaries including Buckshot Creek, Fall River, Clyde River, Indian and Carp River. We do not expect any significant flooding to occur and expect levels to start to recede over the next week pending any significant rain.

We are currently filling the upper lakes to meet their summer target levels, we will then try to maintain stable levels and flows over the next two months to meet the requirements of fisheries (walleye and bass), wildlife (nesting loons ducks etc) while ensuring summer levels are set for the long weekend of May. Weather at this time of year is highly variable and there is always concern regarding the potential for significant rain leading to high water levels and flows that may necessitate the release of water from the upper lakes. Water released at this time of year can sometimes be difficult to replenish.

A normal to mild spring is also expected on the Ottawa River, which is showing normal conditions for this time of year. However, the peak is still a few weeks away and conditions may change during this time.

Rain will continue to be the controlling factor for high and low water conditions on our lakes and rivers this year. Long term forecasts are suggesting a normal to slightly above normal trend in both temperature and precipitation.

REPORT 3212/22

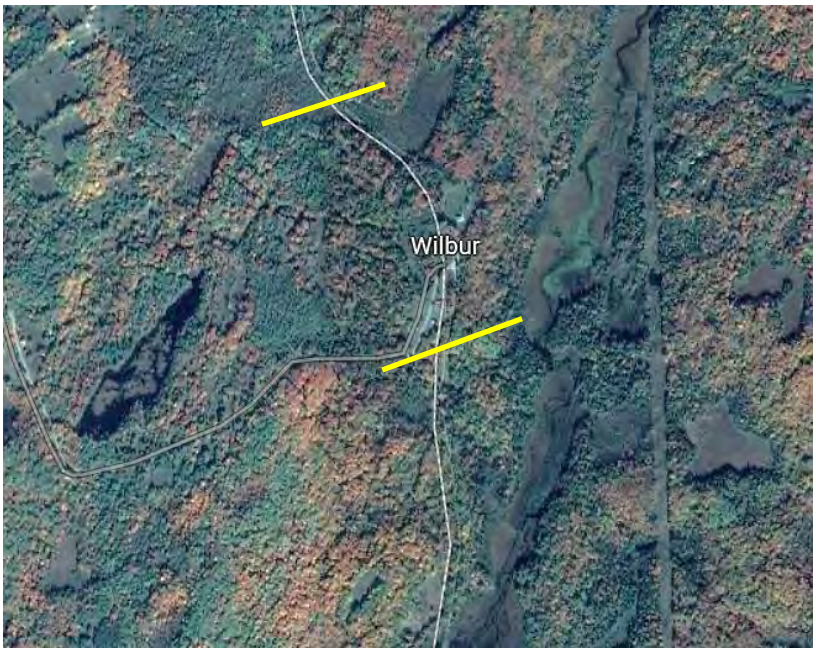
TO:	Finance & Administration Committee
FROM:	Sally McIntyre, General Manager AND Ross Fergusson, Operations Manager
RE:	**Bucci Offer to Purchase a segment of the K&P Trail**
DATE:	March 27, 2022

RECOMMENDATION

That the Finance and Administration Committee recommend that the Board decline the Bucci offer.

MVCA owns a 35 km section of the K&P Trail that extends roughly from Snow Road to Barryvale. The Authority is currently in discussions with the counties of Lanark, Frontenac and Renfrew for the sale of its portion of the K&P. In February, MVCA received an offer of [redacted] to purchase a ~650 metre segment of the K&P Trail that lies in the County of Frontenac at the end of Wilbur Road from Glen and Marthe Bucci.

FIGURE 1: Approximate Limits of Bucci Purchase Offer



1.0 BACKGROUND

In 2014, it was observed that a landowner abutting the trail had removed fencing that delineated the edge of MVCA's property, and had installed new fencing and a gate on MVCA's property. In February 2015, staff was directed[1] to apply to the courts for an Order to establish property title and to register the Order on title. At issue was ownership of the easterly half of the ~650 metre trail segment as measured from the centre line of the trail. Petition to the court was made, a hearing held, and Reasons for Judgment issued in September 2017 that found and directed as follows:

- MVCA is the legal owner of the land in dispute.
- That a Reference Plan based on a new survey would be required to identify the boundary between the properties based on the location of the historical fences (pre-2014) and the historical boundaries of lands taken by the KPR.
- At their expense, Glen and Marthe Bucci are to remove the new fencing they installed and reinstall the fencing at the boundary between the properties as determined by the Reference Plan.

As MVCA was entitled to seek its legal costs for the action and the Judgment, Glen and Marthe Bucci and MVCA entered into Minutes of Settlement and agreed to the following:

- Glen and Marthe Bucci are to pay MVCA legal costs in the amount of [redacted] once the Survey contemplated in the Reasons for Judgment was completed.
- Glen and Marthe Bucci would be required to move the existing fence after the Survey was completed and provided to them.
- The MVCA will grant Glen and Marthe Bucci an easement to ensure they have continued access to their property as agreed to after the Survey was completed.
- Glen and Marthe Bucci will abandon the appeal they commenced.

In the years since, MVCA completed a survey (see Figure 2) and provided the Buccis with draft easement agreements. The Buccis have contested the validity of the Reasons for Judgment and the Survey and continue to contend that they own the land.[2] The fencing and gate have not been removed, MVCA's legal costs have not been paid, and the Buccis have not agreed to the terms of drafted easement agreements tabled that would provide them with legal access across the K&P on title.

[1] Motion B02/18/15-3
[2] Refer to Attachment 2.

2.0 BUCCI OFFER

On February 22, 2022, Glen and Marthe Bucci made an official offer to purchase a segment of the K&P Trail. The revised offer[3] (Attachment 1) is to purchase Parts 1, 2, 3, and 4 of R-Plan 13R-22083 for [redacted]. Refer to the letter from Glen and Marthe Bucci dated March 8, 2022 for their perspective and rationale (Attachment 2.)

Part 1 – Entire width of K&P Trail (~22 metres) extending approximately 490 m. north from Wilbur Road to the boundary between Lot 24 and Lot 25, Con. 11, Twp. Of N. Frontenac.

Part 2 – Segment of K&P Trail over which Glen and Marthe Bucci have right of access.

Part 3 – Segment of K&P Trail over which Glen and Marthe Bucci have right of access that was illegally fenced and gated.

Part 4 – Entire width of K&P Trail (~22 metres) extending approximately 155 m. south from Wilbur Road to the boundary between Lot 23 and Lot 24, Con. 11, Twp. Of N. Frontenac.

3.0 ANALYSIS

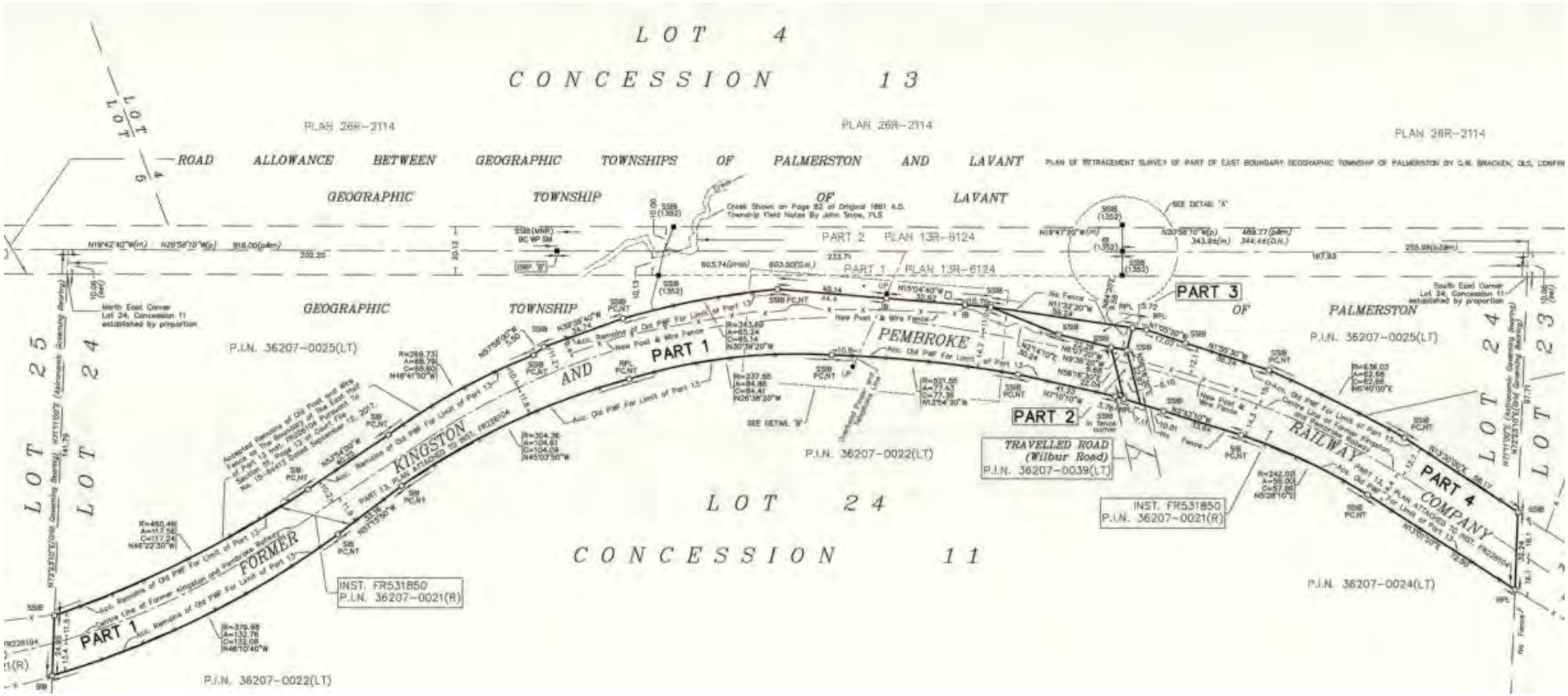
3.1 Assessed Value

The appraised value of MVCA's 35 km section of the K&P Trail in May 2021 was [redacted]. The sale of this ~650 m segment would pose a significant interruption in Trail ownership and control, and could undermine the overall value-proposition of the sale to the three counties and the value of the land within the County of Frontenac in particular.

.

[3] On March 8, 2022 the period of the Offer was extended from March 31, 2022 to April 29, 2022 to allow staff time to consider and table this matter with the Board.

FIGURE 2: Parts 1, 2, 3 and 4 – Land Subject to [redacted] Offer to Purchase



3.2 County of Frontenac

The County, in cooperation with Lanark and Renfrew counties, is working to implement a ring trail to benefit a wide variety of users and attract recreational tourism to Eastern Ontario. To that end, the County has stated its expressed wish that this segment not be sold or otherwise encumbered by fences and gates etc. for the following reasons:

- The County has and continues to experience planning and operational challenges due to privately owned segments of the K&P Trail south of MVCA's property.
- Considerable time and money have been expended to deal with similar interruptions in ownership and encumbrances on other portions of the trail.
- For ease of maintenance and to enable future trail enhancements, the trail should be left unencumbered by fencing and gates within the ~22-metre-wide property.

3.3 Provincial Policy

The province paid 50% of the price for this land when it was purchased in 1990. Provincial policy[4] states that Ministerial approval is required to sell land that was acquired in whole or part with provincial funds. In all cases, land sales must be based on current "market value"[5] and:

- "Fulfill the objects of the Authority.
- Protect Provincially Significant Conservation lands and Managed/Agreement Forest lands.
- Follow an open process with public notification.
- Be accurately defined."

Nothing about the sale of this property aligns with the objects of conservation authorities as defined by the Act. Sale to a private landowner would pose a potentially significant breach in the ~180 km north-south trail which is designed for conservation and recreational purposes, and use by the public at large.

Sale of this segment could result in reduced access to managed forests and private lots that access the trail via Wilbur Road and that travel through this segment to access their property. As well, given extensive use of the trail by local snowmobile and ATV clubs, significant objections are anticipated were the Authority to sell this portion of the trail to a private landowner. This is particularly likely given disruptions experienced this past snowmobile season on the trail south

[4] *Policies and Procedures for the Disposition of Conservation Authority Property*, November 1999.
[5] Unless sold to a municipality in which case Section 4.5.2 of the above 1999 document applies.

of MVCA's property.[6] For these reasons, staff would have significant difficulty justifying to the Minister the sale of this land to a private landowner.

3.4 Township of North Frontenac

The Township of North Frontenac uses portions of the areas described as Parts 2 and 3 of 13R-22083 as a turn-around zone for trucks performing maintenance on Wilbur Road. Any fencing and gates along this section of the K&P Trail could impede access and road operations.

Sale of this segment of the K&P Trail would be subject to MVCA making application to and receiving approval from the Township's Committee of Adjustment. Any consent to sever the property would likely include conditions related to continued public use of the trail, which would necessitate some form of easement agreement. There is no mention in the Offer of assuming land severance costs, associated public notification/consultation costs, or the cost to fulfil any conditions imposed such as the drafting, execution, and registration of an appropriate easement agreement.

4.0 CONCLUSION & RECOMMENDATIONS

Sale of the land to Glen and Marthe Bucci is *not* recommended for the following reasons:

- The Board has already approved, and the counties of Lanark, Renfrew and Frontenac are actively pursuing purchase of MVCA's section of the K&P Trail to facilitate a continuous ring trail in Eastern Ontario so that it remains in public hands, for public use, as a multi-purpose recreational trail in accordance with the Objects of the *Conservation Authorities Act*.
- The County of Frontenac's request that MVCA sell the land as a single contiguous unit unencumbered by fences and gates to ease future enhancement and operation of the trail and mitigate future legal and expropriation costs.
- The significant precedent a private sale would set, and negative feedback it would garner from a multitude of trail users and partner organizations.
- The failure of the Bucci's to acknowledge the validity of the 2017 Reasons for Judgment, the Survey and the resulting Reference Plan, and to fulfill the terms of the Reasons for Judgment and Minutes of Settlement.

[6] https://www.frontenacnews.ca/frontenac-county-news/item/15295-snowmobilers-caught-in-k-p-trail-crossfire#:~:text=A%20group%20of%20private%20landowners,north%20towards%20Renfrew%20and%20Calabogie.

OREA Ontario Real Estate Association

Agreement of Purchase and Sale
Commercial

Form 500
for use in the Province of Ontario

If you use more than 1 Schedule page, change the total page # to include it.

This Agreement of Purchase and Sale dated this 22nd day of February, 20 22

BUYER: Marthe Roche-Bucci and Glen Bucci, agrees to purchase from
(Full legal names of all Buyers)

SELLER: MISSISSIPPI VALLEY CONSERVATION AUTHORITY, the following
(Full legal names of all Sellers)

REAL PROPERTY:

Address N/A

fronting on the ..... side of .....

in the .....

and having a frontage of ..... more or less by a depth of ..... more or less

and legally described as Pt LT 24 CON 11, PALMERSTON, TOWNSHIP OF NORTH FRONTENAC, BEING PARTS 1, 2, 3 & 4 ON 13R-22083, BEING PART OF PIN 36207- 0021, COUNTY OF FRONTENAC

..... (the "property")
(Legal description of land including easements not described elsewhere)

PURCHASE PRICE: Dollars (CDN$) [redacted]

[redacted] Dollars

DEPOSIT: Buyer submits N/A
(Herewith/Upon Acceptance/as otherwise described in this Agreement)

..... Dollars (CDN$) .....

by negotiable cheque payable to.. N/A "Deposit Holder" to be held in trust pending completion or other termination of this Agreement and to be credited toward the Purchase Price on completion. For the purposes of this Agreement, "Upon Acceptance" shall mean that the Buyer is required to deliver the deposit to the Deposit Holder within 24 hours of the acceptance of this Agreement. The parties to this Agreement hereby acknowledge that, unless otherwise provided for in this Agreement, the Deposit Holder shall place the deposit in trust in the Deposit Holder's non-interest bearing Real Estate Trust Account and no interest shall be earned, received or paid on the deposit.

Buyer agrees to pay the balance as more particularly set out in Schedule A attached.

SCHEDULE(S) A attached hereto form(s) part of this Agreement.

1. **IRREVOCABILITY:** This offer shall be irrevocable by Buyer (Seller/Buyer) until 5 p.m. (a.m./p.m.) on the 31st 29th day of March APRIL, 20 22, after which time, if not accepted, this offer shall be null and void and the deposit shall be returned to the Buyer in full without interest.

2. **COMPLETION DATE:** This Agreement shall be completed by no later than 6:00 p.m. on the 28th day of May, 20 22. Upon completion, vacant possession of the property shall be given to the Buyer unless otherwise provided for in this Agreement.

INITIALS OF BUYER(S): **INITIALS OF SELLERS(S):**

March 08, 2022

Subject : Bucci Offer to Purchase Parts 1,2,3,4 Plan13R-22083

Members of the Board of Directors, Mississippi Valley Conservation Authority

Dear Sir or Madam,

Please review the following and take its contents into consideration when you are discussing our Purchase Offer during your Board of Directors Meeting.
We hope that after review you will see the logic in what we are proposing and conclude that accepting our offer and selling us Parts 1, 2, 3 & 4 Plan13R-22083 is the best course of action for MVCA.

Our legal issues concerning the K&P Trail have been ongoing since 2012 when we approached MVCA offering the guaranteed use of the trail on our property in exchange for MVCA assuming any liability for usage of the trail.

Ten years of legal proceedings, including Court action in 2017, have now passed with no sign of an end in sight as the Judge imposed no timelines. Since the 2017 trial MVCA has acquired the very expensive Plan13R-22083 and amassed further legal expenses but has never fulfilled any of the other Judge ruled legal requirements to assume our property. A survey Plan does not afford ownership and can be challenged for 10 years. MVCA will need to undertake an extensive series of legal steps and commit significant additional funds to finalize these requirements unless the situation is resolved.

In addition MVCA has not provided us an Agreed to Easement for access to our property. This must occur before any other steps can be taken.
The first and only written Easement Offer we received from MVCA's team of lawyers was August 24, 2021, almost four years after the Judge's decision of Sep 12, 2017. We found this offer completely unreasonable and unacceptable. According to the Minutes of Settlement we have the right to reject any easement offered if we do not agree with it.

MVCA's newest team of lawyers may recommend you refuse our offer and initiate new legal action in an attempt to force a settlement. Given the current backlog in the Court system a minor issue like ours would likely be put on the back burner for years, exactly what happened with the original action brought by MVCA in 2015. Further action would only prolong the situation and there are no guarantees as to the outcome.

In hopes of solving this impasse, Dec 13, 2021 our Counsel presented MVCA our Offer to Purchase Parts 1, 2, 3 & 4 - Plan13R-22083. It was rejected.

Our revised Purchase Offer that you will be discussing was presented Feb 22, 2022. In it we are offering to pay [redacted] (4.1 acres as identified on Plan 13R-22083 [redacted]) to purchase all Parts 1, 2, 3 & 4 Plan13R-22083.
Further, as a sign of good faith, the [redacted] agreed to in the Minutes of Settlement has been placed In Trust at Nelligan Law, not as part of the purchase offer but to be paid to MVCA once we are the legal registered owners of all Parts 1, 2, 3 & 4 Plan13R-22083. Payment of the funds at that time would conclude our legal association with MVCA.

Despite the fact that we would technically be buying some of our own property and that we disagree with the methodology and conclusions of the Plan due to its nonadherence to the Judge's directions, we would nevertheless utilize it uncontested for the sole purpose of allowing the sale to proceed. This use should not be misconstrued as our acceptance of Plan R13-22083 as it currently exists.

MVCA is actively engaged in selling the K&P Trail but cannot divest itself of our section as long as our legal issues remain unresolved leaving a gap in the Frontenac County portion of their proposed trail.

Frontenac and the other interested Counties are well aware of the challenges of extending the K&P Trail northward from Sharbot Lake. South of our location Frontenac County is presently in discussions with approximately 12 private land owners, one of which owns the crucial bridge currently blocking access to MVCA's portion of the K&P Trail. To the north there is a legal dispute concerning the K&P causeway from Barryvale to Calabogie that will likely last years due to historical inaccuracies. If the counties are determined to develop the remaining K&P Trail regardless of these and other possible obstacles, selling us one small portion will not deter them in any way. In fact, if Frontenac County hopes to complete its trail to the Lanark border in a timely manner it might actually prefer to approach one additional private land owner now rather than awaiting the unknown outcome of a seemingly endless legal dispute severing the trail.

For those of you who might suggest our aim is to own the K&P Trail in order to close it, that has never been our intent. If it were, our family has had ample opportunities to do so in the past, an action that would have avoided the legal mess we now find ourselves in.
We have no ulterior motive for wishing to buy the trail. We simply see it as the best way forward for all of us. Please also consider that former GM Paul Lehman testified in 2017 that the trail could be easily moved west and that he had no complaints about our 2014 fence: a fence and gates that have been in place for almost 8 years with no incidents or impact on the trail.

MVCA staff previously advised that once our legal issues are concluded they would approach their BOD suggesting you sell us Part 3. If that is truly the intension, what

possible difference could it make to sell us all the Parts now if MVCA actually wishes to divest itself of the K&P Trail as you have instructed.
Offering to sell us only Part 3 now will not remove MVCA's legal obligation to provide us an Agreed to Easement or solve the complications to acquire our property. Selling us all Parts 1, 2, 3 & 4 Plan R13-22083 and merging them with our property would.

Accepting our purchase offer would avoid further legal action and eliminate the need for any Agreed to Easement Agreement and their associated legal fees. There would be no complicated land transfers or title changes, no Land Title vs Registry encumbrances, no multiple deeds and no adjustments or challenges to the survey resulting in significant savings for MVCA. A simple, straight forward sale to us would be all that is required.

We hope that you will look favourably on our Purchase Offer but in the event you do not, you will leave us no recourse but to contest the survey Plan and sue for ownership of our 130 year old driveway. This is not a threat but an unfortunate unavoidable necessity for us to continue to protect the property our family has owned since 1890. We have avoided taking that route and would prefer not to but we have not spent the last ten years fighting for our property to just abandon it now.
It would not matter if MVCA Counsel initiates new legal action or we do, either scenario would result in further lengthy and expensive discussions and possibly damage public opinion of the Authority.

We would like to be able to pass our property on to our children and grandchildren free of any legal encumbrances: that is why we approached MVCA in 2012. Many of you on the current BOD and your General Manager inherited this problem through no fault of your own. Would it not be preferable to resolve it now rather than passing it on to a future BOD? Why drag it out any longer when you have been offered a simple solution?
Just curious but have any of you calculated how many taxpayer dollars MVCA has already spent on our small bit of property considering the appraised value of the entire 35km of the K&P Trail is only [redacted] How much more are you willing to spend?

Our purchase proposal is the most expedient and cost effective way to avoid further delays, minimize legal expenses and put an end to this once and for all.
Since you are selling the K&P Trail anyway why refuse our offer?

Thank you for your attention, we remain hopeful that you will accept our offer.
If you have questions concerning our proposal please do not hesitate to contact us. If you prefer we are available to attend your BOD Meeting.

Respectively Glen Bucci and Marthe Roche Bucci
[redacted]

REPORT 3204/22

TO:	MVCA Policy & Priorities Committee
FROM:	Sally McIntyre, General Manager
RE:	**MVCA Committees**
DATE:	February 10, 2022

RECOMMENDATION

That the Policy & Priorities Committee recommend that the Board of Directors direct staff to draft and table amendments to MVCA's *Administrative By-law* to address the recommendations contained in this report.

1.0 PURPOSE

The purpose of this report is to identify options for amending MVCA committee structures and to recommend potential amendments.

2.0 BACKGROUND

Currently, MVCA has the following committees[1] (refer to Attachment 1 for Terms of References):

- Finance and Administration Advisory Committee (board members only)
- Policy and Priorities Advisory Committee (board members only)
- Regulations Committee (Section 28 tribunal comprised of board members with delegated powers)
- Executive Committee[2] (Chair, V. Chair, and Committee Chairs; struck during pandemic)
- Mill of Kintail Museum Advisory Committee (primarily members of the public with representation from the Board and the MVC Foundation)

In November 2020 and March 2021 respectively, the Board directed staff to consider establishment of a Public Advisory Committee (PAC) for implementation of the Watershed Plan;

[1] Section 12 of MVCA's *Administrative By-laws* allows the Board to "establish such advisory boards as required by regulation and may establish such other advisory boards or committees as it considers appropriate to study and report on specific matters."

[2] Executive Committees are permitted under section 19 (1) of the Conservation Authorities Act, with section 19 (2) prescribing that the chair and vice-chair of the authority shall be the chair and vice-chair of the executive committee.

and to clarify the Terms of Reference of the P&P Committee to state that it held responsibility to review and make recommendations regarding committee structures.[3]

While by-law amendments were made to clarify the scope of P&P Committee responsibilities, consideration of a PAC was parked until provincial regulations were released, as PACs were expected to be made mandatory with prescribed membership and responsibilities. Regulations released last fall did *not* make PACs mandatory, therefore staff have now conducted a review of this matter. As well, options to address issues raised regarding Board and Committee workload management and the future role of the Executive Committee were reviewed.

3.0 COMMITTEES AT OTHER CONSERVATION AUTHORITIES

Over the past month, staff researched Eastern Ontario conservation authorities and a selection from south-western Ontario regarding committees used by their Boards. A variety of committees were found; and it was not unusual to learn that committee structures evolved over time to adapt to changing needs.[4]

The ASAE Center for Association Leadership identifies the following as typical organizational committees[5]:

- **Standing committees** that a board uses on a continual basis. Typical standing committees include: Executive, Program, Governance, Finance, and Audit committees. Some organizations have Board Development Plans where members alternate committees to gain a broad understanding of their organization.
- **Ad hoc committees** are formed for a limited time to address a specific need and are dissolved when work is completed. Example uses include to amend corporate bylaws, develop a strategic plan, and to study and find creative solutions to a particular challenge.
- **Advisory councils** assist boards in carrying out their work by providing expertise and advice in selected areas. Advisory councils do not have any governance responsibilities and are a good way to include stakeholders, potential board members, subject matter experts, and others in the work of the board without placing them on the board.

The following sections summarize research findings for each type of committee. Note: what was stated in Administrative By-laws posted to CA websites was often found to *not* reflect current practice during subsequent interviews/correspondence. And, not all Administrative By-laws posted on websites could be verified through interviews/correspondence.

[3] Refer to staff reports 3108/20 and 3120/21.
[4] Refer to Staff Report 3120/21 for a discussion on this topic.
[5] ASAE. The Basics of Board Committee Structure, 2015.

3.1 Standing Committees of the Board

Most CAs consulted make relatively limited use of standing committees compared to municipalities—preferring to take all matters directly to the full Board (for example Nottawasaga and Credit Valley.) The main reason given (which tended to be from boards with < 10 Members) was that Members saw no need or advantage to having committees. In one case, the Board felt that committee meetings allowed for too much discussion.

While several authorities like Lower Trent have an Executive Committee, the mandate seems largely confined to the role served by MVCA's and Quinte's Regulations Committees, which consider appeals under Section 28 of the *CA Act* on behalf of the Board.

