



## Policy and Planning Advisory Committee

MVCA Administration Office

Monday, May 1, 2023

### AGENDA

#### **ROLL CALL**

#### **Adoption of Agenda**

#### **Declarations of Interest (written)**

1. Approval of Minutes: Policy and Planning Advisory Committee, February 17, 2022, Page #2
2. Natural Systems Monitoring & Reporting Program Review, Report 3322/23 (K. Stiles & M. Craig), Page 8
3. Section 28 Compliance Strategy, Report 3323/23 (M. Craig), Page 51
4. Conservation Strategy; Scope & Methodology, Report 3324/23 (S. McIntyre), Page 58

#### **Other Business**

#### **ADJOURNMENT**



**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”

## REPORT

3322/23

|       |   |
|-------|---|
| TO:   | MVCA Policy & Planning Advisory Committee                                 |
| FROM: | Kelly Stiles, Biologist & Matt Craig, Manager of Planning and Regulations |
| RE:   | <b>Program Review: Natural Systems Monitoring &amp; Reporting</b>         |
| DATE: | April 21, 2023  |

**Recommendation:**

**That the Policy and Planning Committee recommend that the Board approve continuation of MVCA’s monitoring and reporting program with the recommended changes set out in this report and the attached Program Review document.**

**1.0 PURPOSE**

The purpose of the report is to present findings of a recent review of MVCA’s natural system monitoring and reporting program; and to confirm the proposed scope and cost allocation of services to be delivered per O.Reg. 686/21 and O.Reg. 687/21 under the *Conservation Authorities Act*.

**2.0 BACKGROUND**

MVCA’s natural system monitoring and reporting program supports local and provincial decision-making by providing science-based data and analysis. Much of the program is mandatory under the new regulatory framework and supports the protection of people and property. The balance of the program was designed to support municipal decision-making, inform targeted actions on the ground, and sustainable resource management. Specifically, tracking natural system conditions allows for:

- Assessment of the current conditions
- Identification of areas of concern and trends
- Determination of potential impacts when considering permit and planning applications



- Informed municipal planning and infrastructure design
- Targeted mitigation and adaptation strategies
- Targeted stewardship programs

Investment in these programs allows for proper resource management, protection of lakes and rivers, community sustainability.

Review and update of the program was carried out to ensure that it continues to address priority issues within MVCA's jurisdiction, that resources are being targeted efficiently to meet the evolving needs of users, and to confirm program categorization per the new regulations for upcoming discussions with municipalities.

### **3.0 PROGRAM REVIEW SUMMARY**

A review of existing programs determined that the scope and type of monitoring being carried out is appropriate and should continue for the following reasons:

- Two data collection programs are mandated by the province.
- The data is used by municipalities and consultants to carry out studies, and fulfil responsibilities under the *Planning Act* and *Provincial Policy Statement*.
- In some cases, the data sets exceed 20 years and support trend analysis.
- Some of the smaller ad hoc programs have negligible incremental costs.

Review of the program identified the following key challenges:

- Lack of clarity with the province regarding responsibilities for effects monitoring.
- Not all sites can be monitored annually and a review of priorities is needed.
- Resources to ensure timely data entry, QA/AC, analytics, sharing, and reporting.
- No redundancy in field leadership during the spring, summer, and fall.
- Reliance on grants to hire summer monitoring staff.

The Review includes recommendations to address these and other issues. Most recommendations can be accomplished with existing resources. The main exception to this is the funding of summer students, which is addressed in the following section.

Refer to Attachment 1 for a comprehensive discussion of program review findings and how the program will be improved to better meet user needs.

#### 4.0 FINANCIAL ANALYSIS

Over the past three years the province made amendments to the *Conservation Authorities Act* that require CA's to distinguish between mandatory, municipal and other programs and services, and to enter into agreements with participating municipalities to fund non-mandatory programs. The Natural Systems Monitoring & Reporting program review included consideration of which components of the program fell into which category.

As shown in Table 1, two of our programs are mandatory Category 1 services delivered on behalf of the province. Most other programs delivered by MVCA are designed to support municipal planning Category 2 services by providing the baseline data used to determine the impact of proposed developments and to inform studies prepared by consultants. Category 3 programs are limited in size, are only carried out on an opportunistic basis, and have negligible incremental costs. Table 3 shows the distribution costs from the 2023 Budget for Category 2 monitoring services.