At Otonobee and Rideau Valley (RVCA) the Executive Committee is also responsible for conducting an annual performance appraisal of the General Manager and collaborating with the GM to set annual performance objectives. And at Otonobee, the Executive Committee also has delegated authority to approve agreements that may be urgent and time sensitive in months that the Board does not meet.

Toronto Region CA was the only authority contacted that had an Executive Committee with expansive powers. This appears to be, in part, because of the size of the Board at 28 members. Half of those Members (14) form an Executive with a wide range of delegated powers.

Some CAs identify an Executive Committee in their by-laws but when contacted stated that it was largely inactive (e.g. Lake Simcoe Region CA.)

Several CAs have an Audit Committee that reviews annual Financial Statements, monitors spending of senior management and Board members, and ensures the auditor can consider and discuss governance and audit issues with parties not directly responsible for operations.

Some CAs identified Budget Committees that set parameters for budgeting and comment on draft budgets, however this was not common. Lake Simcoe Region's budget committee was disbanded because Members found that input did not differ substantially from the Board.

Quinte Conservation has a Land Management Committee to review draft strategic plans, policy documents and discussion papers; and to make recommendations regarding capital improvements, property acquisitions & disposals, leases to outside agencies/ groups, and general land uses of the property holdings.

Quinte Conservation also had an Executive Personnel Committee to deal with personnel issues, but it is not in use having retained a consultant to perform specific tasks and report to the full Board.

Otonobee Conservation has a Nomination Committee that brings forward a slate of officers and appointments for approval at the AGM each year to support succession planning and governance at the Board level.

3.2 *Ad Hoc* Committees

Lower Trent stated that it establishes *ad hoc* committees as needed to address short-term projects, and prepares terms of reference that include the committee's mandate, membership, frequency of meetings and the anticipated delivery date. MVCA established an *ad hoc* Building Committee during the planning, design, and construction of the HQ/Works Yard facility.

Both Kawartha CA and RVCA have an *ad hoc* Policy Committee that meets as required to assist staff in a review and advisory capacity in drafting updates to planning and regulations policies—a more scoped mandate than MVCA's Policy & Priority Committee.

3.3 Public Advisory Committees (PACs)

Most PACs identified are comprised of community stakeholders, often with business, First Nation, and environmental sector representatives, and one or two representatives from the Board. While many conservation authorities have contemplated establishing PACs, few have them, and generally they are established to support a specific program/initiative.

For example, CAs that deliver ALUS or a Rural Clean Water program establish PACs with the expertise needed to support staff during the review of applications and to provide on-the-ground support to applicants. Both South Nation Conservation (SNC) and RVCA have Clean Water Committees, and MVCA is collaborating with RVCA to establish a PAC for the new Lanark County ALUS program.

SNC also has a Communications Committee that provides stakeholder input to programs designed to increase public awareness of landowner stewardships initiatives and stakeholder groups; and a Fish and Wildlife Committee to help increase public awareness of local fisheries and wildlife initiatives by supporting youth fish camps and wildlife education programs.

Toronto Region CA (TRCA) has three very large advisory committees:

- the Regional Watershed Alliance Committee advocates for sustainability, regional biodiversity and healthy rivers/shorelines by sharing knowledge with the Board;
- the Partners in Project Green Executive Committee oversees the Partners in Project Green Initiative and promotes innovation and improved environmental impact by organizations in TRCA's jurisdiction; and

- the Natural Science and Education Committee advises the TRCA Board of Directors and partner agencies on the implementation and advancement of the recommendations of the Outdoor Education Task Force.

Sault Ste. Marie Conservation Authority established a Forest Management Committee to support development of objectives for its *Forest Management Plan* and supported the CA in consultant selection. And, as noted previously, MVCA established a Watershed Plan PAC to support development of the Mississippi River Watershed Plan.

4.0 DISCUSSION

4.1 Standing Committees

Given the nature of discussions that has occurred at standing committees over the past three years, it is felt that they have allowed complex items to be given an appropriate amount of attention and to be dealt with expeditiously when considered by the full Board.

Typically, standing committees deal with up to four items per meeting, which allows matters to be presented, understood and discussed to a greater degree than is typically desired at a Board meeting. They have also been instrumental in providing management with guidance as well as the opportunity to obtain additional information before a matter is tabled to the full Board. In order to provide for the same level of consideration at Board meetings would require longer Board meetings; with the added disadvantage that management would not have the opportunity to investigate questions raised by Members prior to final debate of a matter.

Table 1 summarizes committee activity over the past three years.

Table 1: Standing Committee Meetings 2019-2021

No. of Meetings/year	2019	2020	2021
Policy & Priorities	6	4	4
Finance & Administration	2	3	7[6]
Executive	-	4	1
Regulations	1	1	0

Major items dealt with during this period included the following: Mississippi River Watershed Plan; Bills 108, 229 and associated regulatory changes; the Interim Financial Plan; capital works at Shabomeka and Kashwakamak Lake Dams; the Corporate Strategic Plan; Job Evaluation; the

[6] Three of these meetings dealt with the Draft 2022 Budget.

Workforce Plan; the pandemic and related administrative policies and HR matters; policy changes to the Administrative By-laws; and changes to regulated flood plain mapping.

Some of these items were major corporate planning documents that took significant time to prepare and consider. Going forward, the intent is to update these once per election cycle, so the level of consideration should be less onerous. However, major pieces of work on the horizon include the following:

- Implementation of the Transition Plan per O.Reg. 687/21;
- Completion of several projects prescribed by O.Reg. 686/21 (e.g. Land Conservation Strategy);
- Implementation of projects under the Nature Smart Climate Solutions Fund;
- Sale of the K&P;
- Completion of the Carp River Flood Plain mapping;
- Phase 2 of the Job Evaluations; and
- Amendments to the Administrative By-laws to address financial matters (e.g. administration of Reserves and regulatory changes.)

Until the Authority is through implementation of the *Transition Plan*, continued use of the Finance & Administration and Policy & Priorities advisory committees is recommended. There is an opportunity, however, to clarify roles and responsibilities between the two committees, and to make more effective use of the Executive Committee. The following changes and clarifications are recommended:

1. <u>Optimizing use of the Executive Committee</u>

The Executive Committee was struck due to the pandemic and the Administrative by-law allows the Committee to "carryout items ii, iv, vi, and xv above on behalf of the Board until such time as MVCA moves out of Emergency Operations."

ii. Appointing a Chief Administrative Officer and/or Secretary-Treasurer;

iv. Approving, establishing and implementing regulations, policies and programs;

vi. Awarding contracts or agreements where the approval of the Authority is required under the Authority's purchasing policy.

xv. Appointing a Regulations Committee (see Terms of Reference in Appendix 4) to conduct hearings for the purpose of reviewing permit applications pursuant to any regulations made under Section 28 of the Act, to deliberate on the evidence presented at the hearing, grant or deny such permission on behalf of the Authority and provide the applicant with reasons in writing thereof.

The following roles are recommended for the Executive Committee outside of emergency operations:

- review and provide guidance regarding the legislative agenda. Specifically, a quarterly meeting would allow the Executive to understand items on the horizon and to support the GM in managing upcoming Committee and Board workloads.
- annual work planning and performance review of the General Manager. This would codify current practice.
- approve the tender and award of WECI-funded contracts falling within budgets approved by the Board. This is particularly desirable as timelines to tender, award, and carry-out WECI projects are short, and delays in approvals impede timely completion and could compromise receipt of provincial funding.

Given the role that Executive members play on the Board and Committees, no further expansion of their responsibilities is recommended. Specifically, it is *not* recommended that the Executive take on the role of the Regulations Committee. While the Board Chair and Vice Chair must sit on the Regulations Committee, all other positions are open to the General Membership, which is viewed as good for the distribution of power, transparency of the Board, and succession planning.

2. Clarifying Roles amongst the F&A and P&P Committees

The most significant recommendation is to change the name of the Policy & Priority committee to the Policy & Planning committee, with elevation of all priority-setting discussions to the full Board.

Priority setting at the Authority is very much risk-based and financially driven, with future Category 3 programs and services to be subject to MOUs and Cost Apportionment Agreements (CAAs), and more complex approval processes under *O.Reg. 687/22* and cost recovery regulations (expected later this year.) With corporate planning documents now in place, it is recommended that update to priority-setting documents be tabled directly to the full board, or if appropriate before both committees.

Table 2 identifies proposed changes and clarifications in responsibilities in *italics* and strike-out. The third column is provided simply to show the removal of priority setting from the P&P committee.

Nothing in Table 2 prescribes that an item must go before a committee before it goes to the Board. It is intended to show where an item *may* be directed when desirable due to complexity, scope, or potential controversy. As well, the bulleted lists are not intended to be exhaustive but are provided to support legislative agenda decision-making.

Table 2: Recommended Clarifications in Committee Mandates

Finance & Administration	Policy & *Planning* ~~Priorities~~	Full Board
• consider short and long range financial requirements to implement Mississippi Valley Conservation Authority programs *and services, borrowing, and reserve fund management* • consider and provide recommendations with respect to annual budgets, *audits and financial statements* • provide guidance with respect to wages, benefits and personnel administration • organizational structure and operation • *Employee Manual and H&S Manual policies* • *Purchasing/Procurement by-law policies* • *Per diems, honorariums, mileage, fee setting and other cost recovery*	• Policies *and plans* to guide ~~administration of the Section 28 (Flood plain) Regulations Program~~ *implementation and application of the Conservation Authorities Act and regulations thereunder that are not finance-based.* • ~~current and future program priorities~~ • emerging resource management/conservation related issues • ~~maintenance/rehabilitation of Mississippi Valley Conservation Authority structures and facilities~~ (The above is too limiting and is made redundant by revising the first bullet.) • *Administrative by-law policies that do not relate to compensation and benefits.*	• *All reports/plans having to do with priority setting, e.g.:* o *Corporate Strategic Plan* o *Interim Financial Plan* o *10-year Capital Plan* o *Workforce Plan* (These matters have both policy and financial implications and will be subject to MOUs and CAAs in future. It is recommended that they go to both committees in future **or** directly to the full Board.)

4.2 *Ad hoc* Committees

There are no *ad hoc* committees currently in place at MVCA, and none are proposed at this time. Section 12 of MVCA's Administrative By-laws provide for striking of other committees, including ad hoc committees, if needed.

4.3 Public Advisory Committee

In Fall 2019, a Public Advisory Committee was established to work with MVCA on development of the *Mississippi River Watershed Plan*. The committee worked well as a group and was of

significant help during the project. The committee has since disbanded, however, there was strong interest amongst several members to continue to engage with the Authority on watershed planning and implementation matters.

Staff have reviewed the matter and recommend that MVCA establish a PAC with a focus on watershed planning and implementation for the following reasons:

- Watershed planning has the potential to impact all residents, businesses and landowners within a watershed;
- Many of the actions identified in watershed plans are community-based, require the support of the local municipality, and will require the negotiation of Category 3 agreements and other partnership agreements to execute;
- PAC members could help gauge public interest in specific actions, to disseminate and collect information, and provide critical feedback on the design and implementation of specific programs and services;
- Membership could be designed to obtain a cross-section of interests, expertise, and experience not available amongst staff;
- As such, members could support prioritization of actions and liaise with member municipalities on implementation in their communities; and
- Lastly, a PAC would help maintain and improve relationships with the community as identified per Goal 2 of the *Corporate Strategic Plan*.

Regarding governance, it is recommended that:

- The PAC meet a least twice annually: in the summer to support priority setting and fall budgeting; and following budget approval to support annual design and delivery of approved programs of services, where appropriate.
- The PAC have the power to create subcommittees to work with staff on specific initiatives where appropriate.
- Two Board members representing the Mississippi and Carp watersheds respectively, co-chair the PAC.
- Recruitment be through a public recruitment/selection process.
- Members are paid for out-of-pocket expenses.

ATTACHMENT 1: Committee Terms of Reference

(excerpts from the 2018 Administration By-law, as amended)

FINANCE AND ADMINISTRATION ADVISORY COMMITTEE

1. General Terms

The Finance and Administration Advisory Committee will concern itself with matters of internal administration of MVC, financial planning and budgeting. At the first meeting of the Committee, a Committee Chair and Committee Vice-Chair will be elected from among the members of the Committee.

The Committee will meet at the call of the Committee Chair and will likely be limited to 2 – 3 meetings per year.

The Committee will consider a variety of issues and provide recommendations for consideration by the Board of Directors.

2. Duties of the Committee Chair and Committee Vice-Chair

The Committee Chair, or in his/her absence the Committee Vice-Chair will:

- preside over the meetings of the committee
- in conjunction with the General Manager, prepare and distribute agendas and other items of business
- report to the Board of Directors as appropriate.

3. Specific Terms

The following items of business are provided for consideration by the Committee:

- consider short and long range financial requirements to implement Mississippi Valley Conservation Authority programs
- consider and provide recommendations with respect to annual budgets
- provide guidance with respect to wages, benefits and personnel administration
- organizational structure and operation

POLICY AND PRIORITIES ADVISORY COMMITTEE

1. General Terms (Amended by Resolution B06/16/21-9)

The Policy and Priorities Advisory Committee will concern itself with matters of internal policy development and ~~establishing~~ priority setting related to the committees, programs, and, ~~activities~~ services of Mississippi Valley Conservation Authority. At the first meeting of the Committee, a Committee Chair and Committee Vice-Chair will be elected from among the members of the Committee.

The Committee will meet at the call of the Committee Chair and will likely be limited to 2 – 3 times per year.

The Committee will consider a variety of issues and provide recommendations for consideration by the Board of Directors.

2. Duties of the Committee Chair and Committee Vice-Chair

The Committee Chair, or in his/her absence the Committee Vice-Chair will:

- preside over meetings of the Committee
- in conjunction with the General Manager, prepare and distribute agendas and other items of business
- report to the Board of Directors as appropriate

3. Specific Terms

The following items of business are provided for consideration by the Committee:

- policies to guide administration of the Section 28 (Flood plain) Regulations Program
- current and future program priorities
- emerging resource management/conservation related issues
- maintenance/rehabilitation of Mississippi Valley Conservation Authority structures and facilities

MILL OF KINTAIL MUSEUM ADVISORY COMMITTEE

1. General Terms

The Mill of Kintail Museum Committee will advise Mississippi Valley Conservation Authority on the protection, promotion and presentation of the Dr. R. Tait McKenzie Collection and Museum, and help to facilitate the development of the Mill of Kintail site and programming. At the first meeting of the Committee, a Committee Chair and Committee Vice-Chair will be elected from among the members of the Committee.

2. Duties of the Committee Chair and Committee Vice-Chair

The Committee Chair, or in his/her absence the Committee Vice-Chair will:

- preside over meetings of the Committee
- in conjunction with the General Manager, prepare and distribute agendas and other items of business
- report to the Board of Directors as appropriate

3. Specific Terms

The Committee will work specifically on:

- assisting in developing recommendations and strategies to improve Museum operating standards
- initiate projects and activities that will help to implement the development plans
- assist staff with special and regular programming
- consult with outside agencies, groups and individuals as appropriate

- review annual budget requirements and provide recommendations to the Board of Directors
- investigate additional funding sources

4. Committee Membership

Membership on the Committee will be appointed annually by the Mississippi Valley Conservation Authority Board of Directors and consist of:

- one Mississippi Valley Conservation Authority member from the Board of Directors
- one representative of the Mississippi Valley Conservation Foundation
- public representatives, six of whom are voting members

REGULATIONS COMMITTEE

1. General Terms

The Mississippi Valley Conservation Authority has enacted regulations pursuant to Section 28 of the *Conservation Authorities Act.* Section 28(3) of the Act requires that the applicant be party to a hearing by the local Conservation Authority before an application made under the regulation is refused. The Mississippi Valley Conservation Authority has delegated this responsibility to a Hearing Board and more specifically referred to as a Regulations Committee. The Regulations Committee is an Administrative Tribunal within the definitions of the *Statutory Powers Procedure Act.* It is the purpose of the Regulations Committee to evaluate the information presented at the hearing by both Conservation Authority staff and the applicant and to decide whether the application will be approved or refused.

The Regulations Committee membership will consist of the Chair and Vice-Chair of the Board of Directors of the Mississippi Valley Conservation Authority and three additional members from the Board of Directors. The Chair and Vice-Chair of the Board of Directors shall be the Chair and Vice-Chair of the Regulations Committee.

2. Specific Terms

The role of the Regulations Committee will be to:

- hear applications pursuant to Ontario Regulation 153/06
- deliberate on the evidence presented at the hearing
- grant or deny such permission on behalf of the Mississippi Valley Conservation Authority and provide the applicant with reasons, in writing, thereof.

3. Prehearing Procedures

In considering the application, the Regulations Committee is acting as a decision making tribunal. The tribunal is to act fairly. Under general principles of administrative law relating to the duty of fairness, the tribunal is obliged not only to avoid any bias but to avoid the appearance or apprehension of bias. The following steps will be taken by the members of the Regulations Committee to avoid apprehension of bias where it is likely to arise:

- no member of the Regulations Committee who will take part in the decision regarding the permit should be involved, either through participation in committee or intervention on behalf of the applicant or other interested parties with the matter, prior to the hearing
- if material relating to the merits of an application that is the subject of a hearing is distributed to Regulations Committee members before the hearing, the material should be distributed to the applicant. The applicant may be afforded an opportunity to distribute similar pre-hearing material.
- In instances where the Regulations Committee has doubts as to whether it can accept a staff recommendation to grant a permit, care must be taken to avoid making a final decision until such time as a hearing is held.

4. Hearing Procedures

The following is the set-up for a Regulations Committee hearing pursuant to the *Statutory Powers Procedure Act:*

- Chair of the Regulations Committee opens the hearing
- Secretary-Treasurer (recording secretary) takes the roll call
- Chair of the Regulations Committee introduces the hearing format
- Staff presents evidence
- Applicant presents evidence
- After each witness has given evidence the members of the Regulations Committee or the applicant/staff may question the presenter. The questions must be relevant to the application
- Once all evidence is given, the Regulations Committee adjourns. All but the members of the Regulations Committee and the recording secretary must leave the room to allow for deliberation on the application. Discussion of the application privately between individual Committee members must not occur until a decision has been finalized. All discussion must be in an open forum.
- Once the decision is made the motion is tabled

The Regulations Committee votes on the motion and the resolution is recorded.

REPORT	3217/22
TO:	The Chair and Members of the Mississippi Valley Conservation Authority Board of Directors
FROM:	Juraj Cunderlik, Director, Water Resources Engineering
RE:	**Review and Update of the Lower Mississippi River Flood Plain Mapping Study**
DATE:	April 11, 2022

Recommendation:

That the Board of Directors:

a) adopt this report and the associated GIS-based flood hazard limits and flood plain maps as the delineation of areas along the Lower Mississippi River that are susceptible to flooding during the Regional flood standard as defined in Schedule 1 of Ontario Regulation 153/06, and
b) direct that the report, maps and Regulation Limit be used in the implementation of Ontario Regulation 153/06.

1.0 BACKGROUND AND PURPOSE

The MVCA updated flood plain mapping for the Lower Mississippi River in 2019. The Board adopted new regulatory limits in April 2020. In 2021, a landowner contacted MVCA to advise that an area showing as outside the flood plain is subject to flooding.

Per direction received at the May 2021 meeting of the Board, the MVCA developed a workplan, schedule, and budget to review and update the Lower Mississippi River Flood Plain Mapping Study. The workplan was presented to the Board and approved in June 2021.

The purpose of this report is to summarize the analysis and findings of the Lower Mississippi River Flood Plain Mapping Update.

2.0 STUDY AREA

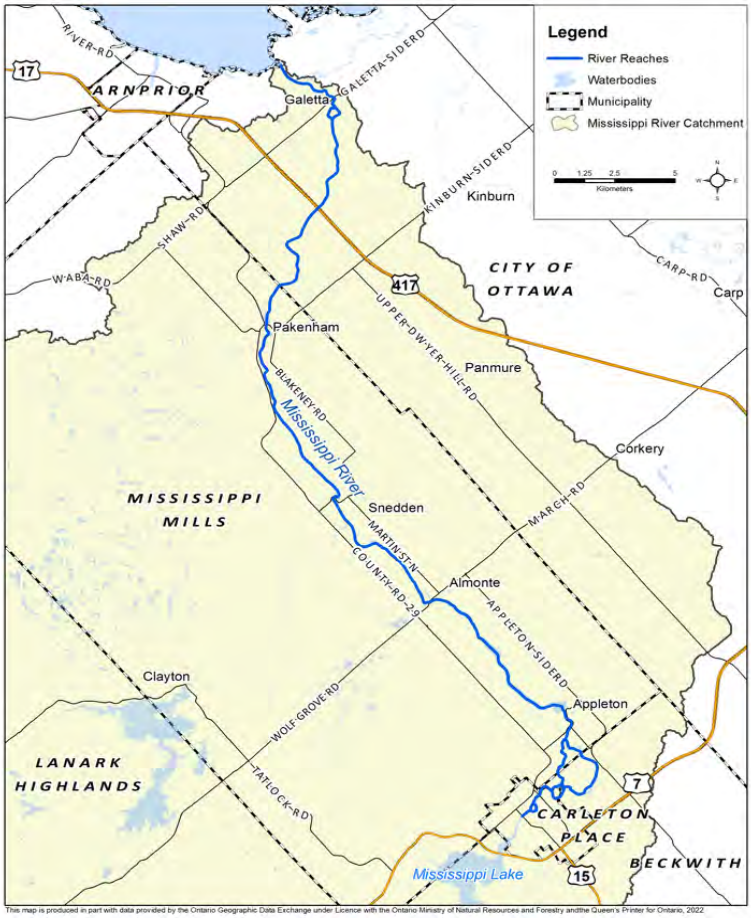
This study reviewed and updated flood plain maps for the main branch of the Lower Mississippi River from Bridge Street in Carleton Place downstream to the confluence with the Ottawa River (Figure 1).

The Lower Mississippi River watershed is predominately agricultural. There are two Provincially Significant Wetlands (PSW): Morris Island Wetland Complex at the confluence of the Mississippi River with the Ottawa River and Appleton Wetland directly north of the village of Appleton.

Towns and villages along the river include Carleton Place, Appleton, Almonte, Pakenham, and Galetta. There are hydro power generating stations at Appleton, Almonte (Enerdu and Mississippi River Power Generating Stations) and Galetta.

The major tributaries of the lower Mississippi River are the Indian River, Indian Creek, Cody Creek and Cartwrights Creek. Through the entire length of the study reach the channel is well defined and widespread flooding is generally limited to isolated areas.

Figure 1: Lower Mississippi River



3.0 METHODOLOGY

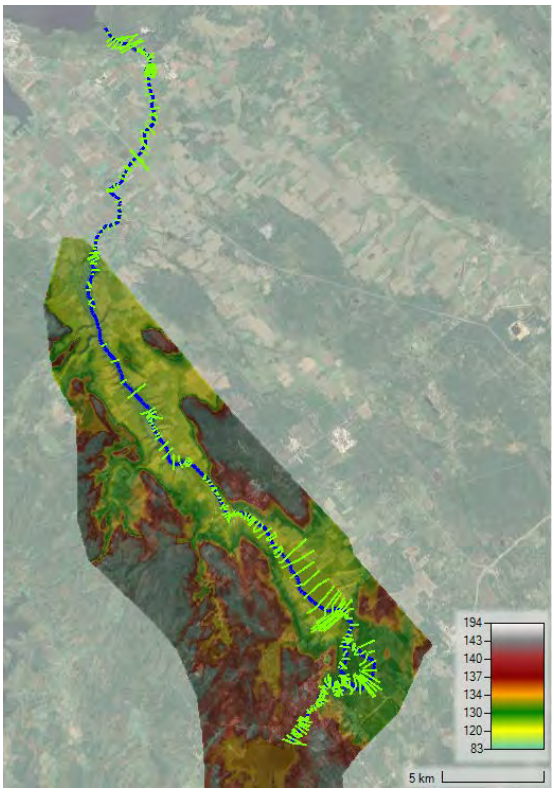
3.1 *Technical Review*

A comprehensive technical review of the 2019 study was completed by MVCA engineering staff in accordance with the standards of the Technical Guide River & Stream Systems: Flooding Hazard Limit (MNRF, 2002). An independent third-party review of the 2019 study was completed by J. F. Sabourin and Associates Inc. (JFSA) and their comments addressed and incorporated in the final Flood Plain Mapping Update. The JFSA report is provided in Appendix A. Detailed MVCA responses to JFSA comments are provided in Appendix B.

3.2 *LiDAR Update*

The 2019 study used City of Ottawa's LiDAR data collected in 2014 and 2015 by Airborne Imaging. New LiDAR data collected in 2019 was obtained from Natural Resources Canada (NRC) to update the existing terrain model. The new LiDAR data extends from the upstream study limit to Pakenham. The existing digital terrain model (DTM) was used downstream of Pakenham. The new LiDAR data was converted to create a DTM compatible with the existing DTM. The new DTM has vertical and horizontal accuracy of 10 cm and 15 cm, respectively (95% confidence interval), is hydro-flattened and has buildings/vegetation removed such that it represents the bare earth. The updated DTM is depicted on Figure 2.

Figure 2: Updated Digital Terrain Model



3.3 *Field Surveys*

A topo-bathymetric data gap analysis was completed to determine areas where additional data is required to improve model accuracy. Land surveys were conducted by MVCA staff at historic flood prone locations in Carleton Place and Almonte (Figure 3) to acquire more accurate topographic data using real-time kinematic positioning (RTK) with a vertical accuracy of 1-2 cm.

Bathymetric surveys were conducted using an acoustic Doppler Current Profiler (ADCP) attached to a buoyant rover to collect updated, accurate bathymetry of Mississippi River around Carleton Place, Glen Isle, and Arklan Island (Figure 3). Using benchmarks created by the RTK, the ADCP had a vertical accuracy of 1-2 cm.

Field reconnaissance was also completed in areas of concern where current model is reportedly not representative of flooding. Meetings were held with dam operators and engineers (TransAlta, Enerdu, and MRPC) to confirm structure dimensions and water surface elevations during the 100-year event. These meetings were supplemented with site visits to two of the dams (Appleton and Galetta) to further confirm structure dimensions and get a first-hand understanding of the flow and structure at these locations. Information from these meetings, reconnaissance activities, and research was used to verify and update the model.

3.4 *Hydrological Analysis*

The 2019 study used a single station flood frequency analysis (FFA) to determine Mississippi River flows at the Water Survey Canada (WSC) stream gauge (02KF006) located in Appleton. The annual maximum instantaneous peak flows were analyzed using several distributions. The 3-parameter Lognormal distribution (LN3) was used for the flood plain mapping purposes.

In this study the streamflow record at Appleton was extended with the recent data (up to and including 2021) and the analysis repeated utilizing additional distributions and distribution fitting techniques (such as the method of L-moments). The analysis confirmed the validity of the previous results and their suitability for the flood plain mapping update (see Figure 4).

Figure 3: Topo-bathymetric Survey Areas

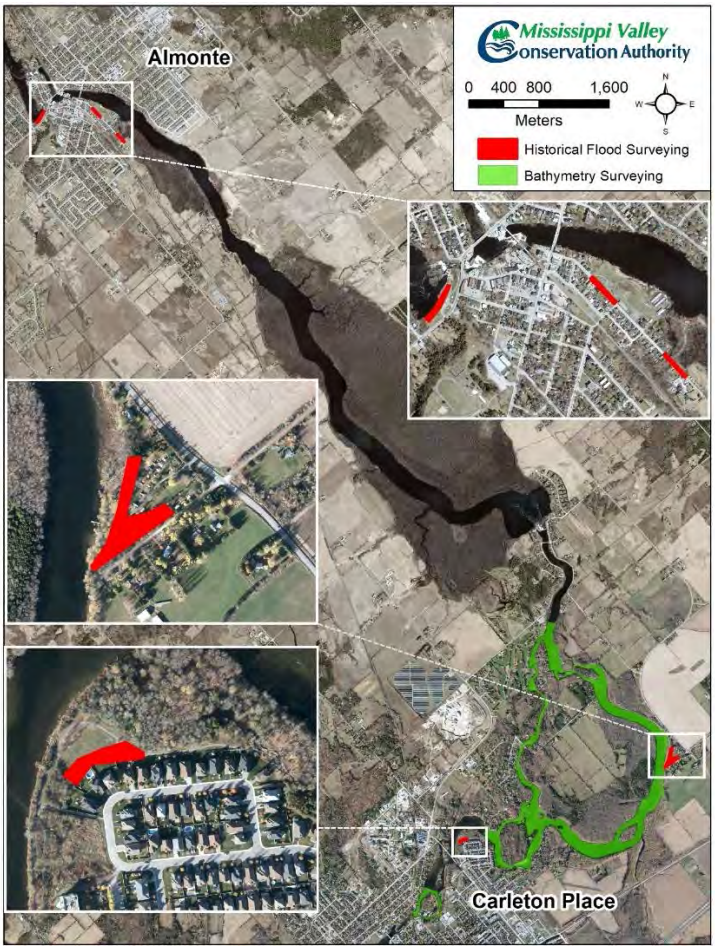
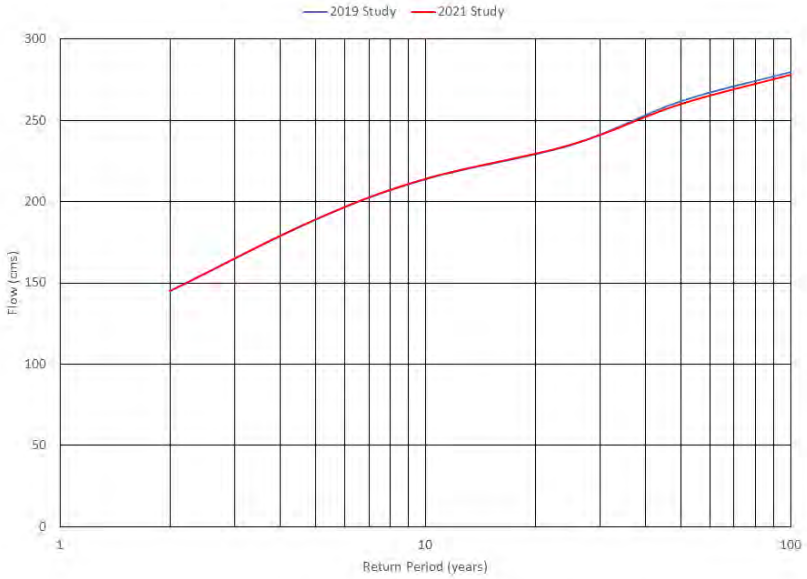


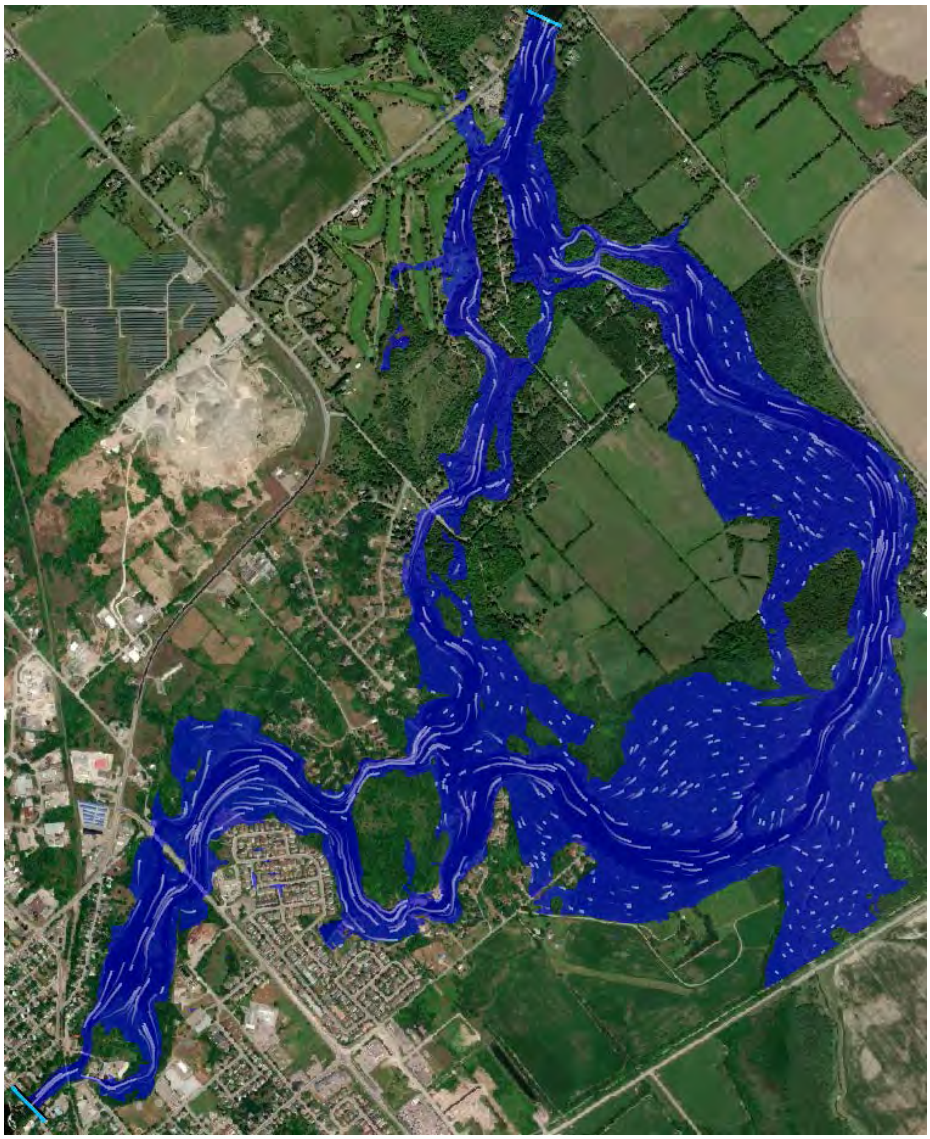
Figure 4: Flood Frequency Analysis – Mississippi River at Appleton



3.5 *Two-Dimensional Modeling*

A two-dimensional (2D) hydrodynamic model was developed for the area around MacArthur Island, Arklan Island, and Glen Isle to better model the complex river hydraulics associated with river channels and islands in this area. The 2D model was nested into the existing one-dimensional (1D) hydraulic model and its boundary conditions forced with outputs from the 1D model. The 2D model consists of over 20,000 computational cells with 10x10 m resolution in the river channel and 25x25 m resolution in the flood plain areas. Figure 5 outlines the 2D model domain with the flooding extent corresponding to the 100-year regulatory flood event.

Figure 5: Two-dimensional Hydrodynamic Model



3.6 *Hydraulic Model Update*

The existing hydraulic model was reviewed in-house and by an independent reviewer (JFSA) to identify issues and opportunities for improvement. All comments and suggestions outlined in the technical review were addressed and implemented where appropriate (see Appendix B). The model update included the following:

- Reviewing and correcting cross-section geometry
- Updating geometry to reflect new DTM data (LiDAR and topo-bathymetric surveys)
- Reviewing and correcting all bank station locations
- Updating channel and overbank reach lengths
- Reviewing Manning's roughness coefficients
- Reviewing, updating, and adjusting ineffective flow areas
- Reviewing and adjusting levees
- Reviewing and revising contraction and expansion coefficients
- Reviewing and updating flow split areas
- Reviewing and revising model boundary conditions
- Reviewing and updating water crossing structures and their modelling assumptions
- Updating weirs and dams to inline structures

A model sensitivity analysis was completed to address variations and uncertainty in peak flows. The revised model was run in both subcritical and mixed flow regimes and the results compared.

3.7 *Model Validation*

The updated model was validated by comparing water surface elevations and flood extents with historic flood marks at several locations along the Lower Mississippi River. The model shows good performance at predicting the 100-year flood extent at all historical flood mark locations. Rating curves from an engineering report for the Enerdu and Middlefalls weir in Almonte were compared with model results to assess model performance at different flow rates. A good agreement was found between the two, with model typically predicting slightly higher water surface elevations. Detailed validation results can be found in Appendix C.

3.8 *Regulatory Mapping*

The Regulatory (1:100 year) flood plain elevations were used to plot the Regulatory flood lines using ArcGIS. The Regulatory flood levels at each cross section were used to produce a Triangulated Irregular Network (TIN) surface in ArcGIS. The TIN surface is a plane between each cross section based on the Regulatory flood plain elevations. The intersection of the TIN and the LiDAR derived terrain determines the location of the Regulatory flood line.

Potential hazards associated with rivers, stream and their valley lands include flooding, slope instability, stream bank and valley erosion and the erosion associated with meandering rivers or streams. In determining the extent of the Regulation Limit for Ontario Regulation 153/06 (MVCA's regulation under Section 28 of the Conservation Authorities Act) the presence of all these potential hazards must be considered to determine the requisite (most extensive) hazard. The Regulation Limit is defined by a 15 m buffer beyond the requisite hazard. The Regulation Limit along sections of the Mississippi River includes the limit around the wetlands which are beyond the watercourse (e.g. Appleton Wetland).

The draft flood lines and Regulation Limits were reviewed by MVCA engineering staff and any revisions to define spill areas etc. were made. The flood plain maps were produced, on a total of 15 map sheets at a scale of 1:5,000. The map sheets used a bases of 2019 aerial photography.

4.0 RESULTS AND FINDINGS

4.1 *Comparison to Existing Model*

A comparison between the existing and updated flood plain mapping results was performed to determine where and to what degree water surface elevations and flood extents differ as a result of the model update. The updated flood plain closely follows the existing flood plain along the Lower Mississippi River, with changes mostly occurring in rural areas resulting in minimal impacts on buildings and infrastructure. The most significant changes include (see Appendix D for details):

- Increased flood plain in Carleton Place on Arklan Island
- Increased flood plain on Glen Isle forming island during the 100-year event
- Increased flood plain in Carleton Place along Waterside Dr.
- Increased flood plain near Carleton Place at Tranquil Acres trailer park
- Increased potential spill area in Almonte along Mill St (Kirkland Park)
- Increased flood plain in Blakeney forming diversion channel to NW of rapids
- Increased flood plain in Pakenham behind Margaret St

4.2 *New Flood Prone Areas*

The revised flood plain mapping results were reviewed to provide an updated assessment of flooding potential in the flood prone areas identified in the Lower Mississippi River Flood Plain Mapping Study (2019) and to identify new potential flood prone areas. Of the three flood prone areas identified in the 2019 study (Ramsay Concession 7B crossing the Indian River, Peter Robinson Road crossing Cody Creek, and downtown Almonte), the only one within the scope of the project update is in Almonte along Mill St., between the Enerdu and Middlefalls dams along the south side of the Lower Mississippi River. The flood plain in this area increased slightly under the updated model, impacting Kirkland Park and the Riverwalk. This area is remains designated

as a potential spill area, due to the use of sandbags along this section during the April 2019 flood (approximately equal to the 100-year flood) and the slight increase in flood plain extent in the updated model.

Several new flood prone areas were identified where houses, infrastructure, roads and public places are located within the flood plain. While some of these areas are the same as the previous model, they were not identified as flood prone areas in the 2019 report.

Buildings/structures affected:

- 1 house in Carleton Place: 107 Patty Lane
- 8 buildings in Almonte along Water Street (already in or partially in flood plain): 11 Bridge Street (mixed use commercial/residential), 166 Water Street (house), 137 Water Street (house), 143 Water Street (house), 149 Water Street (house), 159 Water Street (house), 163 Water Street (house), and 165 Water Street (house).
- 2 buildings along the north side of Water Street within the Almonte Fairgrounds (already partially in flood plain): 195 Water Street, housing the North Lanark Highland Games, and a large barn without an address just to the north of the north entrance to the fairgrounds and Almonte beach
- 2 buildings in Almonte at the southeast end of Water Street (already partially in flood plain): 340 Water Street (house) and 350 Water Street (Commercial: Water Street Autoworks Inc.)
- Approximately 45-50 structures (trailers) near Pakenham in Riverbend Park (already in flood plain, plus an additional trailer not previously within flood plain).

Infrastructure, roads, and public places affected:

- Water Street in Almonte
- Tooley Street in Almonte
- Two driveways in Carleton Place: 100 and 101 Patty Lane (does not impact safe access)
- Anthony Curro Park in Carleton Place
- Appleton Bay Park in Appleton
- Kirkland Park in Almonte

A detailed assessment of flood prone areas can be found in Appendix E.

5.0 CONCLUSION

The final products of this project include the following:

1. This report
2. Flood hazard limit lines in GIS format (shape files)
3. The HEC-RAS model files
4. The mapping schedules (15 flood plain maps) prepared at a scale of 1:5,000.

The updated flood plain maps are provided in Appendix F. Upon approval, PDF copies of the maps will be made available for download from the MVCA website. The report and the model files will be available to the public upon request subject to the MVCA fee schedule and the acceptance of the standard "terms of use" that apply to the release of MVCA data and information.

The analysis documented in this report meets the standards found in the *Technical Guide River & Stream Systems: Flooding Hazard Limit* (MNDMNR, 2002) and therefore, the resulting Regulatory (1:100 year) flood plain and Regulation Limit delineation is suitable for use in MVCA's Regulation mapping as well as for municipal land use planning purposes.

After the adoption by the MVCA Board of Directors the report, maps and Regulation Limit will be used in the implementation of Ontario Regulation 153/06 and forwarded to the local municipalities for inclusion in their Zoning By-law document.

LIST OF APPENDICES

Appendix A: JFSA Report

Appendix B: Responses to JFSA Comments

Appendix C: Model Validation

Appendix D: Significant Flood Plan Changes

Appendix E: New Flood Prone Areas

Appendix F: Updated Flood Maps

APPENDIX A

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September 30, 2021 Project Number: P2149-21

Mississippi Valley Conservation Authority
10970 Highway 7
Carleton Place, Ontario
K7C 3P1

Attention: **Juraj M. Cunderlik, Ph.D., P.Eng., Director, Water Resources Engineering**

Subject: **Technical Review of Lower Mississippi River Flood Plain Mapping Study (Hydraulics Only)**

---

1. INTRODUCTION

J.F. Sabourin and Associates Inc. (JFSA) were retained by Mississippi Valley Conservation Authority (MVCA) to complete a technical review of the Lower Mississippi River flood plain mapping study completed by MVCA in 2019. It is JFSAs understanding that MVCA has requested this review to assess the methodologies and model details of the study as it was not previously subject to a third party technical review.

As stated in the September 2019 report, the Mississippi River has a total drainage area of approximately 3,700 km^2 from its headwaters in Kilpecker Creek, north of Mazinaw Lake, to its outlet at the Ottawa River. The river is 212 km long, consists of a complex system of lakes, rivers and numerous dams. The watershed is predominantly forest and lakefront development in the headwaters and primarily agricultural lands in the tailwaters. Four hydropower generating stations are also located on the Mississippi River. MVCA has prepared a report as well as flood hazard lines for this study. According to the MVCAs report, flood plain mapping for the Lower Mississippi River was previously produced in 1983.

2. SCOPE OF TECHNICAL REVIEW

The scope of this technical review is isolated to the hydraulic modelling and analysis completed for this study. The hydrologic modelling and analysis as well as the flood plain maps are excluded from the scope of this review. Furthermore, this review is focused on the main channel of the Lower Mississippi River between Mississippi Lake and the Ottawa River.

The scope of this technical review includes the following:

1. General review and screening of the background reports including the flood plain mapping report to confirm an appropriate breadth of information is available to proceed with the review.

2. Assess the descriptions and details in the report related to the hydraulic modelling. Confirm the report appropriately documents:
   a) The sources of information used to complete these analyses;
   b) Methodologies, parameters, and assumptions; and
   c) The information used is adequate in terms of accuracy, level of detail and representative of existing conditions for the purposes of flood risk mapping.

3. Confirm the report appropriately documents key information, both discussed and presented in summary tables and figures including:
   a) Selection of methodology and model(s) including commands/subroutines, used;
   b) Hydraulic model parameters (cross-sections, bridges, culverts, boundary conditions, Manning's 'n', etc.);
   c) Methods of calibration/verification;
   d) Dam information; and
   e) Wind, wave, ice analyses, if applicable

3. FRAMEWORK FOR TECHNICAL REVIEW

The Ontario Ministry of Natural Resources and Forestry (MNRF), formerly known as the Ontario Ministry of Natural Resources (MNR), produced a technical guide in 2002 titled "River & Stream Systems: Flooding Hazard Limit" (referred to as "the MNRF guide" in this letter report). This MNRF guide was prepared to assist in the understanding of the 1996 Provincial Policy Statement and updates to the original 1986 Flood Plain Management in Ontario, Technical Guideline Publications. This document provides a substantial level of technical guidance for flood plain mapping studies in Ontario and is currently being used as a guideline reference for other flood plain mapping projects in the Ottawa area.

Reference to the MNRF guide is provided periodically throughout the report. In the absence of an updated publication, the MNRF guide is considered a suitable reference document for the current MVCA flood plain mapping study.

As indicated in the MNRF guide “It [the technical guide] is not intended to be a list of mandatory instructions or technical methodologies to be rigidly applied in all circumstances, rather, it serves to assist technical staff experienced in water resources in the selection of the most appropriate computational method and flexible implementation measures, provided the decisions made are consistent with the latest Provincial Policy Statement”. Although the technical guide is not a list of mandatory instructions, it does provide a means by which we can assess the MVCA report in terms of conformance to standard methodology in flood plain mapping studies in Ontario.

This technical review focuses specifically on the flood plain reporting and hydraulic modelling prepared by MVCA. The following sections will use the MNRF guide as a framework to address all items detailed in Section 2.0 of this letter report.

4. SELECTING FLOOD PLAIN STANDARD

According to Figure B-1 of the MNRF guide, the Mississippi Valley jurisdictional area (which includes the Lower Mississippi River watershed) falls within Zone 2. In general, the 100-year flood is the governing flood plain standard for this zone. The exception to using the 1:100-year flood for Zone 2 is if there are recorded or documented flood levels found in the same watershed which exceeded the computed 1:100-year flood levels. The MNRF guide suggests that if the observed event is at least 0.1 m higher than the computed 100-year water level and the watershed characteristics have not changed since the historical observation, then the historical event should be considered for flood plain standard.

The 2020 Provincial Policy Statement identifies the flooding hazard limit as “the greater of:

1. the flood resulting from the rainfall actually experienced during a major storm such as the Hurricane Hazel storm (1954) or the Timmins storm (1961), [these specific storms are not applicable to MNRF Zone 2, where Lower Mississippi River is located], transposed over a specific watershed and combined with local conditions, which evidence suggests that the storm event could have potentially occurred over watersheds in the general area;
2. the one hundred year flood; and
3. a flood which is greater than 1. or 2. which was actually experienced in a particular watershed or portion thereof as a result of ice jams and which has been approved as the standard for that specific area by the Minister of Natural Resources and Forestry”

It is noted MVCA has acknowledged that the 1:100-year flood is the flood plain standard to be used in preparing their flood risk maps for Lower Mississippi River. This is referenced on page 40 of the report.

In the absence of an observed water surface elevation in excess of 0.1 m above the 1:100-year and without knowledge of any regulation that would supersede the Provincial Policy Statement referenced above with respect to the flood plain standard, JFSA would agree MVCA has followed the applicable guidelines appropriately.

5. HYDRAULIC ANALYSIS

Page 45 of the report indicates that HEC-RAS software (v5.0.7) was used to study the Lower Mississippi River. This modeling software is widely used in Ontario, used for other flood plain mapping projects in the Ottawa area and considered sufficient for this flood risk mapping study.

- At the time this technical review was completed, the most recent version of HEC-RAS available was v6.0. It is worthwhile for MVCA to check the release notes for versions newer than v5.0.7 to ensure the most reliable version of the software is being used.

The HEC-RAS modelling files used for this technical review include:

- **Project:** Mississippi River (*Lower Mississippi Model-MISSISSIPPI-Final.prj*)
- **Plan:** Default Scenario (*Lower Mississippi Model-MISSISSIPPI-Final.p01*)
- **Geometry:** Default Geometry (*Lower Mississippi Model-MISSISSIPPI-Final.g01*)
- **Steady Flow**: Default Steady Flow (*Lower Mississippi Model-MISSISSIPPI-Final.f01*)

5.1 Review of Cross Section Data

5.1.1 Cross Section Geometry

A cursory review of the cross sectional geometry and descriptions provided in the report has been completed. JFSA offers the following comments:

- As noted on page 45 and in Appendix G of MVCAs report, the above water cross sectional geometry was derived from LiDAR flown in 2012. It is JFSAs understanding the City of Ottawa has a LiDAR data set that is more recent than the 2012 LiDAR used by MVCA to complete this study. Considering the cross sectional geometry in the hydraulic model is derived from the 2012 data, it is recommended LiDAR data sets be compared as it relates to the cross sectional geometry and update the hydraulic model, as required, to reflect the best available data.
- A visual comparison of the geometry in plan view vs. cross section view indicates there may be topographic data missing from some cross sections. This includes cross sections at stations 47600, 47520 and 47419 (River: Mississippi, Reach: 3) in which aerial photos show raised islands in the river which are not represented in the hydraulic model.
- It is noted that there appears to be some overlapping cross sections included in the HEC-RAS model which may result in double counting of the available cross sectional area for flow conveyance. This includes cross sections 45480 (River: Mississippi, Reach: 4-2) and 45243 (River: Mississippi, Reach: 5) near junctions Junc-DS03 and Junc-DS04.
- It is noted there are a number of cross sections that do not contain the 100-year flow. It is recommended MVCA make all reasonable efforts to contain peak flows where feasible. Please refer to Table 1 in Attachment 1 for a summary of the recommended cross sections to be reviewed.
- It is noted there are a number of cross sections in which the Froude number is calculated to be above 1.0 (approximately eight cross sections with the highest simulated value being 1.12). Where slopes are steep and flow depths are shallow, running the HEC-RAS model to check for supercritical flow may be warranted.
- A potential spill is noted at cross section 17449 (River: Mississippi, Reach: Reach 7), however, the report does not appear to document it. It is recommended MVCA review this location and consider adding text to the report to suit.

5.1.2 Reach Lengths

As per the HEC-RAS Hydraulic Reference Manual, channel reach lengths should be measured along the thalweg. Overbank reach lengths should be measured along the anticipated path of the center of mass of the overbank flow. Although these lengths are of generally similar value, there are conditions where they differ significantly such as at river bends or where the channel meanders and overbanks are straight.

- There appears to be a number of errors in the calculation of reach lengths throughout the HEC-RAS model. For example, left overbank values for twelve individual cross sections along Reach 6 are each more than one kilometre long which is well in excess of the representative value at each of those respective cross sections. A summary of cross sections with reach lengths in excess of 1000 m are summarized on Table 2 in Attachment 1. It is recommended MVCA complete a thorough check of all cross section reach lengths and update the HEC-RAS model accordingly.
- Checks of the left overbank, right overbank and channel reach lengths of each cross section show that at some locations, all three lengths have been set to the same value. An example of this is seen at cross section 17449 (River: Mississippi, Reach: Reach 7). It is recommended MVCA review all cross-sections to ensure reach lengths follow the typical convention described above.
- It is noted there are a few areas in which the left and right overbank markers appear to cross the centerline of the Mississippi River. This is seen between cross sections 46074 and 45867 (River: Mississippi, Reach: 4-2), 41604 and 41021 (River: Mississippi, Reach: 6-2). It is recommended MVCA review these areas of the model and adjust overbank markers accordingly.
- The junction lengths included at Junc-DS04 and Junc-DS05 appear to be well in excess of the actual length across each respective junction. It is recommended MVCA review all junction lengths and update the model as required.
- The length between cross sections 27133 and 25246 (River: Mississippi, Reach: 7) is 1886.29 m. It is recommended MVCA add additional cross sections to better represent this area in the HEC-RAS model.

5.1.3 Manning's 'n' Coefficients

The source and selection of Manning's 'n' coefficients are provided on page 46 of MVCAs report. The range of values selected is between 0.020 to 0.040 for the main channel and between 0.045 and 0.08 for the overbanks.

- Based on available aerial imagery and model spot checks, the selection of Manning's 'n' values appears to be in general conformance with standard values.

5.1.4 Ineffective Flow Areas

Approximately 13% of the cross sections in the HEC-RAS model include ineffective flow areas. JFSA offers the following comments:

- It is noted ineffective flow areas applied at some of the cross sections in the model, particularly those close to structures are shown beyond the limits of the cross section. Although this may not change model results, it is recommended MVCA review and remove portions of these blocked ineffective flow areas to follow typical HEC-RAS model convention. A summary of cross sections with misplaced ineffective flow areas is provided on Table 3 in Attachment 1.
- Ineffective flow areas have not been included at cross sections adjacent to the Highway 417 crossing at stations 8508, 8465 and 8416 (River: Mississippi, Reach: 7). It is recommended this be reviewed and the model updated accordingly.

5.1.5 Levees

It is noted MVCA has included levees at four select cross sections in the HEC-RAS model. JFSA offers the following comments regarding levees:

- Judgment should be made in the placement of levees with respect to which areas of the cross section are likely to convey flow if that elevation is overtopped. This judgment will include an investigation of looking at both upstream and downstream cross sections for similar conveyance features. If a conveyance channel appears to be present in one cross section but the adjacent ones do not contain these same features, then it is not likely the middle cross section will convey flow at that location. Levee locations in this case would be set to prevent bank overflow into what may only appear to be a conveyance channel. It is recommended MVCA provide due consideration of these principles in selecting the location of levees for use in their HEC-RAS modelling.
- It is noted there may be cross sections in the HEC-RAS model where the placement of levees may be applicable. A summary of cross sections where the placement of levees should be considered is provided on Table 4 in Attachment 1.
- It is noted on page 54 of MVCAs report that there is a flood fringe area along the north shore of the Mississippi River near cross section 49021 (River: Mississippi, Reach: 1). Levees have been added in the HEC-RAS model in this area to remove flood plain storage. According to aerial photos, this area appears to remain undeveloped. As such, the flood fringe will still encroach the area during a 100-year event. It is recommended that ineffective flow areas instead be used to represent the ineffective flow through this area. Furthermore, although not specific to this project, it may be a prudent exercise for MVCA to compare the results of their final HEC-RAS model with the criteria for flood fringe designation for this area.