**Table 1: Monitoring Program Categorization & Costs (2023)**

| Program Allocation                     | Category 1      | Category 2             | Category 3 |
|--|-----------------|------------------------|------------|
| Prov. Water Quality (PWQMN)            | \$32,700        |                        |            |
| Prov. Groundwater (PGWMN)              |                 |                        |            |
| Program Materials & Supplies           | \$1,000         |                        |            |
| Stream & Lake Water Quality Monitoring |                 | \$119,100 <sup>1</sup> |            |
| Stream & Lake Temperature Monitoring   |                 |                        |            |
| Stream Shoreline Monitoring            |                 |                        |            |
| Algae Monitoring                       |                 |                        | n/a        |
| Invasive Specie Monitoring             |                 |                        | n/a        |
| Seine Netting                          |                 |                        | n/a        |
| Laboratory analytics                   |                 | \$19,500               | -          |
| Mileage                                | \$5,000         | \$13,500               | n/a        |
| <b>TOTAL</b>                           | <b>\$38,700</b> | <b>\$152,100</b>       | n/a        |

<sup>1</sup> Includes funding of three students to ensure annual delivery on a go-forward basis. These positions were made grant dependent as a cost saving measure resulting from provincial funding cuts in 2019. This represents a \$42k pressure commencing 2024.

**Table 2: Category 2 Cost Distribution (2023)**

| <b>Municipality</b>    | <b>Assessment</b> | <b>Cost</b>      |
|------------------------|-------------------|------------------|
| North Frontenac        | 0.9283            | \$1,412          |
| Central Frontenac      | 0.4357            | \$663            |
| Tay Valley             | 0.6295            | \$957            |
| Beckwith               | 0.6784            | \$1,032          |
| Carleton Place         | 2.5368            | \$3,859          |
| Drummond/North Elmsley | 0.4880            | \$742            |
| Lanark Highlands       | 1.1218            | \$1,706          |
| Mississippi Mills      | 2.7352            | \$4,160          |
| Addington Highlands    | 0.1578            | \$240            |
| Ottawa                 | 90.2534           | \$137,275        |
| Greater Madawaska      | 0.0350            | \$53             |
|                        | <b>100</b>        | <b>\$152,100</b> |

## 5.0 CORPORATE STRATEGIC PLAN

Delivery of the monitoring program will support achievement of:

**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.
- c) Implement priority actions identified in the *Mississippi River Watershed Plan*.
- d) Work with the City of Ottawa towards an update of the *Carp River Watershed Plan*.
- e) Plan for the next phase of asset development and management.

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



# Natural Systems Monitoring & Reporting: Program Review and Update



April 2023

DRAFT v8

## ***“What gets measured gets managed.”***

Peter Drucker, management educator and consultant

### **Contents**

|  |     |
|--|-----|
| <b>Abbreviations</b> .....   | iii |
| <b>1.0 Why We Monitor Natural Systems</b> .....                                | 4   |
| <b>2.0 Updating Monitoring Programs</b> .....                                  | 4   |
| <b>3.0 Local Geography</b> .....   | 5   |
| 3.1 Geology .....  | 5   |
| 3.2 Land Use .....   | 5   |
| 3.3 Drainage Areas / Subwatersheds .....                                       | 6   |
| <b>4.0 Regulatory and Policy Context</b> .....                                 | 10  |
| 4.1 Conservation Authorities Act, 1990 .....                                   | 10  |
| 4.2 Legislative Responsibility of Municipalities .....                         | 10  |
| 4.3 Mississippi River Water Management Plan (MRWMP) .....                      | 11  |
| 4.4 MVCA Corporate Strategic Plan .....  | 12  |
| 4.5 Mississippi River Watershed Plan .....                                     | 12  |
| 4.6 Mississippi-Rideau Source Protection Plan .....                            | 13  |
| <b>5.0 MVCA’s Current Monitoring Program</b> .....                             | 14  |
| 5.1 Staff Expertise and Resources .....  | 14  |
| <b>6.0 Other Natural System Monitoring in the Watershed</b> .....              | 22  |
| 6.1 Facilities Monitoring .....  | 22  |
| 6.2 Natural System Inventories and Monitoring for Land Development .....       | 22  |
| 6.3 Other Conservation Authority Programs .....                                | 22  |
| 6.4 Provincial and Federal Agency Programs .....                               | 23  |
| 6.5 Indigenous Knowledge .....   | 24  |
| 6.6 Other Organizations .....  | 24  |
| 6.6.1 Local universities .....   | 24  |
| 6.6.2 Ontario Power Generation (OPG) .....                                     | 24  |
| 6.6.3 Nature Conservancy of Canada, Ducks Unlimited, Ottawa River Keeper ..... | 24  |
| 6.6.4 Volunteer Monitoring Programs .....                                      | 25  |
| 6.6.5 i-Naturalist, eBird, Eddmaps .....                                       | 25  |
| <b>7.0 Program Needs, Goals and Objectives</b> .....                           | 26  |