5.1.6 Expansion and Contraction Coefficients

JFSA completed a comparison between the contraction/expansion coefficients and the flood plain geometry prepared by MVCA and offers the following comments:

- It is noted MVCA has applied contraction and expansion coefficients of 0.1 and 0.3 at most cross sections other than those adjacent to structures. This generally conforms to the HEC-RAS modelling convention.
- It is noted the contraction and expansion coefficients of 0.3 and 0.5 have been included at the first upstream and downstream cross sections directly adjacent to each bridge structure. To adhere to general conformance with the HEC-RAS convention, it is recommended contraction and expansion coefficients also be increased at the second upstream cross section of each respective structure.
- It is noted a contraction coefficient of 0.13 has been applied at the bridge structure at station 3387 (River: Mississippi, Reach: 13). It is recommended MVCA review this and update the model accordingly.
- It is recommended MVCA review sudden flood plain transitions (rapid contraction or expansion) and consider increasing corresponding coefficients at those applicable cross sections. There are a number of flow splits located within the Lower Mississippi River in which there appear to be rapid contractions of flow at the upstream end of the split and rapid expansions at the downstream confluence/merging of the flow split. These locations may warrant higher contraction and expansion coefficients to better represent the energy losses that occur at these locations.

5.2 Flow Splits

Pages 47 to 49 of MVCAs report identifies that there are five flow split locations represented in the HEC-RAS model. JFSA offers the following comments:

- It is acknowledged the approach to assess the flow splits included the derivation of rating curves at each branch and completing HEC-RAS simulations for a range of flows independently for each branch. Energy gradeline comparisons of adjacent sections at flow locations were then completed to confirm general agreement. It is recommended MVCA complete automated calculations for flow spits using HEC-RAS and compare simulated results (flow allocation to each branch and energy gradeline) with the manual rating curve approach described in the report. Note that it is important to first address all other technical review comments of this letter report prior to completing the automated flow split simulations, especially those contained in Section 5.1 above.
- It is recommended a two-dimensional (2D) modelling approach also be followed to validate the rating curves used and further establish confidence in the allocation of peak flows at all flow split locations within the limits of this study.
- The rating curves provided in Appendix F derived for the purpose of assessing flow splits may be oversimplified. It is JFSAs understanding the basic weir equation was used $Q=CLH^{1.5}$ with a weir coefficient (C) of 1.67 applied for all dams. Given the majority of these structures appear to have sluices, that will convey some of the flow over these structures, flow contractions at each sluice should also be accounted for in the effective weir length, if not done so already. It is also recommended the weir coefficient for each structure be checked to ensure the most appropriate value is selected for each.
- A background document provided to JFSA titled Lakes and Rivers Improvement Act Application – Enerdu Generating Station Expansion Project – Engineering Report (dated June 2014) indicates rating curves of the different structures downstream of the generating station have been assessed. If not done so already, it is recommended MVCA include a comparison of the rating curves at these structures with those derived for the 2014 study.
- It is noted the peak flow applied at HEC-RAS cross section 31060, downstream of the Middle Weir, indicates a decrease in peak flow from 289.2 m^3/s to 103.2 m^3/s. Considering the 2014 Enerdu Generating Station report indicates that approximately two thirds of the flow is discharged by the Middle Falls Weir (per Section 2.3 on page 18), it is recommended MVCA review the split flow allocations and/or include justification in the final report to justify this decrease.

5.3 Boundary Conditions

The downstream boundary condition applied in the hydraulic model is explained on page 47 of the report. JFSA offers the following comments:

- It is noted the report indicates the high water level on the Ottawa River and Mississippi River are considered to be generated by independent events given the difference in watershed areas. It is recommended MVCA include a comparison of the drainage areas to provide better context in the final report.
- It is noted MVCA has applied the 2-year Ottawa River WSEL (74.67 m) at the study limit of the Lower Mississippi River near the confluence with the Ottawa River. Furthermore, it is JFSAs understanding, where the 100-year WSEL on the Ottawa River (76.10 m) is higher than the simulated WSEL generated by the 100-year flow on the Mississippi in combination with the 2-year on the Ottawa River, the Regulatory WSEL at these locations reflects the 100-year Ottawa River WSEL. The influence of the 100-year Ottawa River WSEL appears to govern up to cross section 2740 (River: Mississippi, Reach: 13). This

approach is in general conformance with Section B – 4.44 (Confluence of Rivers) on page 18a of the MNR guide.

5.4 Review of Structures

A cursory review of the 20 structures (18 bridges and 2 lateral structures) included in the HEC-RAS model was completed. JFSA offers the following comments:

- It is noted simulated results from MVCAs HEC-RAS model show there may be opportunities to improve the structure representation and/or cross section data adjacent to the Bridge Street bridge in Carleton Place (at HEC-RAS station 48390).The two cross sections immediately adjacent to this structure show the 5-year WSEL is higher than the 100-year WSEL. It is recommended MVCA review the model at this location and update the model accordingly.
- Associated to the above comment, page 46 of MVCAs report indicates the channel Manning's n value was reduced to 0.02 upstream of the Carleton Place Bridge to obtain an equivalent Regulatory flood elevation at Mississippi Lake. It is recommended this model change be re-evaluated after the above comment has been addressed.
- As described on page 51 of MVCAs report, there are five weir/dam structures along the Lower Mississippi River which are each represented in the HEC-RAS model by a single cross section. This includes cross sections 48289 (Carleton Place Weir) (River: Mississippi, Reach: 1), 39424 (Appleton Weir) (River: Mississippi, Reach: 7), 31326 (River: Mississippi, Reach: 7), 31137 (River: Mississippi, Reach: 7), and 3143 (Galetta Dam) (River: Mississippi, Reach: 13). It is recommended MVCA consider representing each of these as inline structures in the HEC-RAS model. Furthermore, due to the complexity of hydraulics over such weirs including representation of lateral flow over the weirs, one-dimensional (1D) representation of the weirs may not be the most accurate approach. As such, it is also recommended each of these weirs be evaluated using a 2D model for comparison.
- Pages 51 to 53 of MVCAs report identifies assumptions regarding whether control structures including sluices are considered to be open in the hydraulic model. It is recommended these assumptions be clearly documented in the report for each structure where engineering judgement was used. These assumptions should be justified with documentation from dam owners/operators and be commensurate with dam operating procedures.
- It is noted there is a bridge crossing the Mississippi River at the Main Street weir in Almonte which is not currently represented in the HEC-RAS model. This bridge has a number of piers (at least seven appear to be within the river extents) which have the potential to affect WSELs upstream. It is recommended this structure be accounted for in determining upstream WSELs and the associated flood plain or justification for omitting this structure otherwise be added to the report.
- It is noted there are a number of structures in which the Yarnell equation is selected as the low flow bridge modelling approach method. The Yarnell equation is applicable for bridges where the piers are the dominant contributor to energy losses but is only applicable for subcritical flow situations. This limitation should be considered by MVCA in selecting the most appropriate bridge modelling approach for each bridge in the HEC-RAS model.
- There are a number of warning messages and notes in the HEC-RAS model associated with structures. It is recommended MVCA assess the reasons behind these warning messages and update the model to eliminate these warning messages if possible or otherwise justify why they can be dismissed.

5.5 Sensitivity Analysis

A cursory review of the sensitivity analysis described on page 58 of MVCAs report was completed. JFSA offers the following comments:

- It is recommended the sensitivity analysis completed by MVCA also include variations in peak flows. Although the report indicates values for the Mississippi River were derived from a frequency analysis of recorded flows, engineering judgement has been made in the completion of the flood frequency analysis of the Appleton gauge. As such, it is recommended peak flows be included in the sensitivity analysis. It is recommended MVCA consider using the confidence interval established for the flood frequency analysis as a guide to establish the range of peak flows for this sensitivity analysis.

5.6 Additional Comments

- Although not within the scope of this review, it is noted that a very simplified approach was used, as described on pages 12 and 13 of MVCAs report, in an attempt to validate that the conversion of flows collected from the Appleton gauge from regulated flow to natural flow, was not necessary. Specifically, it is noted it was assumed 50% of the rainfall volume was converted into runoff and then compared against the total storage volume upstream of all major structures. Using a larger than expected runoff volume will minimize the percentage of controlled drainage area presented in the report. The level of regulation is minimized by using the 50% assumptions and is not recommended.

We trust the technical review comments enclosed will assist MVCA toward the successful completion of this flood plain mapping project.

6. STATEMENT OF LIMITATIONS

Our technical review of MVCAs Lower Mississippi River Flood Risk Mapping study was limited to the specific scope of work for which we were retained and that is described in this report. Our review comments should be evaluated in light of this limited scope of work.

JFSA has relied in good faith on all information provided and does not accept responsibility for any deficiencies, misstatements, or inaccuracies contained in the report as a result of omissions, misinterpretation, or fraudulent acts of the persons contacted or errors or omissions in the reviewed documentation and data.

JFSA is not a guarantor of the accuracy, completeness or adequacy of this information provided by others. JFSA assumes no responsibility or liability for errors or omissions resulting from inaccuracies in the data received from others. JFSA assumes no responsibility for any negligence by others related to the data provided for this technical review.

JFSA has provided technical review comments based on the information received. Final decisions regarding how these comments are addressed is not the responsibility of JFSA.

JFSA warrants only that its work was undertaken, and technical review comments prepared in a manner consistent with the level of skill and diligence normally exercised by competent engineering professionals practicing in the Province of Ontario.

Respectfully Submitted,

J.F Sabourin and Associates Inc

Bryan Willcott, P.Eng.
Project Engineer in Water Resources, JFSA

cc: J.F Sabourin, M.Eng., P.Eng.
Director of Water Resources Projects

Attachment 1 – Summary Tables – Technical Review Comments

JFSA
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS

Project Ref #:P2149-21
Client: Mississippi Valley Conservation Authority

Ottawa, ON
Paris, ON
Gatineau, QC
Montréal, QC
Québec, QC

Attachment 1

Summary Tables – Technical Review Comments

September 2021

Table 1: Summary of Cross Sections Which Do Not Contain 100-Year Event

(See tech review comment in bullet 4 under Section 5.1.1)

River	Reach	HEC-RAS Cross Section ID
Mississippi	1	50325
Mississippi	2-1	48348
Mississippi	2-1	47847
Mississippi	2-2	47700
Mississippi	3	46875
Mississippi	4-2	45867
Mississippi	4-3	45480
Mississippi	4-4	45402
Mississippi	4-1	45352
Mississippi	6-1	44000
Mississippi	6-1	43889
Mississippi	6-1	40857
Mississippi	6-2	43142
Mississippi	7	38828
Mississippi	7	32792
Mississippi	7	32560
Mississippi	7	31219
Mississippi	7	31137
Mississippi	7	23898
Mississippi	7	17449
Mississippi	7	17105
Mississippi	7	12078
Mississippi	12-1	4120
Mississippi	12-1	4039
Mississippi	12-1	3964
Mississippi	12-1	3848
Mississippi	12-1	3728
Mississippi	12-1	3589
Mississippi	12-1	3564
Mississippi	12-2	4070
Mississippi	12-2	3972
Mississippi	12-2	3897
Mississippi	12-2	3842
Mississippi	12-2	3696
Mississippi	12-2	3609

Table 2: Summary of Cross Sections With Error in Reach Lengths (Only Those >1000 m shown)

(See tech review comment in bullet 1 under Section 5.1.2)

River	Reach	HEC-RAS Cross Section ID
Mississippi	4-2	45867
Mississippi	6-1	44000
Mississippi	6-1	43889
Mississippi	6-1	43777
Mississippi	6-1	43651
Mississippi	6-1	43442
Mississippi	6-1	43094
Mississippi	6-1	42634
Mississippi	6-1	42229
Mississippi	6-1	41902
Mississippi	6-1	41594
Mississippi	6-1	41460
Mississippi	6-1	40947
Mississippi	12-2	3544

Table 3: Summary of Misplaced Ineffective Flow Areas

(See tech review comment in bullet 1 under Section 5.1.4)

River	Reach	HEC-RAS Cross Section ID
Mississippi	2-1	48330
Mississippi	2-2	47919
Mississippi	6-2	42323
Mississippi	7	39575
Mississippi	7	31441
Mississippi	7	31060
Mississippi	7	31039
Mississippi	7	15103
Mississippi	7	15087
Mississippi	7	7801
Mississippi	12-2	3683

Table 4: Summary of Cross Sections where Placement of Levees Should be Considered

(See tech review comment in bullet 2 under Section 5.1.5)

River	Reach	HEC-RAS Cross Section ID
Mississippi	3	47062
Mississippi	4-2	46074
Mississippi	4-2	45982
Mississippi	6-1	44594
Mississippi	6-1	43094
Mississippi	13	1731
Mississippi	13	1635
Mississippi	13	1514
Mississippi	13	1155
Mississippi	13	963
Mississippi	13	821

APPENDIX B

Appendix B: Response to JFSA comments

	JFSA Comment	MVCA Response
5.1.1 Cross Section Geometry		
1	As noted on page 45 and in Appendix G of MVCAs report, the above water cross sectional geometry was derived from LiDAR flown in 2012. It is JFSAs understanding the City of Ottawa has a LiDAR data set that is more recent than the 2012 LiDAR used by MVCA to complete this study. Considering the cross-sectional geometry in the hydraulic model is derived from the 2012 data, it is recommended LiDAR data sets be compared as it relates to the cross-sectional geometry and update the hydraulic model, as required, to reflect the best available data.	The best available data (LiDAR data collected in 2019) was used to update the hydraulic model. In addition, new bathymetry data collected by a field survey in the fall of 2021 was used to update channel geometry for sections of river reaches 1, 2-1, 2-2, 4-1, 4-2, 6.1, 6.2, and 7.
2	A visual comparison of the geometry in plan view vs. cross section view indicates there may be topographic data missing from some cross sections. This includes cross sections at stations 47600, 47520 and 47419 (River: Mississippi, Reach: 3) in which aerial photos show raised islands in the river which are not represented in the hydraulic model.	Topographic data was updated with island area for cross-sections 47600, 47520, and 47419 (River: Mississippi, Reach: 3). Island banks have been adjusted to match channel bank slopes.
3	It is noted that there appears to be some overlapping cross sections included in the HECRAS model which may result in double counting of the available cross-sectional area for flow conveyance. This includes cross sections 45480 (River: Mississippi, Reach: 4-2) and 45243 (River: Mississippi, Reach: 5) near junctions Junc-DS03 and Junc-DS04.	Overlapping cross-sections 45480 (River: Mississippi, Reach: 4-2) and 45243 (River: Mississippi, Reach: 5) were fixed in the updated model.
4	It is noted there are a number of cross sections that do not contain the 100-year flow. It is recommended MVCA make all reasonable efforts to contain peak flows where feasible. Please refer to Table A1 for a summary of the recommended cross sections to be reviewed.	Cross-sections were extended in the updated model to contain the 100-year flow (see updated Table 1).
5	It is noted there are a number of cross sections in which the Froude number is calculated to be above 1.0 (approximately eight cross sections with the highest simulated value being	The updated model was run in the mixed flow regime that accounts for both subcritical and supercritical flows.

	1.12). Where slopes are steep and flow depths are shallow, running the HEC-RAS model to check for supercritical flow may be warranted.	
6	A potential spill is noted at cross section 17449 (River: Mississippi, Reach: Reach 7), however, the report does not appear to document it. It is recommended MVCA review this location and consider adding text to the report to suit.	All cross sections have been reviewed and extended where required to contain 100-year flood.
5.1.2 Reach Length		
7	It There appears to be a number of errors in the calculation of reach lengths throughout the HEC-RAS model. For example, left overbank values for twelve individual cross sections along Reach 6 are each more than one kilometre long which is well in excess of the representative value at each of those respective cross sections. A summary of cross sections with reach lengths in excess of 1000 m are summarized on Table A2. It is recommended MVCA complete a thorough check of all cross section reach lengths and update the HEC-RAS model accordingly.	Reach lengths were updated for all cross-sections listed in Table A2. Distance to downstream cross section (i.e., reach length) was reviewed (channel, LOB, ROB) for all cross sections, and corrected as required.
8	Checks of the left overbank, right overbank and channel reach lengths of each cross section show that at some locations, all three lengths have been set to the same value. An example of this is seen at cross section 17449 (River: Mississippi, Reach: Reach 7). It is recommended MVCA review all cross-sections to ensure reach lengths follow the typical convention described above.	Left overbank, right overbank, and channel reach lengths were reviewed and corrected for all cross sections.
9	It is noted there are a few areas in which the left and right overbank markers appear to cross the centerline of the Mississippi River. This is seen between cross sections 46074 and 45867 (River: Mississippi, Reach: 4-2), 41604 and 41021 (River: Mississippi, Reach: 6-2). It is recommended MVCA review these areas of the model and adjust overbank markers accordingly.	Left and right banks were corrected for cross-sections 46074 and 45867 (River: Mississippi, Reach: 4-2); 41604 and 41021 (River: Mississippi, Reach: 6-2). Left and right bank stations were reviewed and corrected for all cross sections.

10	The junction lengths included at Junc-DS04 and Junc-DS05 appear to be well in excess of the actual length across each respective junction. It is recommended MVCA review all junction lengths and update the model as required.	All junction lengths were recalculated and updated in the model.
11	The length between cross sections 27133 and 25246 (River: Mississippi, Reach: 7) is 1886.29 m. It is recommended MVCA add additional cross sections to better represent this area in the HEC-RAS model.	Three new cross-sections, 25247, 25246.6, and 2546.3, were added between existing cross-sections 27133 and 25246 (River: Mississippi, Reach 7).
5.1.4 Ineffective Flow Areas		
12	It is noted ineffective flow areas applied at some of the cross sections in the model, particularly those close to structures are shown beyond the limits of the cross section. Although this may not change model results, it is recommended MVCA review and remove portions of these blocked ineffective flow areas to follow typical HEC-RAS model convention. A summary of cross sections with misplaced ineffective flow areas is provided on Table A3.	All cross sections directly upstream and downstream of bridges (including the ones in Table 3) were reviewed, and ineffective flow areas revised to not extend past cross section bounds. Ineffective flow areas completely below grade were removed. Table 3 documents all cross sections with ineffective flow areas.
13	Ineffective flow areas have not been included at cross sections adjacent to the Highway 417 crossing at stations 8508, 8465 and 8416 (River: Mississippi, Reach: 7). It is recommended this be reviewed and the model updated accordingly.	The model has been updated to include the piers of the Hwy 417 bridge as obstructions to more accurately represent the hydraulics in the vicinity of the bridge. Since bridge abutments are above the 100-year WSE, ineffective flow areas are not necessary.
5.1.5 Levees		
14	Judgment should be made in the placement of levees with respect to which areas of the cross section are likely to convey flow if that elevation is overtopped. This judgment will include an investigation of looking at both upstream and downstream cross sections for similar conveyance features. If a conveyance channel appears to be present in one cross section but the adjacent ones do not contain these same features, then it is not likely the middle cross section will convey flow at that location. Levee locations in this case would be set to prevent bank overflow into what may only appear to be a conveyance	All cross sections have been reviewed, in conjunction with existing flood plain mapping, updated terrain data and satellite imagery and levees added where appropriate.

	channel. It is recommended MVCA provide due consideration of these principles in selecting the location of levees for use in their HEC-RAS modelling.	
15	It is noted there may be cross sections in the HEC-RAS model where the placement of levees may be applicable. A summary of cross sections where the placement of levees should be considered is provided on Table A4.	All cross sections in the model (including those in Table 4) have been reviewed and levees added where appropriate. Summary is provided in Table 5.
16	It is noted on page 54 of MVCAs report that there is a flood fringe area along the north shore of the Mississippi River near cross section 49021 (River: Mississippi, Reach: 1). Levees have been added in the HEC-RAS model in this area to remove flood plain storage. According to aerial photos, this area appears to remain undeveloped. As such, the flood fringe will still encroach the area during a 100-year event. It is recommended that ineffective flow areas instead be used to represent the ineffective flow through this area. Furthermore, although not specific to this project, it may be a prudent exercise for MVCA to compare the results of their final HEC-RAS model with the criteria for flood fringe designation for this area.	Ineffective flow areas were used in the updated model to represent the flood fringe area.
5.1.6 Expansion and Contraction Coefficients		
17	It is noted the contraction and expansion coefficients of 0.3 and 0.5 have been included at the first upstream and downstream cross sections directly adjacent to each bridge structure. To adhere to general conformance with the HEC-RAS convention, it is recommended contraction and expansion coefficients also be increased at the second upstream cross section of each respective structure.	Contraction and expansion coefficients have been increased to 0.3/0.5 for all second upstream cross sections (relative to bridges).
18	It is noted a contraction coefficient of 0.13 has been applied at the bridge structure at station 3387 (River: Mississippi, Reach: 13). It is recommended MVCA review this and update the model accordingly.	This was applied at the cross section downstream of the bridge (Reach 13, RS-3369). This has been corrected to 0.3.
19	It is recommended MVCA review sudden flood plain transitions (rapid contraction or expansion) and consider increasing corresponding coefficients at those applicable cross	All reaches have been reviewed, and contraction/expansion coefficients updated where appropriate at flow split/merges and abrupt changes in channel or floodplain geometry to more

	sections. There are a number of flow splits located within the Lower Mississippi River in which there appear to be rapid contractions of flow at the upstream end of the split and rapid expansions at the downstream confluence/merging of the flow split. These locations may warrant higher contraction and expansion coefficients to better represent the energy losses that occur at these locations.	accurately represent the energy losses at these locations. Where appropriate, coefficients have been increased to 0.3/0.5 (for contraction/expansion, respectively), and the changes documented in Table 4.
5.2 Flow Splits		
20	It is acknowledged the approach to assess the flow splits included the derivation of rating curves at each branch and completing HEC-RAS simulations for a range of flows independently for each branch. Energy gradeline comparisons of adjacent sections at flow locations were then completed to confirm general agreement. It is recommended MVCA complete automated calculations for flow spits using HEC-RAS and compare simulated results (flow allocation to each branch and energy gradeline) with the manual rating curve approach described in the report. Note that it is important to first address all other technical review comments of this letter report prior to completing the automated flow split simulations, especially those contained in Section 5.1 above.	A bathymetric survey was completed in the fall of 2021 to address the limited topographic information available at the flow split locations. A detailed two-dimensional (2D) model was developed for the flow splits to validate and adjust existing rating curves.
21	It is recommended a two-dimensional (2D) modelling approach also be followed to validate the rating curves used and further establish confidence in the allocation of peak flows at all flow split locations within the limits of this study.	See previous comment, a detailed 2D model was developed to validate and adjust existing rating curves.
22	The rating curves provided in Appendix F derived for the purpose of assessing flow splits may be oversimplified. It is JFSAs understanding the basic weir equation was used Q=CLH1.5 with a weir coefficient (C) of 1.67 applied for all dams. Given the majority of these structures appear to have sluices, that will convey some of the flow over these structures, flow contractions at each sluice should also be accounted for in the effective weir length, if not done so already. It is also recommended the weir coefficient for each	See previous comment, a detailed 2D model was developed to validate and adjust existing rating curves.

	structure be checked to ensure the most appropriate value is selected for each.	
23	A background document provided to JFSA titled Lakes and Rivers Improvement Act Application – Enerdu Generating Station Expansion Project – Engineering Report (dated June 2014) indicates rating curves of the different structures downstream of the generating station have been assessed. If not done so already, it is recommended MVCA include a comparison of the rating curves at these structures with those derived for the 2014 study.	Rating curves at two locations are included in the 2014 HydroSys report – at the Enerdu weir and just downstream of up (upstream of the Middle Falls Weir). Comparison of these rating curves to those from the updated model show similar results, with the updated model showing WSE 3 cm higher at the Enerdu weir, and approximately 8 cm higher just upstream of the Middle Falls weir. Comparison of rating curve at Galetta dam (from model and curve supplied by operator, TransAlta) show WSE at 100-year event flow approximates the upper compliance elevation.
24	It is noted the peak flow applied at HEC-RAS cross section 31060, downstream of the Middle Weir, indicates a decrease in peak flow from 289.2 m^3/s to 103.2 m^3/s. Considering the 2014 Enerdu Generating Station report indicates that approximately two thirds of the flow is discharged by the Middle Falls Weir (per Section 2.3 on page 18), it is recommended MVCA review the split flow allocations and/or include justification in the final report to justify this decrease.	Model has been revised so that 2/3 of the 100-year flow (186 m^3/s) passes the Middlefalls Weir, while 1/3 (103.2 m^3/s) is diverted down the Chancery channel.
5.3 Boundary Conditions		
25	It is noted the report indicates the high water level on the Ottawa River and Mississippi River are considered to be generated by independent events given the difference in watershed areas. It is recommended MVCA include a comparison of the drainage areas to provide better context in the final report.	Mississippi River watershed area = 2,940 km2 (at Appleton) Ottawa River watershed area = 90,900 km2 (at Britannia)
26	It is noted MVCA has applied the 2-year Ottawa River WSEL (74.67 m) at the study limit of the Lower Mississippi River near the confluence with the Ottawa River. Furthermore, it is JFSAs understanding, where the 100-year WSEL on the Ottawa River (76.10 m) is higher than the simulated WSEL generated by the 100-year flow on the Mississippi in combination with the 2-year on the Ottawa River, the Regulatory WSEL at these locations reflects the 100-year Ottawa River WSEL. The	Acknowledged

	influence of the 100-year Ottawa River WSEL appears to govern up to cross section 2740 (River: Mississippi, Reach: 13). This approach is in general conformance with Section B – 4.44 (Confluence of Rivers) on page 18a of the MNR guide.	
5.4 Review of Structures		
27	It is noted simulated results from MVCAs HEC-RAS model show there may be opportunities to improve the structure representation and/or cross section data adjacent to the Bridge Street bridge in Carleton Place (at HEC-RAS station 48390). The two cross sections immediately adjacent to this structure show the 5-year WSEL is higher than the 100-year WSEL. It is recommended MVCA review the model at this location and update the model accordingly.	Modeling the Carleton Place dam as inline structure in the updated model resolved this issue.
28	Associated to the above comment, page 46 of MVCAs report indicates the channel Manning's n value was reduced to 0.02 upstream of the Carleton Place Bridge to obtain an equivalent Regulatory flood elevation at Mississippi Lake. It is recommended this model change be re-evaluated after the above comment has been addressed.	The section of the river upstream of the Carleton Place Bridge is outside the current study limit. Since this section of the river is directly impacted by the flood elevation at Mississippi Lake, the updating of this section will be completed as part of the Mississippi Lake floodplain mapping update.
29	As described on page 51 of MVCAs report, there are five weir/dam structures along the Lower Mississippi River which are each represented in the HEC-RAS model by a single cross section. This includes cross sections 48289 (Carleton Place Weir) (River: Mississippi, Reach: 1), 39424 (Appleton Weir) (River: Mississippi, Reach: 7), 31326 (River: Mississippi, Reach: 7), 31137 (River: Mississippi, Reach: 7), and 3143 (Galetta Dam) (River: Mississippi, Reach: 13). It is recommended MVCA consider representing each of these as inline structures in the HEC-RAS model. Furthermore, due to the complexity of hydraulics over such weirs including representation of lateral flow over the weirs, one-dimensional (1D) representation of the weirs may not be the most accurate approach. As such, it is also recommended each of these weirs be evaluated using a 2D model for comparison.	Dam/weir structures were represented as inline structures in the updated model. All dam/weir cross sections were removed and replaced with inline structures, and additional cross sections upstream and downstream of the new structures were added as required.

30	Pages 51 to 53 of MVCAs report identifies assumptions regarding whether control structures including sluices are considered to be open in the hydraulic model. It is recommended these assumptions be clearly documented in the report for each structure where engineering judgement was used. These assumptions should be justified with documentation from dam owners/operators and be commensurate with dam operating procedures.	Galetta – overflow weir was updated to reflect reference elevation (82.61 masl; MR water management plan and pers. Comm. with TransAlta). Elevation and dimensions of Sluice gates (82.9 masl - elevation with two stoplogs in place, since that is all they are able to remove) and other structural elements updated to reflect as-built conditions (based on pers. Comm with TransAlta). Almonte MRPC – model was updated to reflect reference elevation (pers. Comm. With MRPC) of 114.36 masl (original model weir elevation: 114.35 masl). Almonte Enerdu – reference elevation of weir (117.2 masl) and sluiceway (117.6) match model elevations. Appleton –weir reference elevation (123 masl) matches model elevation. Carleton Place – reference elevations for sluice gates (131.68, 131.98 and 133.92 masl) match model elevations. Weir elevation in model (133.9 masl) was updated to reflect reference (Mississippi River Water Management Plan) elevation (133.92 masl).
31	It is noted there is a bridge crossing the Mississippi River at the Main Street weir in Almonte which is not currently represented in the HEC-RAS model. This bridge has a number of piers (at least seven appear to be within the river extents) which have the potential to affect WSELs upstream. It is recommended this structure be accounted for in determining upstream WSELs and the associated flood plain or justification for omitting this structure otherwise be added to the report	The bridge in question spans the Chancery channel, an offshoot of the main river. During the 100-year flood event, approximately 1/3 of the flow will be diverted down the Chancery channel, while 2/3 passes over the Middlefalls Weir (Lakes and Rivers Improvement Act Application – Enerdu Generating Station Expansion Project Engineering Report, Hydrosys, 2014 and pers. comm. with Middlefalls Weir dam operator). This is reproduced in the model with 186 m^3/s passing the Middlefalls weir, with the remained (103.2 m^3/s) being diverted down the Chancery channel. Because accurate bathymetry of the Chancery channel is not available, it was not included in the model; the model extent ends just before the bridge and associated piers that span the Chancery

		channel. The flow split was achieved by means of reducing the flow at the downstream cross section (see above for details). The updated model was run with all flow (289.2 m^3/s) passing the Middlefalls weir as a conservative scenario, resulting in WSE 9-10 cm higher (compared to the updated model) just upstream of the Chancery channel.
32	It is noted there are a number of structures in which the Yarnell equation is selected as the low flow bridge modelling approach method. The Yarnell equation is applicable for bridges where the piers are the dominant contributor to energy losses but is only applicable for subcritical flow situations. This limitation should be considered by MVCA in selecting the most appropriate bridge modelling approach for each bridge in the HEC-RAS model.	Energy, Momentum, and Yarnell (where appropriate, i.e., bridge piers present) equations were used to compute energy loss under all bridges in the updated model for low flow conditions, and the scenario with the highest energy loss was used.
33	There are a number of warning messages and notes in the HEC-RAS model associated with structures. It is recommended MVCA assess the reasons behind these warning messages and update the model to eliminate these warning messages if possible or otherwise justify why they can be dismissed.	Warning messages have been reviewed and addressed as required.
5.5 Sensitivity Analysis		
34	It is recommended the sensitivity analysis completed by MVCA also include variations in peak flows. Although the report indicates values for the Mississippi River were derived from a frequency analysis of recorded flows, engineering judgement has been made in the completion of the flood frequency analysis of the Appleton gauge. As such, it is recommended peak flows be included in the sensitivity analysis. It is recommended MVCA consider using the confidence interval established for the flood frequency analysis as a guide to establish the range of peak flows for this sensitivity analysis.	Sensitivity analysis for peak flows has been completed. A 15% increase in peak flow (323 m^3/s, a value used in 1983 Cumming-Cockburn study) would result in an average increase of 0.37 m for the 100yr flood elevations. An updated statistical flood frequency analysis was conducted that utilized additional data recorded at the Appleton streamflow station (up to and including 2021). The analysis confirmed that the peak flows previously used are appropriate for the floodplain mapping.
5.6 Additional Comments		
35	Although not within the scope of this review, it is noted that a very simplified approach was used, as described on pages 12 and 13 of MVCAs report, in an attempt to validate that the	Hydrological modeling assumptions have been reviewed. Runoff coefficients lower than previously used were also found to be

	conversion of flows collected from the Appleton gauge from regulated flow to natural flow, was not necessary. Specifically, it is noted it was assumed 50% of the rainfall volume was converted into runoff and then compared against the total storage volume upstream of all major structures. Using a larger than expected runoff volume will minimize the percentage of controlled drainage area presented in the report. The level of regulation is minimized by using the 50% assumptions and is not recommended.	supportive of the approach adopted for flow conversion in the original study.

Tables

Table 1: Summary of Cross Sections Which Do Not Contain 100-Year Event

River	Reach	HEC-RAS Cross Section ID	Extend XS left side	Extend XS right side
Mississippi	1	50325	NA -new bathymetry	
Mississippi	2-1	48348	NA -new bathymetry	
Mississippi	2-1	47847	Yes	
Mississippi	2-2	47700		Yes. Right side extended closer to XS on Reach 2-1 in the split area (it seems a spill area)
Mississippi	3	46875		Yes
Mississippi	4-2	45867	NA -new bathymetry	
Mississippi	4-2	45480	NA -new bathymetry	
Mississippi	4-2	45402	Left side – not extended as it is one of the dummy XS in the joining area of Reaches 4-1 and 4-2	
Mississippi	4-1	45352	Right side – not extended as it is one of the dummy XS in the joining area of Reaches 4-1 and 4-2	
Mississippi	6-1	44000	NA -new bathymetry	
Mississippi	6-1	43889	NA -new bathymetry	
Mississippi	6-1	40857	Yes	
Mississippi	6-2	43142		Yes
Mississippi	7	38828	Yes	Yes
Mississippi*	7	37703	Yes	
Mississippi*	7	35777		Yes
Mississippi	7	32792	Yes	
Mississippi	7	32560	Yes	
Mississippi	7	31219	Yes	
Mississippi	7	31137	NA -overbanks updated	
Mississippi	7	23898	NA -overbanks updated	
Mississippi	7	17449	Yes	
Mississippi	7	17105	Yes	

Mississippi	7	12078		Yes – right overbank extracted from 2014 DEM
Mississippi	12-1	4120		*Yes – right overbank extracted from 2014 DEM*
Mississippi	12-1	4039		Yes – right overbank extracted from 2014 DEM
Mississippi	12-1	3964		Yes – right overbank extracted from 2014 DEM
Mississippi	12-1	3848		Yes – right overbank extracted from 2014 DEM
Mississippi	12-1	3728		Yes – right overbank extracted from 2014 DEM
Mississippi	12-1	3589	Not required	
Mississippi	12-1	3564		Yes – right overbank extracted from 2014 DEM
Mississippi	12-2	4070	No – left overbank not extended as it will overlap XS in Reach 12-1, this is the centre of a loop area	
Mississippi	12-2	3972	Yes – left overbank extracted from 2014 DEM	
Mississippi	12-2	3897	Yes – left overbank extracted from 2014 DEM	
Mississippi	12-2	3842	Yes – left overbank extracted from 2014 DEM	
Mississippi	12-2	3696	Yes – left overbank extracted from 2014 DEM	
Mississippi	12-2	3609	Yes – left overbank extracted from 2014 DEM	

** This cross-section was not included in Table 1 _JFSA*

Table 2: Summary of Cross Sections with Error in Reach Lengths (Only Those >1000 m shown)

River	Reach	HEC-RAS Cross Section ID
Mississippi	4-2	45867
Mississippi	6-1	44000
Mississippi	6-1	43889
Mississippi	6-1	43777
Mississippi	6-1	43651
Mississippi	6-1	43442
Mississippi	6-1	43094
Mississippi	6-1	42634
Mississippi	6-1	42229
Mississippi	6-1	41902
Mississippi	6-1	41594
Mississippi	6-1	41460
Mississippi	6-1	40947
Mississippi	12-2	3544

Table 3: Summary of Reaches with ineffective flow areas

River	Reach	RS
Mississippi	1	50325
Mississippi	1	49367
Mississippi	1	49264
Mississippi	1	48406
Mississippi	1	48380
Mississippi	1	48291
Mississippi	1	48029
Mississippi	1	48015
Mississippi	2-1	48330
Mississippi	2-1	48310
Mississippi	2-2	47937
Mississippi	2-2	47919
Mississippi	3	47242
Mississippi	3	47218
Mississippi	5	45243
Mississippi	6-2	43065
Mississippi	6-2	42343
Mississippi	6-2	42323
Mississippi	7	39575
Mississippi	7	39556
Mississippi	7	39426
Mississippi	7	31469
Mississippi	7	31441
Mississippi	7	31060
Mississippi	7	31039
Mississippi	7	24272
Mississippi	7	24237
Mississippi	7	16289

Mississippi	7	16259
Mississippi	7	15103
Mississippi	7	15087
Mississippi	7	9226
Mississippi	7	9164
Mississippi	7	7801
Mississippi	7	7755
Mississippi	12-1	3508
Mississippi	12-1	3496
Mississippi	12-2	3696
Mississippi	12-2	3683
Mississippi	12-2	3544
Mississippi	13	3400
Mississippi	13	3369
Mississippi	13	2901
Mississippi	13	2878

Table 4: Summary of changes to contraction/expansion coefficients due to sudden contraction/expansion of river channel or floodplain (note: does not include changes to contraction/expansion coefficients associated with bridges)

Reach	River Station	Contraction coefficient	Expansion coefficient	Notes
1	48289	0.1	0.3	River widens, but gradually and significantly. Contraction/expansion coefficient kept at 0.1/0.3.
1	48001	0.3	0.5	Corresponds to Junc-DS01, where flow splits around an island. River channel narrower at 2-1 (RS-48348 15 m wide) and 2-2 (RS--47970 30 m wide) than 1-48001 (50 m wide), with 2-1 being significantly narrower representing a large contraction. Increased contraction/expansion coefficient to 0.3/0.5
2-1	47847	0.3	0.5	Just upstream of merge after island. River widens abruptly at merge. Increased contraction/expansion coefficient to 0.3/0.5
2-1	47700	0.3	0.5	Just upstream of merge after island. River widens abruptly at merge. Increased contraction/expansion coefficients to 0.3/0.5
3	46448	0.3	0.5	Just upstream of flow split around island. North channel is quite a bit narrower (so contracts significantly). Reach 4-2 has similar width to 3, but 4-1 is much narrower (110m and 30m), warranting the increased contraction/expansion coefficients. Increased contraction/expansion coefficients to 0.3/0.5
4-2	45480	0.3	0.5	Just upstream of flow merge. Reaches 4-1 and 4-2 are quite narrow going around an island, then widen significantly for merge at reach 5, before becoming narrow again around island for reaches 6-1 and 6-2. Due to these rapid changes in channel width (esp. during high flow). Increased contraction/expansion coefficients to 0.3/0.5
4-2	45402	0.3	0.5	Just upstream of flow merge. See notes from 4-2@45480. Increased contraction/expansion coefficients to 0.3/0.5
4-1	45414	0.3	0.5	Just upstream of flow merge. See notes from 4-2@45480. Increased contraction/expansion coefficients to 0.3/0.5
4-1	45352	0.3	0.5	Just upstream of flow merge. See notes from 4-2@45480. Increased contraction/expansion coefficients to 0.3/0.5
5	45252	0.3	0.5	Channels merge before splitting around another island. See notes from 4-2@45480. Increased contraction/expansion coefficients to 0.3/0.5

5	45243	0.3	0.5	Channels merge before splitting around another island. See notes from 4-2@45480. Increased contraction/expansion coefficients to 0.3/0.5
6-1	40857	0.1	0.3	Just upstream of flow merge. River downstream of merge, and this channel (island between reaches 6-1 and 6-2) have similar widths, so increased contraction/expansion coefficients not warranted.
6-2	41021	0.3	0.5	Just upstream of flow merge. Channel width (downstream of merge) is wider (~100 m at 7 - 40782 and only 30 m at 6-2 - 41021) with an abrupt change where the merge occurs, warranting the increase in contraction/expansion coefficients. Increased contraction/expansion coefficients to 0.3/0.5. The other channel around the island is much wider (~115m at 6-1 - 40857) so I don't see the need to increase coefficients there.
7	39424	0.3	0.5	Represents the Appleton Dam, with rapid expansion of river and floodplain width just downstream. Contraction/expansion coefficients already set to 0.3/0.5
7	38828	0.1	0.3	Just downstream of the dam, the river widens significantly (as does the floodplain) and then gets progressively narrower over the next 4 cross sections. As such, the transition is not very abrupt, and the contraction/expansion coefficients have not been increased.
7	34808	0.3	0.5	While the main river channel is fairly uniform in width here, the floodplain narrows abruptly downstream, warranting an increase in contraction/expansion coefficients which were increased to 0.3/0.5
7	27681	0.3	0.5	From upstream, the river contracts a bit before getting to 7 - 27681, then widens significantly (from ~45m to 165m in 270m) before contracting again further downstream. There is also a river bend and island that is not included in the model that would take some of the flow and slow the flow in the main channel. As such, increasing the contraction/expansion coefficients is warranted. Increased to 0.3/0.5

7	25246	0.1	0.3	100-year WSE does not intrude on old 'channel' (on LHS between 7 - 25246 and 7 - 22343), so does not result in a widening of the floodplain. Have left contraction/expansion coefficients as 0.1/0.3.
7	24164	0.3	0.5	Flow splits around an island with a large reduction in river width. Although the channel XS width is relatively similar, the island significantly reduces the available flow area. Increased contraction/expansion coefficients to 0.3/0.5
7	23898	0.3	0.5	Flows merge back into wide river. The island significantly reduces the available flow area. Increased contraction/expansion coefficients to 0.3/0.5
7	15730	0.3	0.5	Fairly abrupt river widening just downstream. Channel width is ~85m at 7 - 15730, and 250m downstream at 7 - 15493 width is ~200 m. Abrupt change in channel width (much more abrupt that these numbers suggest, as it appears the river goes through some rapids then widens out into a broad, slow-moving section). Increased contraction/expansion coefficients to 0.3/0.5
7	14595	0.3	0.5	Fairly abrupt river narrowing just downstream. River goes from wide (~215m) to quite a bit narrower (90m) in under 100 m. Because of this rapid contraction (and no change in flow rate), increased contraction/expansion coefficients are warranted. Increased to 0.3/0.5.
7	8508	0.1	0.3	Hwy 417 crosses river here, but no bridge in model. This cross section includes piers as obstructed flow area.
7	8465	0.1	0.3	Hwy 417 crosses river here, but no bridge in model. This cross section includes piers as obstructed flow area.
7	8416	0.1	0.3	Hwy 417 crosses river just upstream, but no bridge in model.

7	4156	0.1	0.3	Just upstream of flow split around island. The river splits into two smaller branches which aren't that different in width from the upstream channel (upstream width ~68 m, downstream widths ~43 m & 48 m). When taking into account the drop in flow in each of them, contraction/expansion coefficients of 0.1/0.3 are sufficient.
12-1	3479	0.1	0.3	Just upstream of flow merge. The downstream channel isn't much wider than the upstream channel (only quite wide in the small flow merge zone, where there is another river branch coming in, so an increase in flow as well). No change in contraction/expansion coefficients.
12-2	3443	0.1	0.3	Just upstream of flow merge. The downstream channel isn't much wider than the upstream channel (only quite wide in the small flow merge zone, where there is another river branch coming in, so an increase in flow as well). No change in contraction/expansion coefficients.
13	2343	0.3	0.5	River widens abruptly just downstream. This station bisects an island, so while these isn't an abrupt increase in cross section width there is an abrupt increase in channel width (where most of the conveyance would occur) which justifies the increase in contraction/expansion coefficients to 0.3/0.5

Table 5: List of levees and their station/elevation.

Reach	River Station	Left Station	Left Elevation (masl)	Right Station	Right Elevation (masl)
1	49504			543.81	136.2
1	49021	175	136		
2-1	48045	32.52	131.6		
2-2	47700			163.51	130
3	47062			247.37	131.59
4-2	46074			253.19	128.6
4-2	46028	151.2	130.21		
4-2	45982	340.65	129.42		
4-2	45480			317.18	129.9
4-2	45402	2.41	127		
4-1	45352			394.07	127
5	45243	118.87	127.21		
6-1	43889			1145.45	128.7
6-2	43065			463.17	126.82
6-2	41272			235.4	128.79
7	40782	28.62	126.94		
7	40340	87.26	125.7		
7	31139	113.9	115.47		
7	24344	15.55	99		
7	24272	-32.48	99		
7	14718	91.15	88		
12-1	4120			353.25	85.21
12-1	4039			332.7	84.89
12-1	3964			327.09	85.16
12-1	3848			230.26	85
12-1	3728			281.75	84.7
12-1	3589			314.46	84.8

12-1	3564			347.62	84.8
12-2	4070	0.1	84.57		
12-2	3972	0.14	84.8		
12-2	3842	0.35	84.7		

Appendix 1: Tables from JFSA report

Table A1: Summary of cross sections which do not contain 100-year event.

River	Reach	HEC-RAS Cross Section ID
Mississippi	1	50325
Mississippi	2-1	48348
Mississippi	2-1	47847
Mississippi	2-2	47700
Mississippi	3	46875
Mississippi	4-2	45867
Mississippi	4-3	45480
Mississippi	4-4	45402
Mississippi	4-1	45352
Mississippi	6-1	44000
Mississippi	6-1	43889
Mississippi	6-1	40857
Mississippi	6-2	43142
Mississippi	7	38828
Mississippi	7	32792
Mississippi	7	32560
Mississippi	7	31219
Mississippi	7	31137
Mississippi	7	23898
Mississippi	7	17449
Mississippi	7	17105
Mississippi	7	12078
Mississippi	12-1	4120
Mississippi	12-1	4039
Mississippi	12-1	3964
Mississippi	12-1	3848
Mississippi	12-1	3728
Mississippi	12-1	3589
Mississippi	12-1	3564
Mississippi	12-2	4070
Mississippi	12-2	3972
Mississippi	12-2	3897
Mississippi	12-2	3842
Mississippi	12-2	3696
Mississippi	12-2	3609

Table A2: Summary of cross sections with error in reach length (or those >1000 m shown)

River	Reach	HEC-RAS Cross Section ID
Mississippi	4-2	45867
Mississippi	6-1	44000
Mississippi	6-1	43889
Mississippi	6-1	43777
Mississippi	6-1	43651
Mississippi	6-1	43442
Mississippi	6-1	43094
Mississippi	6-1	42634
Mississippi	6-1	42229
Mississippi	6-1	41902
Mississippi	6-1	41594
Mississippi	6-1	41460
Mississippi	6-1	40947
Mississippi	12-2	3544

Table A3: Summary of misplaced ineffective flow areas

River	Reach	HEC-RAS Cross Section ID
Mississippi	2-1	48330
Mississippi	2-2	47919
Mississippi	6-2	42323
Mississippi	7	39575
Mississippi	7	31441
Mississippi	7	31060
Mississippi	7	31039
Mississippi	7	15103
Mississippi	7	15087
Mississippi	7	7801
Mississippi	12-2	3683

Table A4: Summary of cross sections where placement of levees should be considered

River	Reach	HEC-RAS Cross Section ID
Mississippi	3	47062
Mississippi	4-2	46074
Mississippi	4-2	45982
Mississippi	6-1	44594
Mississippi	6-1	43094
Mississippi	13	1731
Mississippi	13	1635
Mississippi	13	1514
Mississippi	13	1155
Mississippi	13	963
Mississippi	13	821

APPENDIX C

Appendix C: Model Validation

Water surface elevations and flood extents obtained from the updated model for the 100-year flood event were compared with historical flood marks to assess model accuracy. Most historical observations correspond to the April 2019 flood event, which is used as a proxy for the 100-year event (maximum flow rate observed at the Appleton gauge station in April 2019 was 277 m^3/s, which is 99% of the 100-year event flow rate of 280 m^3/s at that location).

The model performs well in predicting the 100-year flood event flood plain extent, as estimated based on historical flood marks (from 2019). The model projects slightly more flooding in Almonte upstream of the Queen St. bridge, while slightly less flooding in Tranquil Acres Trailer Park just outside of Carleton Place. In Carleton Place at Waterside Dr. and downstream of the Middlefalls weir at the Metcalfe Geoheritage Park in Almonte, the model results match historical flood marker observations very well. The model also accurately maps around a barn in the Almonte fairgrounds that has been flood proofed, demonstrating its ability to accurately reflect as-built conditions.

Carleton Place

- 63 Waterside (April 29, 2019)

Figure 1: Historical flood extent at 63 Waterside Dr., Carleton Place

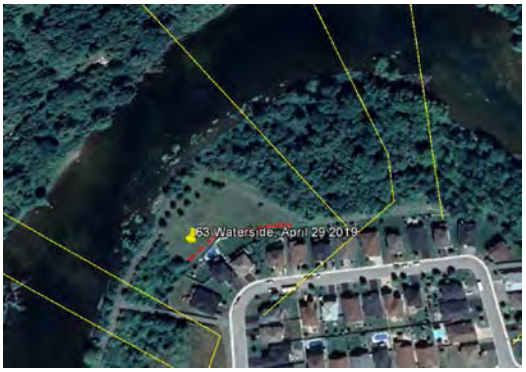


Figure 2: Modelled flood extent in the vicinity of 63 Waterside Dr., Carleton Place

- Tranquil Acres Trailer Park (April 11, 2017)

Figure 3: Historical flood extent at Tranquil Acres Trailer Park

Figure 4: Modelled flood extent in the vicinity of Tranquil Acres Trailer Park

Almonte

- Water Street at Tooley Street, Almonte (April 24, 2019)

Figure 5: Historical flood extent at Water St. and Tooley St., Almonte

Figure 6: Modelled flood extent at Water St. and Tooley St., Almonte and surrounding area

- Fairgrounds, Almonte (April 24, 2019)

Figure 7: Historical flood extent at the Almonte Fairgrounds

Figure 8: Modelled flood extent in the vicinity of the Almonte Fairgrounds

- Metcalfe Geoheritage Park (April 24, 2019)

Figure 9: Historical flood extent at Metcalfe Geoheritage Park in Almonte

Figure 10: Modelled flood extent at Metcalfe Geoheritage Park in Almonte

APPENDIX D

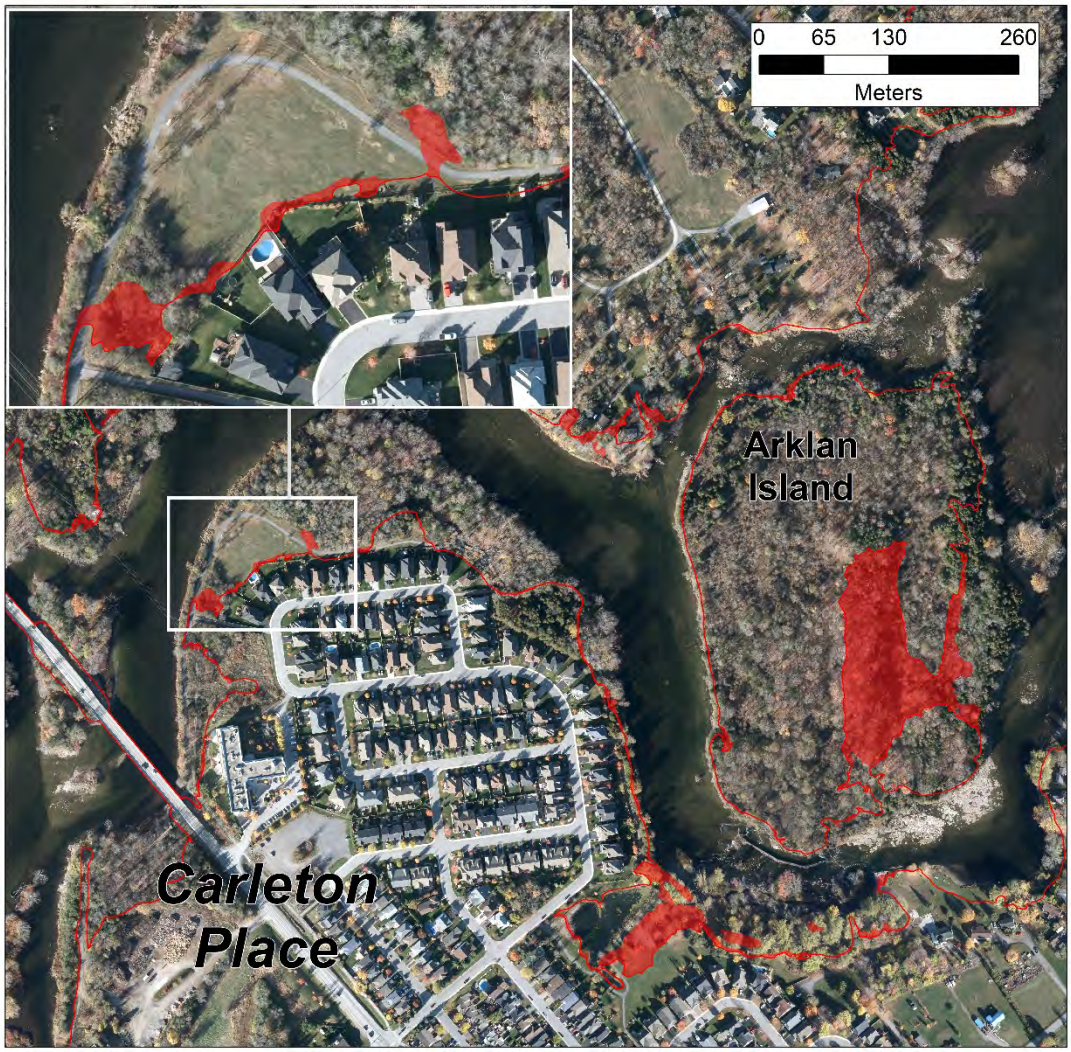
Appendix D: Significant Flood Plain Changes

The updated flood plain closely follows the existing flood plain along most of the Lower Mississippi River, with changes mostly occurring in rural areas resulting in minimal impacts on buildings and infrastructure. Changes to the flood plain that impact buildings and infrastructure are discussed in Appendix E: New flood prone areas. There are, however, a number of locations where the flood plain has significantly changed due to the update.