7.1 Program Goals..... 26

7.2 Program Objectives..... 27

**8.0 Current Program Challenges and Opportunities..... 29**

8.1 Geographic Priorities ..... 31

8.2 Partnerships and Funding ..... 31

**9.0 Program Recommendations ..... 32**

9.1 Monitoring Activities..... 32

9.2 Monitoring Approach and Tools ..... 33

9.3 Potential New Initiatives..... 34

**Appendix 1: Data Needs versus Availability (primary and supplemental sources) ..... 35**

**Appendix 2: Monitoring Program Details..... 37**

**Appendix 3: Geographic Assessment of Program Delivery ..... 38**

*“No one steps in the same river twice, for it is not the same river and they are not the same person.”*

Heraclitus of Ephesus, philosopher



## **Abbreviations**

CA: Conservation Authority

CBLWQ: City Baseline Water Quality monitoring program

CSW: City Stream Watch

FWIS: Flowing Waters Information System

MECP: Ministry of the Environment Conservation and Parks

MNR/MNRF: Ministry of Natural Resources and Forestry

MOU: Memorandum of Understanding

MVCA: Mississippi Valley Conservation Authority

MRWP: Mississippi River Watershed Plan

MRWMP: Mississippi River Water Management Plan

OFAH: Ontario Federation of Anglers and Hunters

OSAP: Ontario Stream Assessment Protocol

PGMN: Provincial Groundwater Monitoring Network

PSW: Provincially Significant Wetland

PWQMN: Provincial Water Quality Monitoring Network



## 1.0 Why We Monitor Natural Systems

The monitoring and analysis of data and identification of trends are fundamental business practices across multiple sectors, including the field of resource management. Tracking natural system conditions allows for achievement of several objectives including:

- Assessment of the current health of the watershed
- Identification of trends and predictive analysis of changes in natural systems
- Use of local field data when considering permit and planning applications
- Information sharing with municipal planners, engineers, and decision-makers
- Information sharing with residents, businesses, and funders
- Planning, design, and targeting of mitigation and adaptation strategies
- Assessment of the efficacy of those strategies over time

The purpose of this report is to present findings of a recent review of the natural system monitoring and reporting program at Mississippi Valley Conservation Authority (MVCA) and to present changes for implementation over the next five-year period. The monitoring plan covers the entirety of MVCA's jurisdiction: the Mississippi River watershed (~3,750 km<sup>2</sup>), Carp River watershed (~306 km<sup>2</sup>), and approximately 263 km<sup>2</sup> of land that drains directly to the Ottawa River between Marshall's Bay and Shirley's Bay.

Note, the scope of this review does not include water quantity monitoring (water levels and flows), which is conducted per the *Mississippi River Water Management Plan (MRWMP)*.

## 2.0 Updating Monitoring Programs

Periodic review of monitoring programs is needed to ensure they keep abreast of current standards and meet the evolving need of users. Consideration should be given to the following matters when reviewing a natural system monitoring program, including:

- Who needs the data and for what purposes? For example:
  - Water quality monitoring for protection of public health and safety
  - Baseline conditions for use in environmental impact assessments and trend analysis
  - Environmental effects monitoring for mitigating impacts
  - Targeted monitoring to address specific locations, species, or pollutants.
- What sample collection and analytical methods and protocols are required?
- Are other data sources available to avoid duplication and consolidate data sets?
- How will geographic, seasonal and other variability be addressed?
- What skills and expertise and specific training and equipment are required?
- Are there site accessibility or health and safety issues to be addressed?
- What frequency of reporting is needed by the end users?