Carleton Place

The updated model expands the flood plain in several locations in Carleton Place, including along Waterside Dr where it encroaches on several backyards/properties, and on Arklan Island (Figure 1).

Figure 1: Changes to Flood Plain (in red shading) in Carleton Place

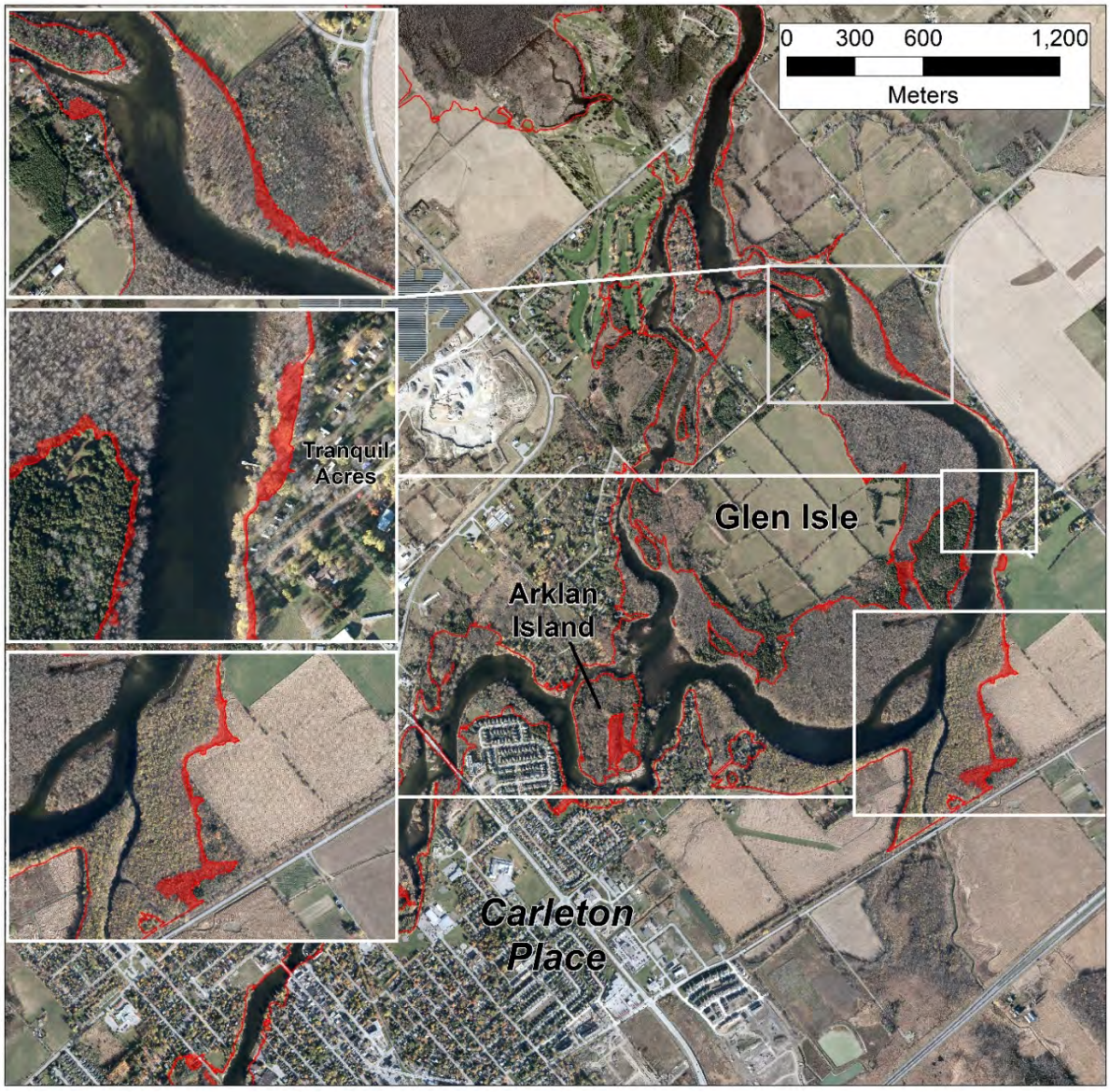


No buildings appear to be impacted on Arklan Island, or along Waterside Drive, although the updated flood plain does encroach on several properties (backyards) along the north side of Waterside Drive.

Glen Isle

The flood plain around Glen Isle, both on the island and the surrounding mainland has been extended in several locations, including south of the island in the Lavallee Creek flood plain north of Cavanagh Rd, on the east side of the island at Tranquil Acres Trailer Park, in the low-lying area on the east side of the island (creating an island without safe access during the 100-year flood event), and at the north end of the island northeast of Glen Rapids Ln (Figure 2). No additional structures, driveways, or roads are included in the flood plain as a result of these changes.

Figure 2: Changes to flood plain (in red shading) in Carleton Place around Glen Isle



Blakeney

Updated mapping expands the flood plain around plunge pool in Blakeney which encroaches on, but does not overtop, Blakeney Rd along south shore (100-year flood elevation is around 3 m lower than road) (Figure 3). Updated mapping also includes channel that bypasses rapids to the northwest. It also extends further up the tributary south of Blakeney at the end of Rosebank St. No buildings are impacted in Blakeney as a result of the updated flood plain.

Figure 3: Changes to flood plain (in red shading) at Blakeney

Pakenham

There is a substantial increase in the flood plain extent in Pakenham behind Margaret St (Figure 4). Satellite imagery indicates this area is green space, but encroaches on one structure (shed).

Figure 4: Changes to flood plain (in red shading) at Pakenham

APPENDIX E

Appendix E: New Flood Prone Areas

Several buildings and infrastructure located within the existing flood plain were not captured in the previous study. These include:

Buildings/structures affected in existing flood prone areas:

- 8 buildings in Almonte along Water Street (already in or partially in flood plain): 11 Bridge Street (mixed use commercial/residential), 166 Water Street (house), 137 Water Street (house), 143 Water Street (house), 149 Water Street (house), 159 Water Street (house), 163 Water Street (house), and 165 Water Street (house).
- 2 buildings along the north side of Water Street within the Almonte Fairgrounds (already partially in flood plain): 195 Water Street, housing the North Lanark Highland Games, and a large barn without an address just to the north of the north entrance to the fairgrounds and Almonte beach
- 2 buildings in Almonte at the southeast end of Water Street: 340 Water Street (house) and 350 Water Street (Water Street Autoworks Inc)
- Approximately 45-50 structures (trailers) near Pakenham in Riverbend Park (already in flood plain, plus one additional trailer not previously within flood plain).

Infrastructure, roads, and public places affected in existing flood prone areas:

- Water Street in Almonte
- Tooley Street in Almonte
- Kirkland Park in Almonte

The updated flood plain has been extended in several locations resulting in additional buildings and infrastructure being located within flood prone areas.

Buildings/structures affected in new flood prone areas:

- 1 house in Carleton Place: 107 Patty Lane

Infrastructure, roads, and public places affected in new flood prone areas:

- 2 driveways in Carleton Place: 100 and 101 Patty Lane (does not impact safe access)
- Anthony Curro Park in Carleton Place
- Appleton Bay Park in Appleton

Existing Flood Prone Areas

Almonte

The only flood prone area noted in the previous report (Lower Mississippi River Flood Plain Mapping Study, 2019) along the Lower Mississippi River is in Almonte, just upstream of the Middlefalls Dam (operated by the Mississippi River Power Corporation) along the south shore behind (north of) Mill St (Figure 1 and Figure 2). This section (the previously identified 'potential spill area' along the Riverwalk) required a couple levels of sandbags during the April 2019 flood to prevent flooding of the area (personal communication with the MRPC operator). As the April 2019 flood event was approximately

equal to the 1-in-100-year flood event, the updated model retains this section as a 'potential spill area.' The updated model predicts a slightly larger flood extent, specifically along the west edge of Kirkland Park, potentially increasing the flood risk along this section (Figure 2). It should be noted that the observed water level behind the Middlefalls Dam during the April 2019 flood event was lower than that predicted by the updated model.

Figure 1: Overview of changes to flood plain in Almonte.
Areas in boxes are shown in more detail in Figure 2 to Figure 4

Although most of Tooley St was already within the flood plain, it was not identified as a flood prone area in the 2019 report. Access along Tooley St. (i.e., to 7 Tooley St) should be considered unsafe, with a maximum depth of 0.89 m during the 100-year flood event. A significant portion of Water St and the buildings along the north side are within the 100-year flood plain (11 Bridge St, and 166, 137, 143, 149, 159, 163, and 165 Water St) (Figure 1 and Figure 3). Water St experiences a maximum depth of 0.39 m during the 100-year flood event and should be considered unsafe for all houses and businesses within the flood prone area. Apart from the changes noted below, this area of the flood plain has not changed, but was not identified as a flood prone area in the 2019 report. The flood plain at the end of Water St (340 and 350 Water St) is slightly enlarged, potentially impacting the businesses there (Figure 1 and Figure 4).

Figure 2: Changes to flood plain (in red shading) in Almonte along Mill St.

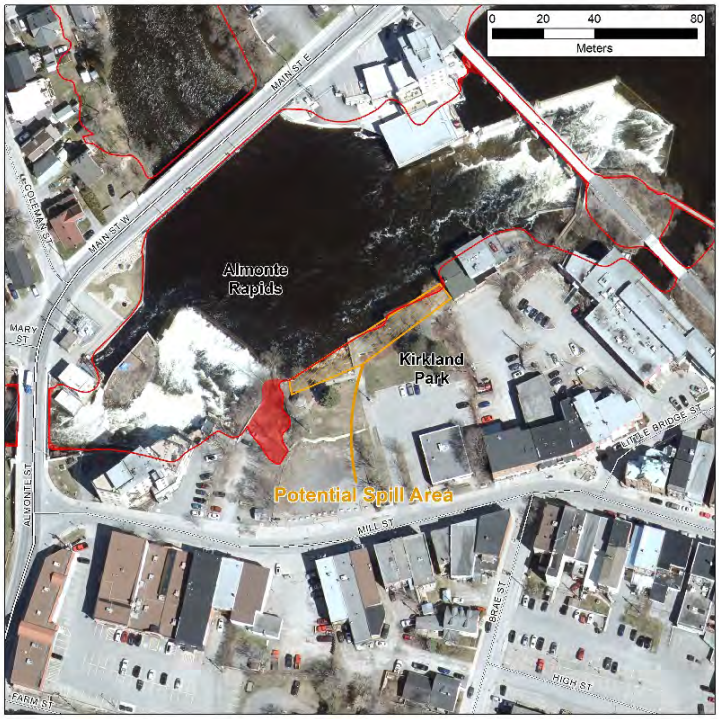


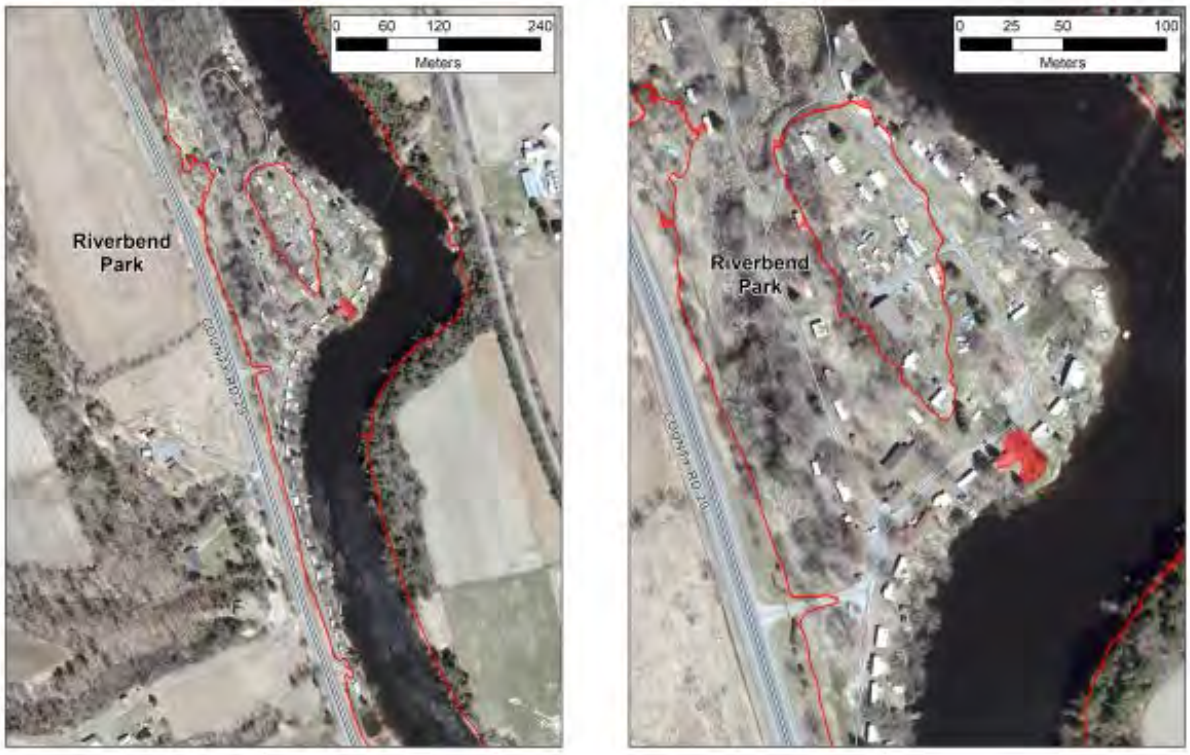
Figure 3: Changes to flood plain (in red shading) in Almonte along Bridge St. and Water St.

Figure 4: Changes to flood plain (in red shading) in Almonte at end of Water St.

Pakenham

South of Pakenham, Riverbend Park is almost completely within the flood plain, which is consistent with the previous flood plain. As such, approximately 45-50 large structures (trailers), numerous smaller structures (sheds etc.), and the access road are included in the flood plain. Flood plain updates in this area now encompasses one additional structure (Figure 5). The main park road has multiple sections where the water depth is greater than 0.3 m during the 100-year flood event, with the first one approximately 20 m from the entrance. As such, access for all trailers is deemed unsafe during the 100-year flood event.

Figure 5: Changes in flood plain (in red shading) at Riverbend Park near Pakenham. Left figure is an overview and right is a close up of main park area



New Flood Prone Areas

Carleton Place

Several new flood prone areas have been identified in Carleton Place, specifically along Patty Ln and at Anthony Curro Park (Figure 6). Satellite imagery indicates one building at the end of Patty Ln (107 Patty Ln) falls within the updated flood plain, while it encroaches upon two others (100 and 101 Patty Ln). They both have safe access, as water levels are not greater than 0.3 m during the 100-year flood event. While no buildings appear to be impacted at Anthony Curro Park, it is important to note the expanded flood plain here since it is a public space, thus imposing a risk to public safety during a flood event.

Figure 6: Changes to flood plain (in red shading) in Carleton Place at Patty Ln. and Anthony Curro Park

Appleton

The updated flood plain along the north side of River Rd. in Appleton encroaches on one house (521 River Rd.) and another building (that appears to be on the same property), and Appleton Bay Park (specifically the boat launch and parking lot) (Figure 7). It also encroaches on River Rd., but does not overtop it. It is important to note the expanded flood plain at Appleton Bay Park since it is a public space, thus imposing a risk to public safety during a flood event.

Figure 7: Changes to flood plain (in red shading) in Appleton at Appleton Bay Park

APPENDIX F

MAP No. / CARTE No. 1

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number / Nombre de la coupe traversale
47919
130.2
Regulatory Flood Elevation (m) / Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
WITH 1 METRE INTERMEDIATE CONTOUR
NORTH AMERICAN DATUM 1983

COURBES DE NIVEAU PRINCIPALES DE 2.0 MÈTRE
AVEC COURBES DE NIVEAU INTERMÉDIAIRES DE 1 MÈTRES
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

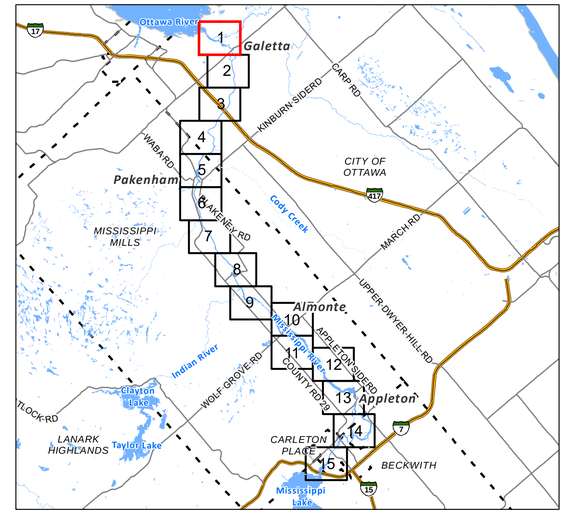
Vertical Datum: CGVD28
Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

Niveau de référence vertical: CGVD28
Niveau de référence horizontal: Nord-americain 1983
Projection cartographique: Projection Mercator Transverse

Mississippi Valley Conservation Authority

SHEET INDEX / TABLEAU D'ASSEMBLAGE



Note: The regulation limit represents all areas regulated under the Conservation Authoritis Act, Section 28, Ontario Regulation 153/06. Although only floodplains are shown on these maps, the regulation limit is defined as a buffer around all flooding hazards, erosion hazards, and wetlands. These areas are regulated in an effort to maintain the vitality of our watersheds while also protecting lives and property from natural hazards.

Remarque : La limite réglementaire représente toutes les zones réglementées en vertu de la Loi sur les offices de protection de la nature, article 28, Règlement de l'Ontario 153/06. Bien que seules les plaines inondables soient représentées sur ces cartes, la limite de régulation est définie comme une zone tampon autour de tous les risques d'inondation, d'érosion et de zones humides. Ces zones sont réglementées dans le but de maintenir la vitalité de nos bassins versants tout en protégeant les vies et les biens contre les risques naturels.

REVISIONS		
NO.	DESCIPRTION	DATE
1	Public Review	Dec 3-4, 2019
2	Board Approval	Mar 18, 2020
3	Floodplain Mapping Update	Apr 13, 2022

Date Printed: 12/04/2022

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N W E S

SCALE 1:5,000 ÉCHELLE

0 50 100 200 300 400
Meters / Mètres

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MAP No. 2
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — Nombre de la coupe traversale
47919
130.2
Regulatory Flood Elevation (m) — Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
WITH 1 METRE INTERMEDIATE CONTOUR
NORTH AMERICAN DATUM 1983

COURBES DE NIVEAU PRINCIPALES DE 2.0 MÈTRE
AVEC COURBES DE NIVEAU INTERMÉDIAIRES DE 1 MÈTRES
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

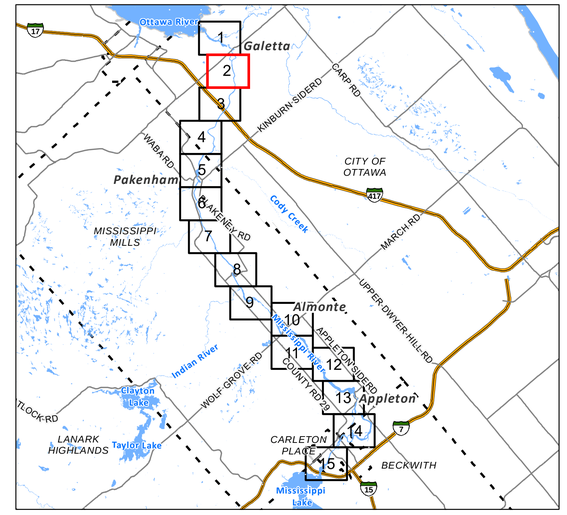
Vertical Datum: CGVD28
Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

Niveau de référence vertical: CGVD28
Niveau de référence horizontal: Nord-americain 1983
Projection cartographique: Projection Mercator Transverse

Mississippi Valley Conservation Authority

SHEET INDEX / TABLEAU D'ASSEMBLAGE



Note: The regulation limit represents all areas regulated under the Conservation Authoritis Act, Section 28, Ontario Regulation 153/06. Although only floodplains are shown on these maps, the regulation limit is defined as a buffer around all flooding hazards, erosion hazards, and wetlands. These areas are regulated in an effort to maintain the vitality of our watersheds while also protecting lives and property from natural hazards.

Remarque : La limite réglementaire représente toutes les zones réglementées en vertu de la Loi sur les offices de protection de la nature, article 28, Règlement de l'Ontario 153/06. Bien que seules les plaines inondables soient représentées sur ces cartes, la limite de régulation est définie comme une zone tampon autour de tous les risques d'inondation, d'érosion et de zones humides. Ces zones sont réglementées dans le but de maintenir la vitalité de nos bassins versants tout en protégeant les vies et les biens contre les risques naturels.

REVISIONS		
NO.	DESCIPRTION	DATE
1	Public Review	Dec 3-4, 2019
2	Board Approval	Mar 18, 2020
3	Floodplain Mapping Update	Apr 13, 2022

Date Printed: 12/04/2022

N W E S

SCALE 1:5,000 ÉCHELLE

0 50 100 200 300 400
Meters / Mètres

MAP No. 3
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — 47919 — Nombre de la coupe traversale
Regulatory Flood Elevation (m) — 130.2 — Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
WITH 1 METRE INTERMEDIATE CONTOUR
NORTH AMERICAN DATUM 1983

COURBES DE NIVEAU PRINCIPALES DE 2.0 MÈTRE
AVEC COURBES DE NIVEAU INTERMÉDIAIRES DE 1 MÈTRES
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

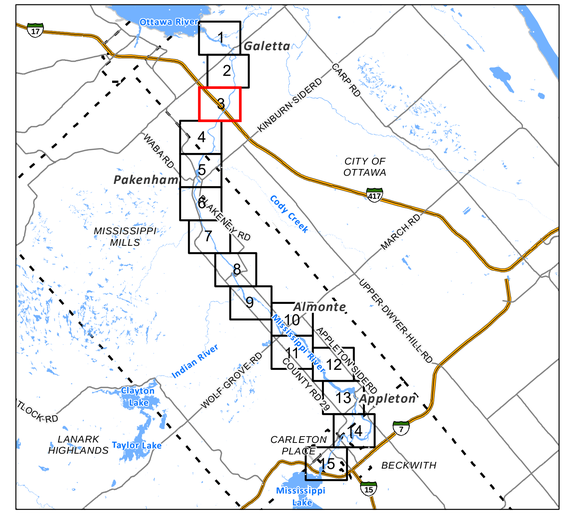
Vertical Datum: CGVD28
Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

Niveau de référence vertical: CGVD28
Niveau de référence horizontal: Nord-americain 1983
Projection cartographique: Projection Mercator Transverse

Mississippi Valley Conservation Authority

SHEET INDEX / TABLEAU D'ASSEMBLAGE



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SCALE 1:5,000 ÉCHELLE

0 50 100 200 300 400
Meters / Mètres

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MAP No. / CARTE No. **4**

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — 47919 — Nombre de la coupe traversale
Regulatory Flood Elevation (m) — 130.2 — Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
WITH 1 METRE INTERMEDIATE CONTOUR
NORTH AMERICAN DATUM 1983

COURBES DE NIVEAU PRINCIPALES DE 2.0 MÈTRE
AVEC COURBES DE NIVEAU INTERMÉDIAIRES DE 1 MÈTRES
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

Vertical Datum: CGVD28
Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

Niveau de référence vertical: CGVD28
Niveau de référence horizontal: Nord-americain 1983
Projection cartographique: Projection Mercator Transverse

Mississippi Valley Conservation Authority

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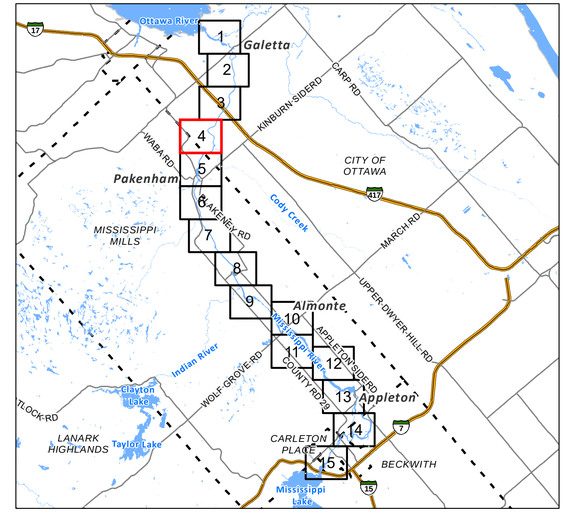

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REVISIONS		
NO.	DESCIPRTION	DATE
1	Public Review	Dec 3-4, 2019
2	Board Approval	Mar 18, 2020
3	Floodplain Mapping Update	Apr 13, 2022

Date Printed: 12/04/2022

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Digital Elevation Information © Natural Resorces Canada, 2019

N W E S

SCALE 1:5,000 ÉCHELLE

0 50 100 200 300 400
Meters / Mètres

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Données a tim triques numériques © Ressources naturelles Canada 2019

MAP No. 5
CARTE No.

FLOOD HAZARD AND REGULATION MAP
MISSISSIPPI RIVER
CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

Date Printed: 12/04/2022

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — Nombre de la coupe traversale
47919
130.2
Regulatory Flood Elevation (m) — Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
WITH 1 METRE INTERMEDIATE CONTOUR
NORTH AMERICAN DATUM 1983

COURBES DE NIVEAU PRINCIPALES DE 2.0 MÈTRE
AVEC COURBES DE NIVEAU INTERMÉDIAIRES DE 1 MÈTRES
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

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Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

Niveau de référence vertical: CGVD28
Niveau de référence horizontal: Nord-americain 1983
Projection cartographique: Projection Mercator Transverse

Mississippi Valley Conservation Authority

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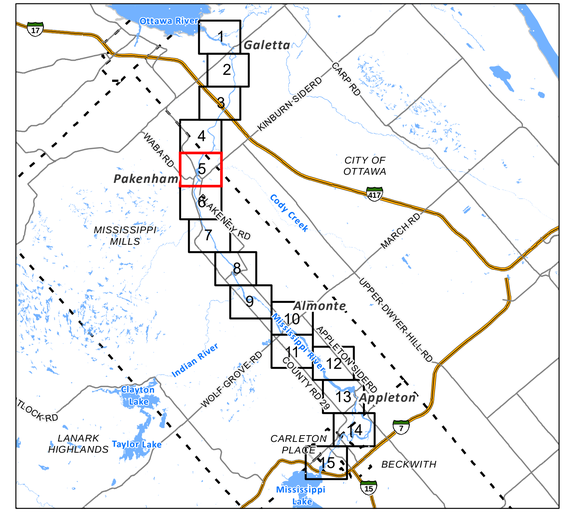

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MAP No. 6
CARTE No.