### 3.0 Local Geography

A general understanding of MVCA's local geography is needed to understand and review the current monitoring program.

#### 3.1 Geology

MVCA jurisdiction is comprised of two diverse physiographic regions: the Canadian Shield in the west and the St. Lawrence lowlands in the east, with a transition area between that combines the characteristics of the two regions (Figure 1).

##### The Western Shield Area:

- Comprises the upper two thirds of the Mississippi River, its headwaters and three main tributaries: the Clyde River, the Indian River and the upper part of the Fall River.
- Has a hummocky topography with shallow soils and rocky outcroppings that limits agricultural use.
- Predominately consists of contiguous expanses of natural areas with abundant forest cover (about 70%), hundreds of lakes and numerous small wetlands.
- Has a rural character with development scattered across rural holdings, concentrated in small villages and hamlets, and around the lakes.

##### The Eastern Lowlands Area:

- Includes the lower reach of the Mississippi River, the entire Carp River watershed (CRW), and the watersheds of several small tributaries to the Ottawa river to the east of the CRW.
- Is flatter with deeper fertile soils more suited to agricultural land use.
- Has smaller, fragmented pockets of natural areas (small forest patches, larger but fewer wetlands) within a mix of rural and urban land use.
- Urban development is concentrated in and around the City of Ottawa, Carleton Place, and Almonte, with rural estate-lot growth and severances in the surrounding municipalities.

#### 3.2 Land Use

MVCA's jurisdiction encompasses portions of eleven municipalities. Each has a distinct character and economy, but with similarities within geographic regions (Figure 2).

The Upper Watershed is comprised of portions of Addington Highlands, Greater Madawaska, North Frontenac and Central Frontenac townships. This area has:

- large tracts of heavily forested Crown Land with a history of logging and mining.
- a wilderness character with growing recreational tourism.
- settlement concentrated in Sharbot Lake, small hamlets, and around some lakes.

The Middle Watershed is comprised of portions of Lanark Highlands, Tay Valley, and Drummond North

Elmsley townships. This area:

- is a transition zone between forest and farming, with farms interspersed between lakes, forests and wetlands.
- has significant lake and riverfront development with a growing year-round population and recreational tourism sector.
- also has population settlements in Lanark Village, small hamlets and along roads in areas with concentrations of rural severances.

The Lower Watershed is comprised of the Town of Carleton Place and portions of the municipality of Mississippi Mills, Beckwith Township, and City of Ottawa. This area:

- has a mix of urban and rural settlements, farmland, and lake and riverfront development interspersed by remnant forests and wetlands.
- comprises some of the fastest growing communities in Canada. The 2021 Statistics Canada Census marked Carleton Place as having the highest growth rate in the country between 2016 and 2021.
- has extensive artificial drainage systems and growing pressures on surface and ground water supplies.

### 3.3 Drainage Areas / Subwatersheds

Numerous smaller rivers and streams (tributaries) feed the Mississippi, Carp, and Ottawa rivers, and have significant influence on the health and functioning and the larger systems. Figures 3 and 4 illustrate key subwatersheds within MVCA's jurisdiction.

Figure 1: Division between On-Shield and Off-Shield

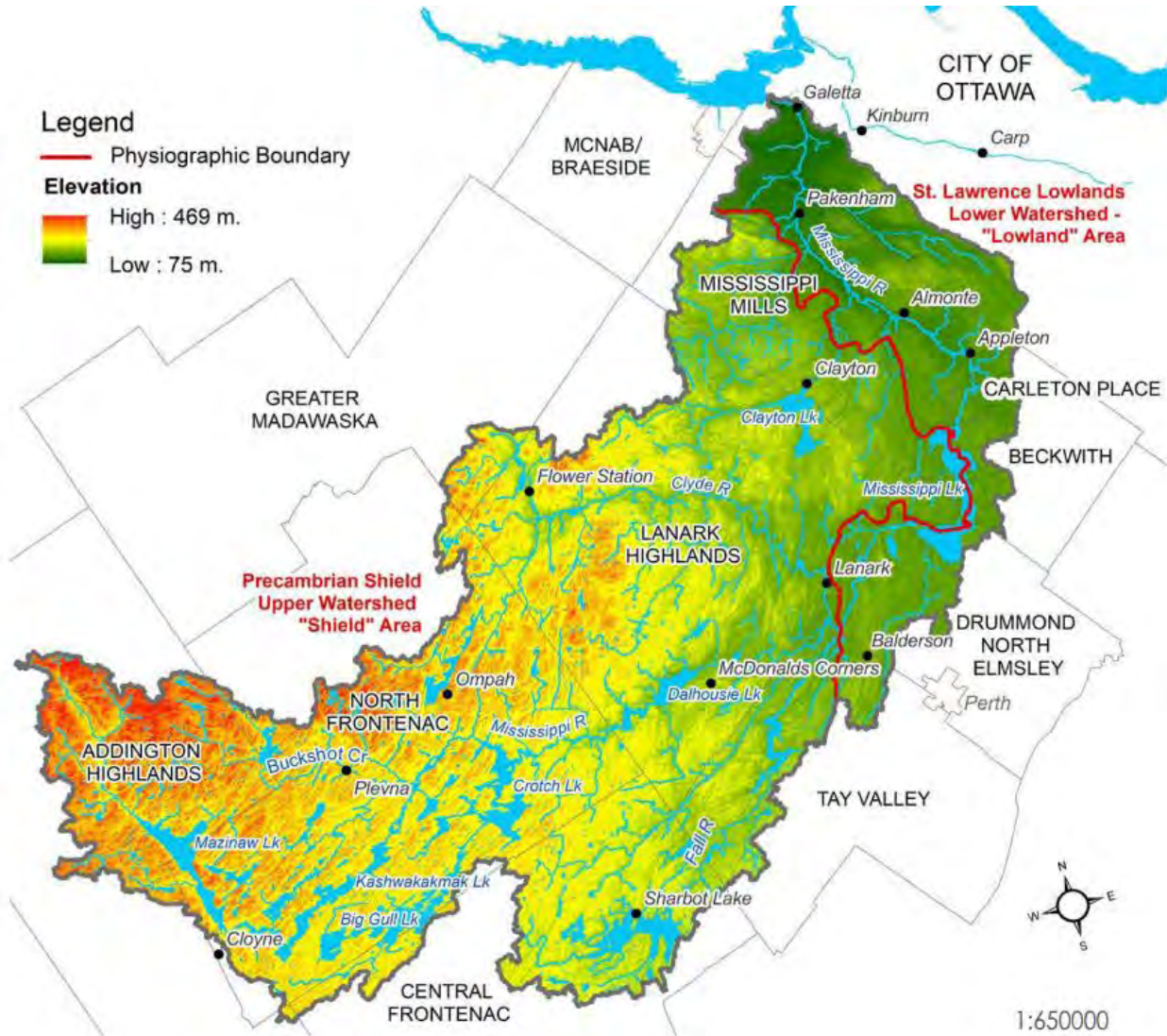


Figure 2: Upper, Middle