FLOOD HAZARD AND REGULATION MAP
MISSISSIPPI RIVER
CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — 47919 / 130.2 — Nombre de la coupe traversale
Regulatory Flood Elevation (m) — Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
WITH 1 METRE INTERMEDIATE CONTOUR
NORTH AMERICAN DATUM 1983

COURBES DE NIVEAU PRINCIPALES DE 2.0 MÈTRE
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SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

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Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

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Projection cartographique: Projection Mercator Transverse

Mississippi Valley Conservation Authority

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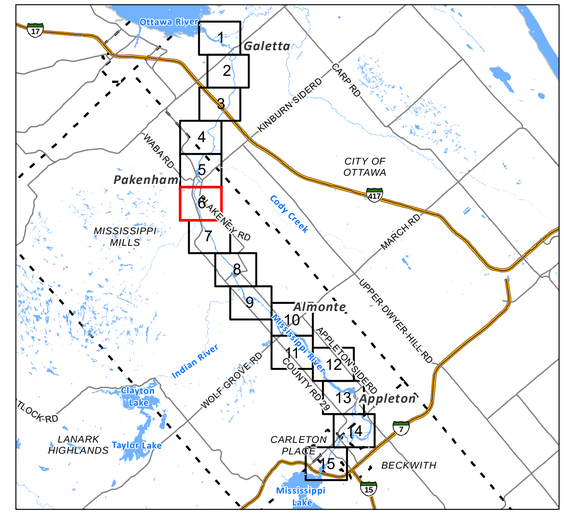

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MAP No. / CARTE No. 7

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — Nombre de la coupe traversale
47919
130.2
Regulatory Flood Elevation (m) — Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
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NORTH AMERICAN DATUM 1983

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AVEC COURBES DE NIVEAU INTERMÉDIAIRES DE 1 MÈTRES
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

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Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

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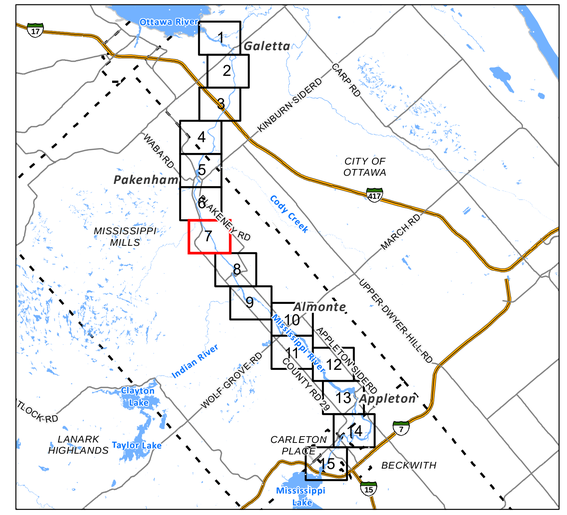
Niveau de référence horizontal: Nord-americain 1983
Projection cartographique: Projection Mercator Transverse

Mississippi Valley Conservation Authority

SHEET INDEX / TABLEAU D'ASSEMBLAGE



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MAP No. 8
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — 47919 — Nombre de la coupe traversale
Regulatory Flood Elevation (m) — 130.2 — Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
WITH 1 METRE INTERMEDIATE CONTOUR
NORTH AMERICAN DATUM 1983

COURBES DE NIVEAU PRINCIPALES DE 2.0 MÈTRE
AVEC COURBES DE NIVEAU INTERMÉDIAIRES DE 1 MÈTRES
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

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Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

Niveau de référence vertical: CGVD28
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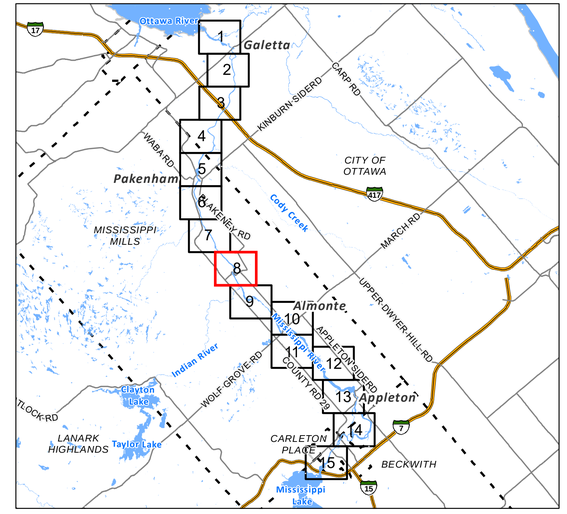
Projection cartographique: Projection Mercator Transverse

Mississippi Valley Conservation Authority

SHEET INDEX / TABLEAU D'ASSEMBLAGE



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MAP No. 9
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — Nombre de la coupe traversale
Regulatory Flood Elevation (m) — Niveau de la crue regulatrice (m)

INDEX CONTOUR INTERVAL 2 METRES
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RENSEIGNMENTS GÉNÉRAUX

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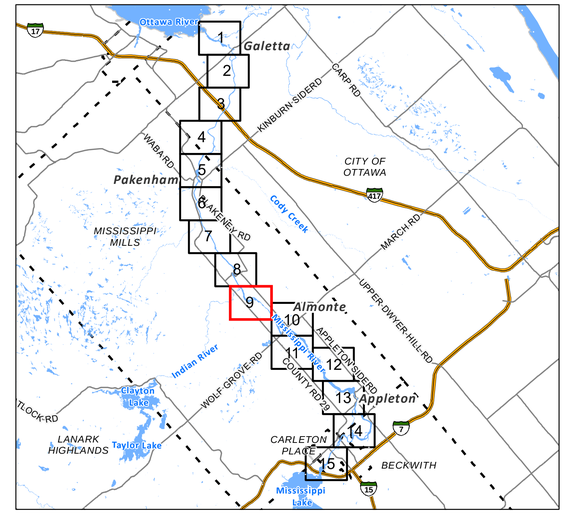

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MAP No. 10
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — 47919 — Nombre de la coupe traversale
Regulatory Flood Elevation (m) — 130.2 — Niveau de la crue regulatrice (m)

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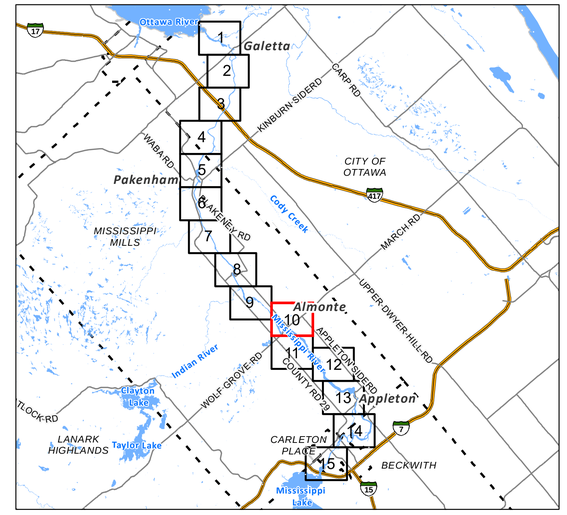

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Date Printed: 12/04/2022

Potential Spill Area: Refer to Lower Mississippi River Flood Plain Mapping Study

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MAP No. 11
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — 47919 — Nombre de la coupe traversale
Regulatory Flood Elevation (m) — 130.2 — Niveau de la crue regulatrice (m)

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COURBES DE NIVEAU PRINCIPALES DE 2.0 MÈTRE
AVEC COURBES DE NIVEAU INTERMÉDIAIRES DE 1 MÈTRES
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRIQUE 1983

GENERAL INFORMATION

Vertical Datum: CGVD28
Horizontal Datum: North American 1983
Map Projection: Transverse Mercator Projection

RENSEIGNMENTS GÉNÉRAUX

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Mississippi Valley Conservation Authority

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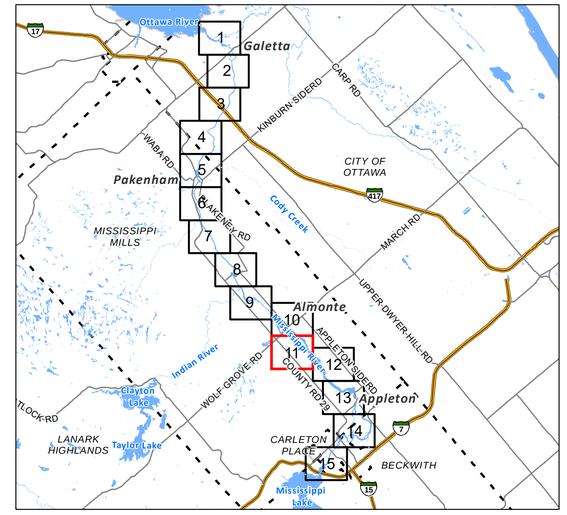

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2	Board Approval	Mar 18, 2020
3	Floodplain Mapping Update	Apr 13, 2022

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MAP No. 12
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

- Regulatory Flood Plain / La Crue Régulatrice
- Regulation Limit / Limite Réglementa ire
- Contours / Courbes
- Cross Sections / La coupe traversale

Cross Section Number — 47919 / 130.2 — Nombre de la coupe traversale
Regulatory Flood Elevation (m) — Niveau de la crue regulatrice (m)

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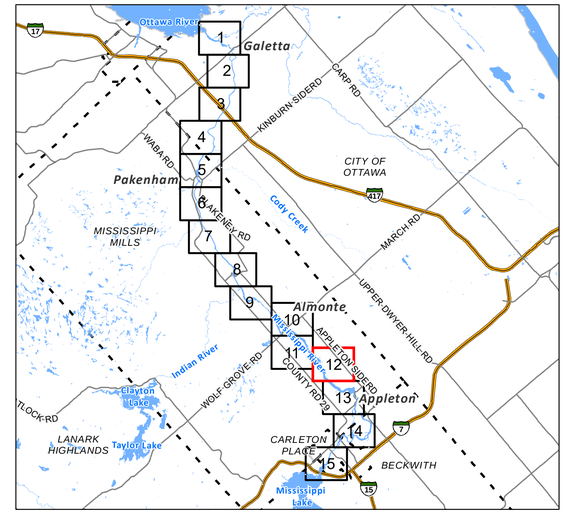

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MAP No. 13
CARTE No.

FLOOD HAZARD AND REGULATION MAP
MISSISSIPPI RIVER
CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

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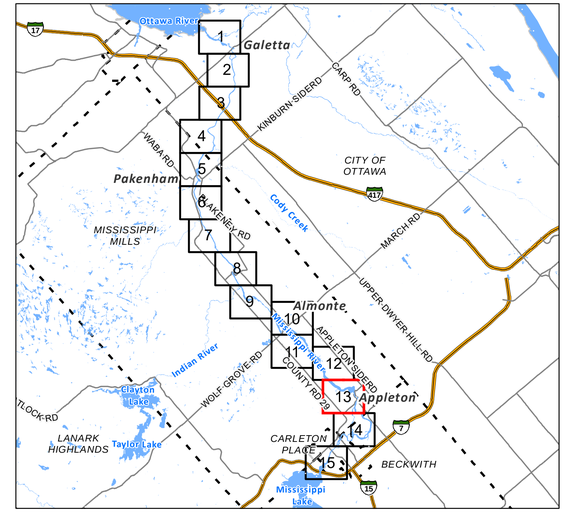

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MAP No. 14
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

LEGEND / LÉGENDE

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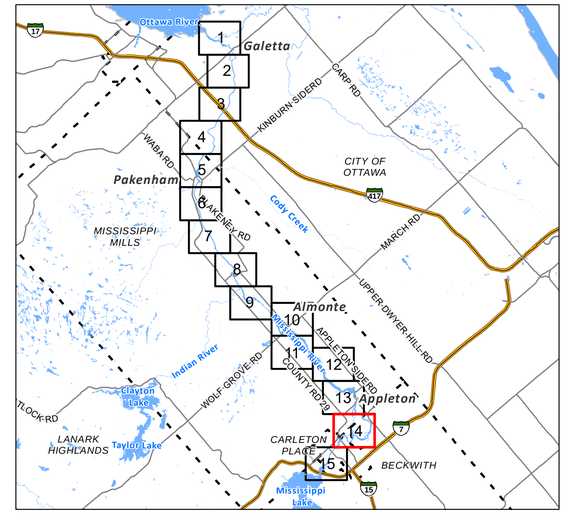

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MAP No. 15
CARTE No.

FLOOD HAZARD AND REGULATION MAP

MISSISSIPPI RIVER

CARTE DU RISQUE D'INONDATION ET DE RÉGULATION

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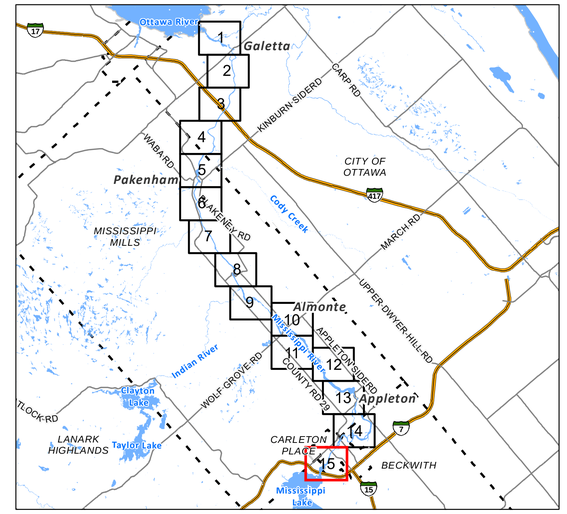

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REPORT 3213/22

TO:	Finance & Administration Committee
FROM:	Sally McIntyre, General Manager AND Angela Millar, Treasurer
RE:	**Management of Reserves**
DATE:	March 28, 2022

RECOMMENDATIONS

That the Finance and Administration Committee recommend that the Board direct staff to:

1. **Prepare and table draft policies governing the Operating Reserve and restricted Reserve Funds.**
2. **Report to the Board each Fall on the state of the Operating Reserve and Reserve Funds concurrent to seeking budget/levy direction.**
3. **Update the 5-year Capital Needs Assessment and assess the health of Reserve Funds.**
4. **Update the 10-year Capital Plan including a schedule of projected capital levies and reserve contributions.**

During review and approval of the 2022 Budget, Board members expressed concern regarding the lack of corporate policy governing the establishment, maintenance, reporting and use of reserves. The purpose of this report is to begin discussion of this matter by reviewing current state, policies of other jurisdictions, and MVCA's Operating Reserve in particular.

1.0 BACKGROUND

Two types of reserves are in common use by municipalities:

Reserve

- generally unrestricted in how it may be used
- commonly used for cashflow management and emergency uses
- may be used for planned and unplanned special projects
- may be established for a short period and closed once a project is completed (which may be suitable for tracking Category 2 and 3 initiatives going forward)

Reserve Fund

- most often used for capital expenditures or longer-term usage (not typically established for short term use)
- generally restricted to a specific use or project
- interest earned may or may not be added to the fund balance at fiscal year-end

In both cases, a portion of the monies may be invested over various periods to optimize interest and cash-flow, with dollars managed as a collective but tracked and accounted for separately in financial statements.

Websites of several municipalities and conservation authorities were reviewed to obtain policies governing reserve management. Most policies posted were from very large organizations (>1 million population) and pertained to Reserve Funds. Generally, policies addressed one or more of the following matters:

- Overarching policy: e.g. financial stability and flexibility, inter-generational equity
- Performance targets: e.g. capital lifecycle reserve funds must reach a balance of at least 1% of the capital asset replacement cost within 10 years.
- Optimal balance and/or minimum balance strategies
- Approval requirements: establishing, using, and closing a reserve or reserve fund
- Reallocation of unused/surplus reserve balances
- Fund specific requirements:
    - Stated objective
    - Target amount and timing of use
    - Initial allocation and contribution policy
    - Periodic review and sunset requirements
- Authority of the Treasurer: e.g. to invest and move funds including interest
- Multi-year forecasting and use of continuity schedules (contributions and withdrawals)

Most policies provided "guidance" and gave decision-makers both the direction and flexibility needed to manage variable financial circumstances.

2.0 CURRENT STATE

2.1 Existing Laws, Regulations, By-laws

In contrast to the *Municipal Act*, neither the *Conservation Authorities Act* nor any regulations thereunder prescribe how a conservation authority should establish or manage reserves.

Section B 1 c) (v) of MVCA's *Administrative By-law* states that the Board can "approve the establishment of special reserves for special projects or programs. The minimum amount for a

restricted reserve shall be $25,000.00." And, in November, 2021, the Board established a target balance of $600,000 in the Operating Reserve for the end of 2022.

A search of Board minutes over the past 10 years found the following additional policy approved in 2015:

> B07/15/15-7 Resolved, That 10% of the revenue generated by the new parking meter at the Mill of Kintail Conservation Area be allocated to deferred revenue on an annual basis until such time as the amount of the reserve reaches $5,900.00 at which time that amount will be transferred to a special reserve for the Museum Building and Art Collection.

This repayment was realized and commitment concluded in 2021.

2.2 MVCA Reserve and Reserve Funds

Table 1 lists the reserve and reserve funds in place today.

Table 1: 2021 Year-end Reserve & Reserve Fund Balances

Reserve	**Audited**
General/Operating Reserve	$1,496,074
Reserve Funds	
Building	$368,701
Conservation Areas	$127,128
Information Technology	$40,158
Museum Building & Art	$6,760
Sick pay[1]	$73,843
Vehicles	$213,537
Water Control Structures	$364,391
Water Management Priorities (Glen Cairn / prov.)	$438,836

While the 2021 year-end balance of the Operating Reserve was $1.496 million, 2022 commitments approved by the Board will result in a balance of $1.025 million by December 2022.

2.3 Historical Investment Practices

In recent years, the Treasurer has invested in short and mid-term GICs at varying interest rates, with differing periods and maturation dates in consultation with Scotia Bank. The following GICs came to maturity in the past three years:

[1] Designed to pay wage of replacement staff during a protracted staff illness/leave.

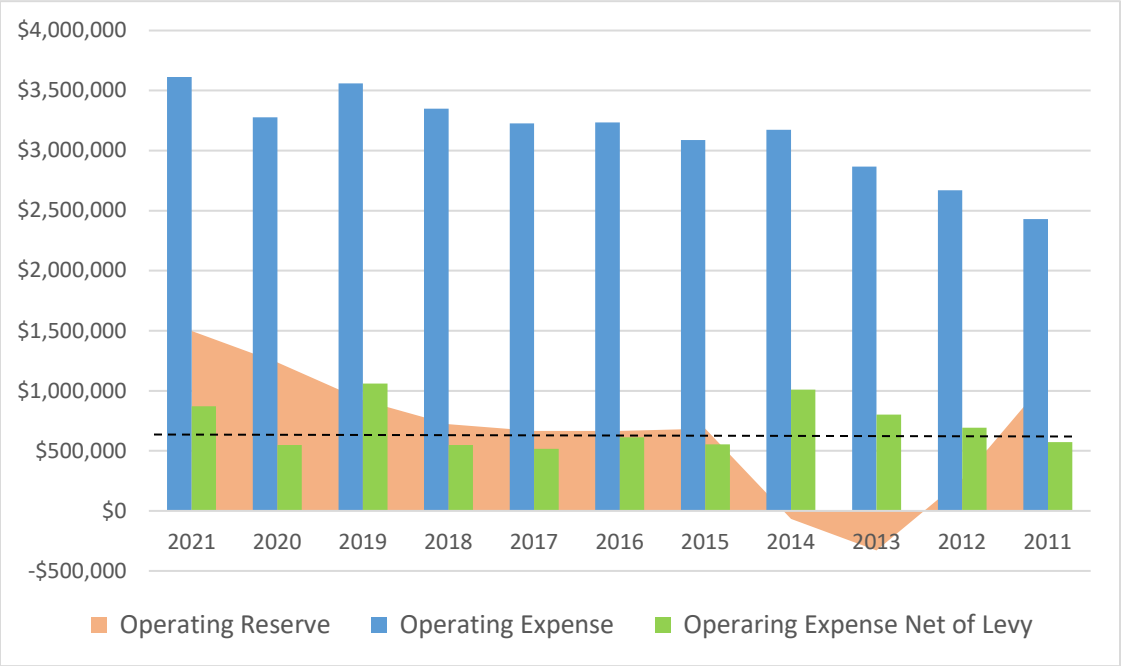
- $81,165, 18 months, 2.2%, matured August 21, 2021
- $500,000, 12 months, 0.8%, matured June 23, 2021
- $500,000, 18 months, 2.2%, matured May 14, 2021
- $250,000, 12 months, 1.8%, matured January 7, 2021
- $250,000, 12 months, 1.32%, matured January 7, 2021

Where projected needs and cashflow permitted, funds were historically reinvested upon maturity. Due to very low interest rates over the past three years, and uncertainty regarding the impact of the pandemic and inflation on cashflow, no GICs have been purchased since 2020 as they offered no benefit over our High Interest Savings account. At present, funds are in a High Interest Savings account earning 0.7% as of April 1st, 2022. However, given the current value of the Operating Reserve and recent rate increases, this is being re-evaluated in consultation with Scotia Bank.

2.4 Operating Reserve Balances

Figure 1 illustrates changes in the Operating Reserve balance relative to Total Operating Costs and relative to Operating Costs Net the Levy. Since 2011, the average year-end value of the Operating Reserve was just under $625,000.

Figure 1 – Annual Operating Costs and Reserve Balance, 2011-2021



It was recommended in November 2021 by MVCA's auditor Cross Street Professional Corporation, "a target of $600,000 or 120% of operating expenses not funded by the General

Levy (whichever is greater) with a minimum of $500,000 or 100%" to be appropriate targets. The 2022 budget results in the Operating Reserve to have a year-end balance of $1,025,544.

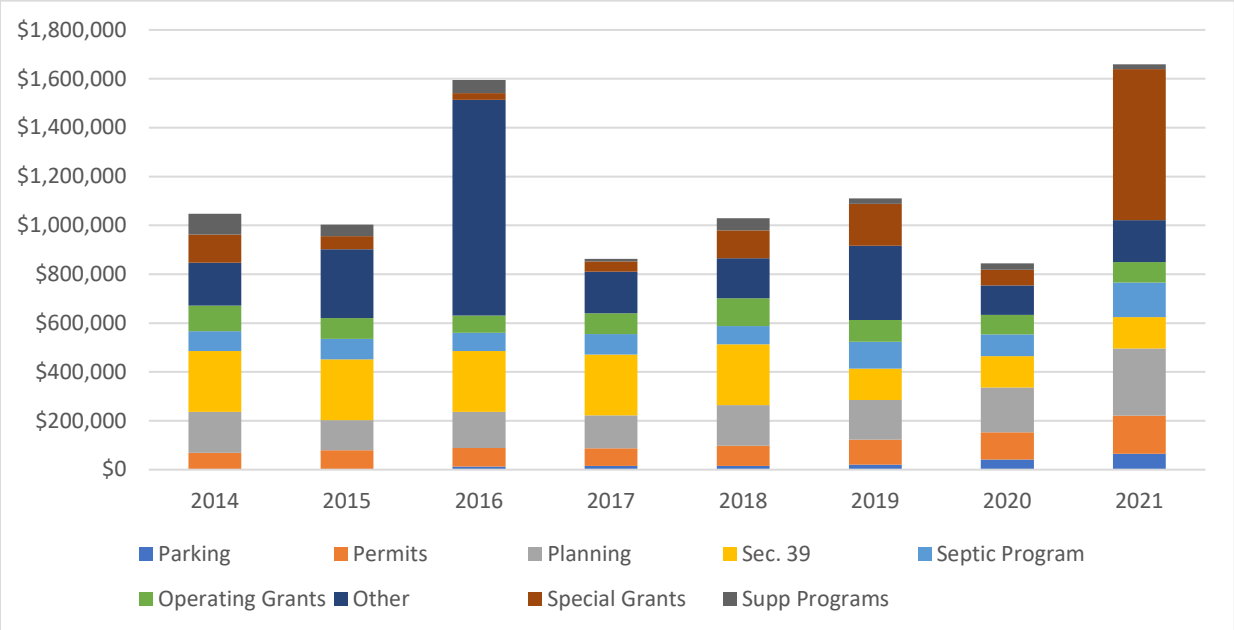
Historically and currently, none of the capital reserve funds are managed to provide for lifecycle replacement of the Authority's assets. While contributions to one or more reserve funds are made annually, these investments do not equal asset depreciation and are not keeping pace with the rate of inflation. A 5-year Capital Needs Assessment will be tabled in July that will provide a more fulsome discussion and financial outlook; and seek direction for update to the 10-year Capital Plan for the 2023 Budget.

3.0 OPERATING RESERVE TARGET SETTING

As noted above, Cross Street advised that MVCA could consider a "target of $600,000 or 120% of operating expenses not funded by General Levy (whichever is greater) with minimum of $500,000 or 100%." However, staff believe that risks to non-levy revenues are not so significant as to warrant 100-120% duplication in an operating reserve.

Figure 2 illustrates variability in the largest sources of "non-levy revenues" over the past 8 years. In the absence of a major housing crash, it is very unlikely that non-levy operating revenues will ever drop below $500,000. And, were that to occur, there would be insufficient workload to justify maintaining a full staff compliment and a reduction in operating costs would result.

Figure 2: Non-levy Sources of Revenue, 2014-2021[2]



[2] Special Grants includes WECI and other capital projects

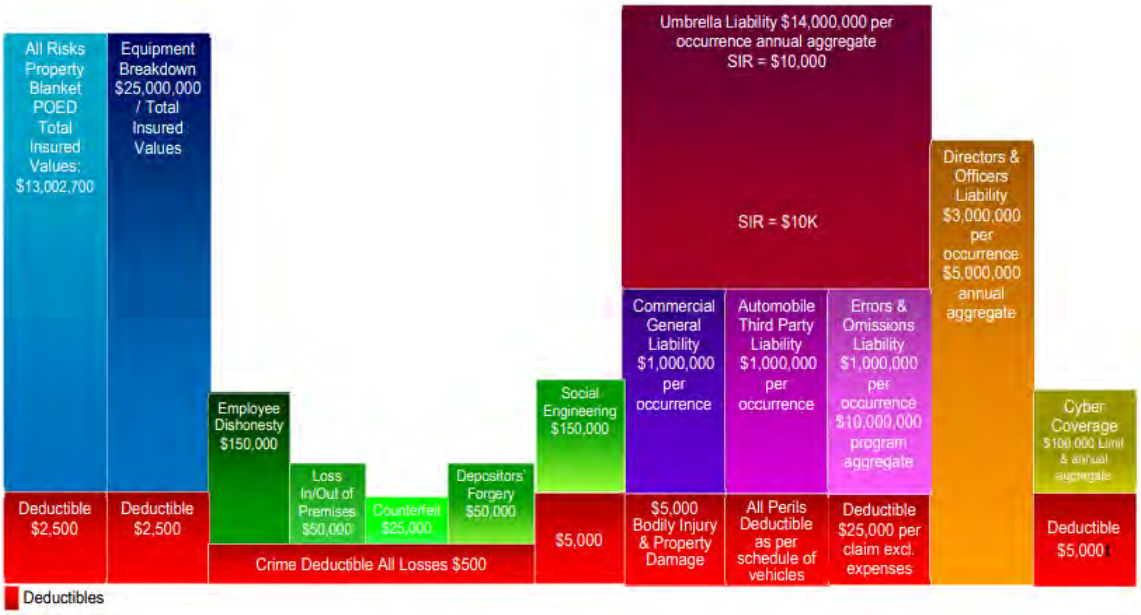
While this analysis provides a good starting point for a discussion of operating reserves, it does not consider potential risks to cashflow, the potential impacts of unplanned spending on the expenditure side, or the mitigating value of insurance. Figure 3 illustrates the full range of variables that should be considered in determining an appropriate operating reserve balance.

Figure 3 – Risk Variables Used in Reserve Planning[3]

MVCA mitigates financial risks through the use of comprehensive insurance. Figure 4 illustrates 2021 coverage and deductibles.[4] As shown, the sum total of all deductibles is less than $49,500 *plus* the deductible for replacement of our highest valued vehicle ($2,500.) Assuming an across the board 25% risk per year, our annual deductibles would be $13,000. In actual fact, our only deductible paid over the past three years for an insurance claim was $5,000.

[3] Source: planning-ahead-improving-financial-health-with-reserves-planning.pdf (grantthornton.ca)
[4] 2022 rates are currently under development and are expected in April.

Figure 4: Insurance Coverage



However, insurance does not address financial risks that are not covered by insurance.

Protracted vacancies where a service must be contracted out. This has been experienced by local municipalities and other CAs in recent years due to a shortage of skilled labour. Were that to occur, contract costs can be two to three-times those of full-time staff. The average salary at MVCA in 2021 was $68,683. Assuming that a position was contracted-out for 6 months, the pressure on the Operating Reserve would be approximately $34,500.[5]

Staff turn-over, overlap, and severance. This can become onerous where a person leaves with a significant vacation bank and/or unused TOIL. For a period of time, the Authority must pay both the former and new employee. Assuming an overlap in payroll costs of 3 months, the burden on the Operating Reserve would be approximately $17,170. As well, occasionally an employee is released from their contract necessitating a severance package. Depending on the length of service and other variables, this can equal a few weeks to a year's pay.

Emergencies, Inflation & Litigation. All three can result in pressures on the Operating Reserve. For example, the 2019 Flood and blow-out of the Mazinaw Dam by-pass necessitated an unplanned expenditure of $9,300. And, over the coming 18-months, potentially significant legal costs are anticipated to secure new MOUs and Cost Apportionment Agreements (CAAs) with member municipalities to meet new regulatory requirements.

[5] Assumes a full-time employee is in place the balance of the year, and that the contracted cost is 2x in-house costs.

Grants. Pressure on the Operating Reserve can also occur where grants require the Authority to make a matching contribution, often between 30-60% of the value of the project. Since the pandemic, significant provincial and federal grants have been on offer to help stimulate the economy and provide youth employment. MVCA has pursued grants to support works-in-progress (WIPs) and accelerate completion of planned projects that were not in the current-year budget, thus creating a pressure on reserves.

At the same time, the value of some historic grants has diminished. For example, Canada Summer Jobs used to pay 50% of wages for 16 weeks, but now only pays 50% to 100% for a maximum of 8 weeks. For this reason, the October 2021 *Workforce Plan* recommended 100% funding of students in the annual budget to ensure that adequate staff are secured for summer programs and services. The 2022 Budget provides 50% funding, which could result in a pressure of up to $48,850 on the Operating Reserve in years where student grants are less than budgeted.[6]

Provincial Transfer. In 2019, the provincial transfer was reduced by 52% from $248,792 to $128,436. This reduction was announced after the 2019 Budget had been passed by the Authority. If operational savings were not achieved to offset this massive reduction, the impact would have been borne by the operating reserve.

Cashflow Interruptions. The City of Ottawa provides monthly contributions that cover 90% of the Authority's levy.[7] A major impact in cashflow could occur if there was a delay in receiving the City's payment. There are also definite peaks and valleys in non-levy revenues that should be considered in establishing a target minimum reserve balance. In a similar vein, many not-for-profit organizations try to maintain at least 3-months operating expense in an Operating Reserve due to fluctuations in membership and donation revenues. Another consideration would be to fund expenses upfront until grant funding has been received. Most programs will not reimburse for expenses incurred until specified timelines / milestones of the program have been met. Therefore, the Authority can experience a cashflow issue until funding is actually received.

4.0 BENCHMARKING A MINIMUM BALANCE

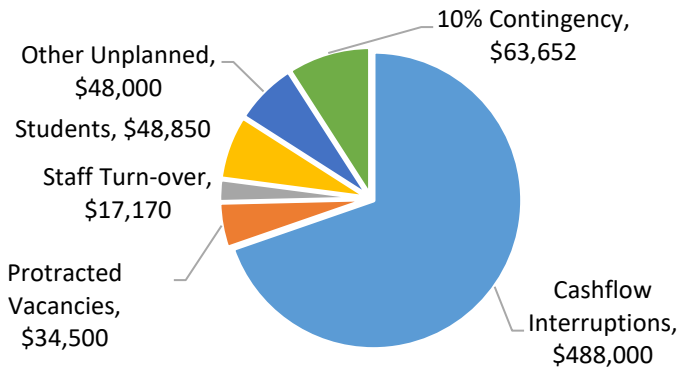
Based upon the above risk analysis, a 2022 Operating Reserve minimum balance of $700,000 is appropriate as shown in Figure 5. For simplicity, this equates to the following benchmarks:

- 2.9 months of the City's of Ottawa's levy payments, and
- 19% of the Authority's annual overhead costs[8]

[6] Unfortunately, notification of funding is often received after the window for hiring college/university students.
[7] As of April 1, 2022 the City's monthly payment equals $244,394.83 minus $2,951 for repayment of the Shabomeka loan that will begin May 2022.
[8] Payroll, fuel and utilities, debt payments, property taxes etc.

Going forward, this minimum balance combined with healthy capital reserve funds provide the Authority with good financial buffer against the most likely risks to face the organization. These benchmarks show that there is opportunity to set aside additional funds to enable pursuit of grant opportunities as they arise. They also will be used for annual reporting to the Board, and to inform decision-making regarding contributions and withdrawals from the Operating Reserve.

Figure 5 – Risks to MVCA's Operating Reserve ~$700,000/year



There is an opportunity to reduce potential pressures on the Operating Reserve by broadening the purpose of the Sick Leave restricted reserve to include all human resource related risks.

5.0 NEXT STEPS

Staff will:

- prepare draft policies to guide management of the Operating Reserve and restricted Reserve Funds.
- report to the Board in the fall on the state of reserves concurrent to seeking annual levy/budget direction.
- update the 5-year Capital Needs Assessment based upon recently completed assessments at Shabomeka Dam and Kashwakamak Dam, and assess the health of reserves to meet projected demands over the next five years.
- update the 10-year Capital Plan and draft a proposed a schedule for capital levies and contributions to reserves to achieve asset management objectives.

6.0 STRATEGIC PLAN

Review of the Authority's approach to reserve and reserve fund management aligns with Goals 1 and 3 of the *2021-2025 Corporate Strategic Plan*, as follows:

Goal 1: Asset Management – revitalize watershed management activities and invest in our legislated mandate.

a) Implement the five-year capital program
b) Strengthen our risk analysis and management capacity to include climate change and development impacts.

Goal 3: People and Performance – support the operational transformations required to achieve MVCA's priorities and to address legislative changes.

b) Monitor the quality, efficiency and impact of what we do and modify to improve operational effectiveness.

REPORT	3218/22
TO:	Board of Directors, Mississippi Valley Conservation Authority
FROM:	Sally McIntyre, General Manager
RE:	**Managing Stress in the Workplace**
DATE:	April 14, 2022

For Information.

1.0 BACKGROUND

Shortly before the pandemic outbreak, members of the JH&SC raised concerns regarding the psycho-social health of the organization. This relates to several factors including the following:

- Interpersonal Communications – a challenge in many workplaces.
- Corporate turn-over – in 2019, MVCA saw four of its seven senior managers retire. This initiated a period of significant change in corporate culture and a gap in corporate knowledge.
- Legislative framework – legislative and regulatory changes were implemented in 2019 through to present that have impacted the mandate and funding of conservation authorities. Some programs and services are in potential jeopardy, and staff in those areas are concerned.
- Aging assets – increasing capital needs/projects were adding to workloads without additional staff; and funding constraints were placing pressures on municipal levies and the need to secure grants.
- Development pressures – unrelenting volume and increasingly complex applications that are subject to regulatory time limits to review and process.
- Climate change – increasing uncertainty and threats from extreme events that impact operations and vulnerable areas within the watersheds.
- Physical change – the corporation occupied new space in 2014 that changed the nature of daily interactions amongst staff. This has been exacerbated during the pandemic.

Several actions were carried out to address issues raised, and a commitment was made to take further actions including completion of a psycho-social survey of employees by a third party. Unfortunately, the pandemic hit shortly after the action plan was tabled with the Joint Health &

Safety Committee (JH&SC), and it took considerable time for the organization to adjust to changed operating circumstances.

2.0 EMPLOYEE SURVEY & WORKSHOPS

In August 2021, a confidential psycho-social survey of employees was carried out by Occupational Health Clinics for Ontario Workers Inc (OHCOW). Employees were provided a month to complete the survey and all communications with staff were from OHCOW.

Results of the survey were shared with employees, and OHCOW provided two presentation Q&A sessions: one for management and the JH&SC, and another for all staff.

Subsequently, a Work Plan was developed by the JH&SC in partnership with the Management Team that included retaining a consultant to facilitate a series of small focus groups to help flesh out key issues and to identify specific actions to help reduce or resolve workplace stress and points of friction. As well, the Plan provided for a confidential email and phone support to employees wishing to share issues, concerns, or ideas privately.

The Work Plan and survey results were shared with the Authority's Executive Committee in November 2021, who expressed concern regarding the degree of stress and the issues identified by employees; supported implementation of the Work Plan; and directed the GM to return to the Board with an Action Plan to address identified concerns.

Five workshops were held with employees over a 1-week period in February, and the confidential email and phone line were available for a month to allow for additional feedback. As with the survey, workshop results were shared with all employees; and the consultant met with the JH&SC and management team to discuss results and next steps.

3.0 NEXT STEPS

A Draft Action Plan was prepared in consultation with the JH&SC and management team that is currently in circulation amongst all employees for comment. A final Action Plan will be tabled at the Finance & Administration Advisory Committee on April 28, 2022, and elevated to the Board at the May meeting.

Results of the survey and workshops will be shared separately "In Camera." Those documents and this report are provided as background to the discussions of the Work Plan that will occur in May.

REPORT	3219/22
TO:	The Chair and Members of the Mississippi Valley Conservation Authority Board of Directors
FROM:	Sally McIntyre, General Manager
RE:	**GM Update**
DATE:	April 13, 2022

For Information.

EXTERNAL

1. **MECP letter re: Programs & Services Inventories** – The province has reviewed draft inventories of the 36 conservation authorities and is hosting a workshop May 2, 2022 to review its findings and requirements going forward. I am registered to attend, and Members are also invited to participate (see Attachment 1.) I anticipate that changes will be required that will delay timing for reaching out to member municipalities until late May or early June depending upon their significance.

   Instead of one large meeting of all 11 municipalities, we are planning 3 kick-off meetings: 1) a City of Ottawa meeting held jointly with RVCA and SNC; 2) a meeting of Central and North Frontenac and Addington Highlands in partnership with Quinte Conservation; and 3) a meeting of Lanark members with Greater Madawaska. (RVCA has decided to meet separately with the three municipalities we share in Lanark County.) The dates of these will be set after we have attended the May 2 workshop and understand the degree of changes required to our inventory.

2. **NRCan Grant** – In 2021, MVCA entered into a partnership to acquire Light Detecting and Ranging (LiDAR) data for significant portions of Eastern Ontario. The partnership includes six conservation authorities (CA), seven upper-tier municipalities, forty-two lower-tier municipalities, and Ontario Power Generation. Total cost of the project is approximately $780,000 plus HST.

   In March we learned that Natural Resources Canada (NRCan) wants to post the LiDAR data being collected by the partnership on federal and provincial open-source portals. To do so, NRCan will provide 50% of the contracted services amount for the LiDAR acquisition

and data processing. Once NRCan funding is finalized, existing agreements between the CAs and member municipalities will be amended to reflect the new partner funding contribution requirements and data ownership, and capture associated savings.

3. **Phase 2 Regulations re: CA Levies –** CAs continue to wait for release of the second set of regulations. Given the nearness of the provincial election scheduled for June 2, 2022, it is increasingly possible that they will be deferred until the next government. It is unknown if this will compromise the above sessions and negotiations with member municipalities.

4. **Drinking Water Committee** – Carleton Place Mayor Doug Black has approached Mississippi Mills, Drummond North Emsley, Beckwith Township, and both MVCA and RVCA to participate in a Committee to collaborate on addressing concerns regarding the health and safety of local water quality. More information will be brought forward as this develops.

INTERNAL

5. **WISKI Standardization Project** – MVCA and nine other CAs share a software database called WISKI that is used to collect, manage, and report on water resource data. Earlier this month, Daniel Post, our Full Stack Developer, completed a major project to develop and implement standardized nomenclature across the 10 CAs and updated over 11,000 time series from all ten members to the new standards. Completion of this project will allow increased collaboration amongst the CAs and for MVCA to make our data more accessible to others. Kudos Daniel and Chris McGuire!

6. **Social Media & Graphic Design Support –** As of April, MVCA is now using Rideau Valley Conservation Authority (RVCA) for these services. It is anticipated that this will be a more efficient and productive arrangement due to RVCA's familiarity with our content.

7. **COVID –** Several staff or their families have contracted COVID in the past month, and there are concerns within the office for workplace safety. Self screening and mask wearing remain mandatory for both staff and visitors, and air exchanges continue to run above average.

8. **Staffing:**

   - The following vacancies were recently filled: Jane Cho accepted a promotion to the position of Engineer-in-Training, Marissa Okum is our new Stewardship Intern, and Matthew Eastman will be joining us in May as our Business Analyst Intern.

- Chris McGuire will be leaving us in early May to take a position with Public Services & Procurement Canada working on the French River system. We wish him all the best in his new job!

Ministry of the Environment, Conservation and Parks

Conservation and Source Protection Branch

14th Floor

40 St. Clair Ave. West

Toronto ON M4V 1M2

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction de la protection de la nature et des sources

14e étage

40, avenue St. Clair Ouest

Toronto (Ontario) M4V 1M2

Ontario

Good afternoon:

As you know, to implement recent changes made to the *Conservation Authorities Act* (CAA), conservation authorities (CAs) are actively completing the requirements outlined in O. Reg. 687/21 (Transition Plans and Agreements for Programs and Services Under Section 21.1.2 of the Act) to transition to the new framework of categories of programs and services by January 1, 2024.

To support CAs with this transition process, the Ministry will be hosting a workshop for CA members specifically related to the O. Reg. 687/21 requirements for CAs to develop inventories of their programs and services. This will provide an opportunity for the Ministry to share the results of its analysis of the submitted CA inventories, discuss inventory requirements and answer CA member questions. It is anticipated that this workshop will assist CAs with refining the inventories where needed in the coming months to support discussions with participating municipalities and corresponding development of agreements to support delivery of category 2 and 3 programs and services. **This workshop will take place on May 2, 2022 from 1:00 – 2:30pm.**

As a reminder, CAs are required to consult with their participating municipalities on their inventories and submit quarterly progress reports, including any updates to the inventories, to the Ministry beginning July 1, 2022. Within 30 days of January 1, 2024, CAs must finalize the inventories and submit them to the Ministry.

Please confirm you have shared this correspondence with all members of the conservation authority. You and your members are invited to register for the workshop by emailing ca.office@ontario.ca with the subject line "CA Program and Service Inventory Workshop." You will receive a reply to your email with information on how to join.

Thank you in advance for your input. The Conservation Authorities Office may be reached at ca.office@ontario.ca if you have any questions.

Sincerely,

Kirsten Corrigal
Director, Conservation and Source Protection Branch
Ministry of the Environment, Conservation and Parks

REPORT 3214/22

TO:	Finance & Administration Committee
FROM:	Ross Fergusson, Operations Manager
RE:	**Insurance Inspection – Marsh Canada**
DATE:	April 5, 2022

FOR INFORMATION

As part of Conservation Ontario's insurance program, Marsh Canada visits several Conservation Authorities each year on a rotational bases to review operational risk exposures and make recommendations to mitigate the risk. On December 6, 2021 Marsh Canada visited Morris Island (MICA), the Mill of Kintail, and Purdon Conservation Areas. Specific objectives were to:

- Review the types of activities permitted on our properties.
- Identify any obvious liability hazards
- Review staff inspection documentation
- Discuss opportunity for improvement

The purpose of this report is to apprise the Board of key findings and next steps. It may also provide useful information to your municipality.

1.0 FINDINGS AND OPPORTUNITIES FOR IMPROVEMENT

1.1 Dogs off Leash

Marsh recommends that on-leash requirements be enforced regularly at the CA's and that alternative enforcement approaches be reviewed with partner organizations.

1.2 Entrance Signage

Conservation Entrance Signage should be located at every entrance location i.e. parking lots and trail heads; and be placed on a single consolidated sign board. As a minimum the signage should include the following:

- In the event of Emergency call 911
- Name of the Conservation Authority and Conservation Area and address

- If you see a concern or have comments please let us know. phone#, email address, website
- Stay on designated Trails
- Use Caution. Trails are natural and may be uneven and slippery. Be prepared for how weather may affect your visit
- Trails are not groomed or maintained in the winter
- List of activities permitted and not permitted
- Legal disclaimer- specific wording to be provide by our legal counsel

1.3 Other Signage - Accessibility

Signs should not describe or include a map that indicates a trail is accessible unless the entire length meets every requirement of an accessible trail as listed in the *Accessibility for Ontarians with Disability Act (AODA).* Signage lettering and graphics also need to meet the AODA requirements.

1.4 Specific Trail improvements to meet AODA requirements

A number of trail improvement are required to designate trails as AODA compliant. At MICA, the Causeway Trail requires edge protection where it runs adjacent water. At Purdon, the trail leading from the lower parking lot does not meet slope or edge protection requirements.

1.5 Boardwalks and Bridge Structures

Marsh recommends bringing existing structures that are more than 600mm above the ground into compliance with Part 9 of the *Building Code*. For those less than 600mm Marsh recommends that kick plates be installed to mitigate wheelchairs and strollers from rolling off of the surface, and that they be of a contrasting colour to the deck as a visual cue.

1.6 Water rescue for Trails adjacent to water

Where practical, Marsh recommends that trails adjacent to rivers, ponds, mashes or dams have life saving equipment installed at regular intervals to aid in water rescue.

1.7 Upgrade detail of inspections

While existing inspection protocols were deemed adequate, a much more comprehensive inspection check list has been recommended that lists specific items and provides for sign-off by management so that they are aware of any issues and can make budgetary decisions regarding repairs/ replacements.

2.0 NEXT STEPS

Staff will carry-out the following actions to mitigate hazards at conservation areas:

Item	Timing	Cost
1. Examine existing dog on-leash enforcement and partnering opportunities	2022	n/a
2. Implement use of more comprehensive inspection check list	2022	n/a
3. Consolidate Entrance Signs at largest conservation areas	2022	$3,800/sign
4. Install smaller signs at secondary entrances	2022-23	$2,800/sign
5. Replace signs that make incorrect reference to accessible trails	2022	$5,000
6. AODA feasibility study of priority trails	2023	$500[1]
7. Boardwalk and Bridges - install railings and guards as per the *Building Code* at life cycle replacement (13 bridges)	2022-2025	$11,000[2]

3.0 STRATEGIC PLAN

Risk management at conservation areas aligns with the following strategic goals and objectives:

Goal 1: Asset Management – revitalize watershed management activities and invest in our legislated mandate.

a) Implement the five-year capital program.

Goal 2: Community Building – engage local partners to foster connections, leverage our resources, and strengthen our "social license" to operate.

a) Demonstrate MVCA to be a trusted, client-centered, resourceful, and helpful partner.

Goal 3: People and Performance – support the operational transformations required to achieve MVCA's priorities and to address legislative changes.

b) Monitor the quality, efficiency and impact of what we do and modify to improve operational effectiveness.

[1] Equipment purchase/rental.
[2] $5,000 in 2022 budget. Balance to be completed in future years.

REPORT	3215/22
TO:	Finance & Administration Committee
FROM:	Sally McIntyre, General Manager AND Angela Millar, Treasurer
RE:	**Grants**
DATE:	April 1, 2022

FOR INFORMATION

In 2019, management was encouraged to increase efforts to obtain grants to offset planned expenditures and enable progress on strategic initiatives. Grants sought and received generally fall into one of three categories:

- Water resources project grants
- Stewardship/education project grants
- Student/other employment subsidies

There are pros and cons to pursuing grants from a resource management perspective. Specifically, where grants offset planned in-year spending, they allow for building of the Operating Reserve, pursuit of strategic opportunities, and may offset future pressures on the municipal levy. Where they *do not* replace planned in-year spending, they often require matching cash or in-kind contributions that can place pressures on the Operating Reserve and workload pressures on staff. Therefore, careful consideration is needed before applying to grants, and making associated financial and staffing commitments.

The purpose of this report is to inform the Board of the approach taken to date, and to be implemented going forward.

1.0 WATER RESOURCE PROJECTS

1.1 Water & Erosion Control Infrastructure (WECI) grants

Each year, roughly 3 weeks of staff time is expended applying for WECI grants. As this program provides up to 50% of the costs for studies and construction related to the Authority's dams it is a worthwhile investment of resources. However, due to the high variability of success and the very limited timelines provided to expend funds under this program, management will be

disaggregating projects into smaller components wherever possible, and staging them over longer periods. This may appear as an increase in the number of projects in the Capital Plan, however, the work to be carried out will be the same.

As well, we will strive to make continual progress on the planning and design of future infrastructure in a manner that will provide us with "shovel-ready" projects should other grant programs become available that would allow MVCA to accelerate delivery of deferred works (e.g. outstanding works at Shabomeka and Kashwakamak dams.) In all cases, grants will only be sought for projects identified in the *2021-2025 Implementation Plan* approved in March, 2022 unless previously approved by the Board. Recent staffing approved by the Board will provide the base level of staff needed to ensure continued progress on our capital program.

1.2 National Disaster Mitigation Program (NDMP), Public Safety Canada (PSC)

Since 2014, this program has subsidized completion of risk analysis and flood plain mapping across Canada, and was used to prepare or update the following flood plain mapping locally:

- Ottawa River from Arnprior to Shirley's Bay
- Mississippi Lake and downstream
- Harwood Creek

In the absence of NDMP funding, the cost of preparing flood plain mapping in Ontario falls to local municipalities in partnership with the CA (e.g. the City of Ottawa and MVCA are 50/50 cost sharing update of mapping of the Carp River.) This is a key reason why there is no flood plain mapping for much of our jurisdiction.

Last year, MVCA partnered with Rideau Valley Conservation Authority and South Nation Conservation to complete a risk assessment across the entirety of our jurisdiction. This project will yield a list of priority areas for future flood plain mapping work. The project is valued at $337,783 of which the three CAs are contributing $168,891 and the balance through the NDMP.

Discussions are underway at PSC for extending this program (it currently expires in 2023.) Should it be continued, grants will be sought to support projects identified in the 10-year Capital Plan where staff is available to manage the work. If the project requires a cash contribution, management will return to the Board to seek direction regarding the source of those funds (i.e. Reserve Fund or Operating Reserve.)

2.0 STEWARDSHIP/EDUCATION INITIATIVES

The following lists the grants MVCA is able to access on a fairly regular basis.

Grantor/Program	Limitations	Max. Annual Grant
Ottawa Rural Clean Water Program (RCWP)	Expenses only	Varies based upon program demand
Lanark County Forestry Program	Expenses only[1]	Avg. $10,600/year
TD Planting Program	Expenses only	$5,000 (based on actuals)

In the past year, MVCA with RVCA have been able to access funds to administer an ALUS program in Lanark County as part of its 3-year Stewardship Program Pilot. For the duration of this pilot, MVCA will continue to apply for grants to offset budgeted costs of the Stewardship Coordinator and a summer student, and to enable delivery of site-specific stewardship projects in the communities we serve, with consideration given to what can be reasonably managed by 1.3 FTE.

3.0 STUDENT/EMPLOYMENT SUBSIDIES

Every year the Authority applies for grants to offset the cost of summer students, and more recently co-op students and for contract staff. The Authority has roughly a 50% success rate, meaning that we are awarded funds for about half the positions we request. Funds typically cover 50% of the cost of the position over an 8 to 16-week period, excluding overhead.[2] The exceptions to this are the annual operating grants received from the Municipality of Mississippi Mills and Community Museums Operating Grant (CMOG) for museum operations, which are received consistently every year, but vary in value.

In terms of the future regulatory environment, students and contract staff allow for delivery of Category 3 monitoring, stewardship, education and museum programs and services (e.g. Lake Monitoring, Shoreline Planting, City Stream Watch, museum student assistance), and often Category 2 work (Ottawa's Baseline Monitoring Program.) In future, these activities will be subject to Memoranda of Understanding and Cost Apportionment Agreements, with a documented understanding of the costs to be incurred and shared. These agreements cannot assume receipt of employment subsidies, but will need language regarding how any savings are to be managed.

The following table lists the common wage subsidies accessed by MVCA. Depending on the program, it can take several weeks or months to learn whether a grant is approved, often long

[1] Allows for cost recovery of consultant fees.
[2] WSIB, EI, CPP, EHT and vacation pay.

after the hiring period is over and a person is in place. Management will continue to apply for employment subsidies to complete activities identified in the annual work plan.

Grantor/Program	Limitations	Max. Grant
Canada Summer Jobs	In 2021, only 8 weeks per student (i.e. 4 students for 8 weeks instead of 2 students for 16 weeks, resulted duplicate training and onboarding costs, and reduced output overall.	$18,036 and spanned 2021 – Feb. 2022
Young Canada Works	Provides 50% funding for wages and employer expenses for placements 6 to 16 weeks	50% wages and employer expenses for 6 – 16 weeks
Project Learning Tree	50 – 80% funding based on type of youth position offered and range from 2 to 20 weeks of funding	Varies based on type of youth placement, and number of applications received by overall program
MNR Summer Experience Program	100% wage and employer costs for placements of minimum of 6 weeks	Up to $3,689 per student

4.0 STRATEGIC PLAN

Grants are an important tool used to make progress on strategic initiatives identified aligns with Goals 1 and 2 of the *2021-2025 Corporate Strategic Plan*, as follows:

Goal 1: Asset Management – revitalize watershed management activities and invest in our legislated mandate.

a) Implement the five-year capital program
b) Strengthen our risk analysis and management capacity to include climate change and development impacts.

Goal 2: Community Building – engage local partners to foster connections, leverage our resources, and strengthen our "social license" to operate.

b) Strengthen relationships with municipalities and community stakeholders, First Nations, the agricultural sector, developers, not-for-profits, and academia.