and Lower Watershed

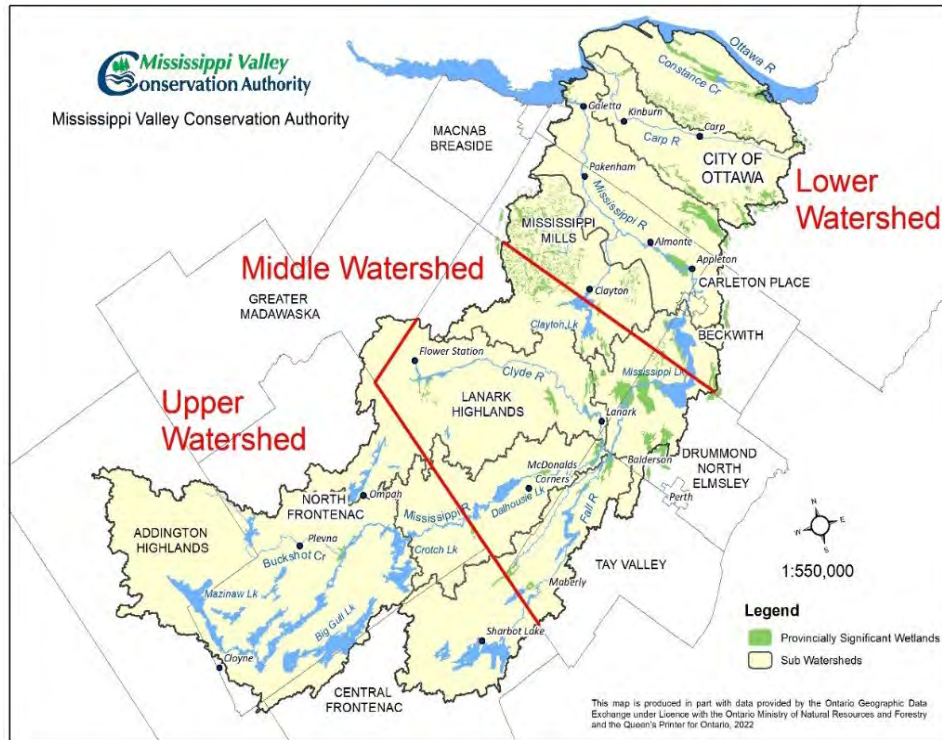
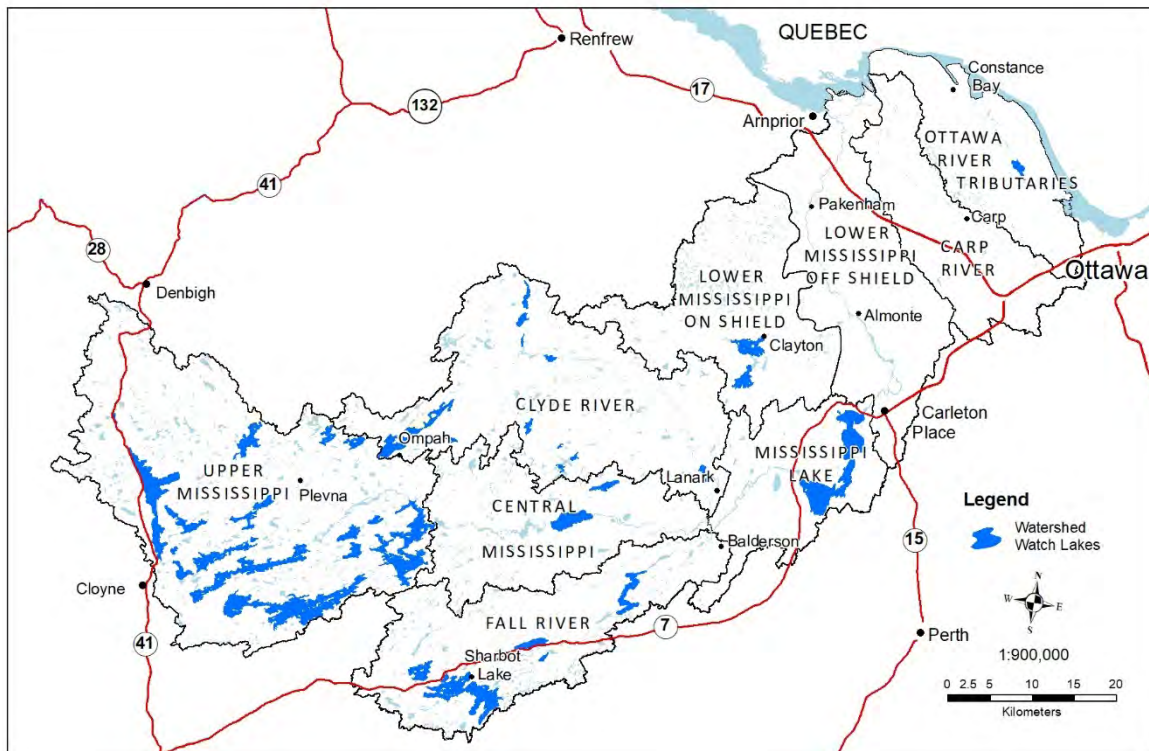


Figure 3: Subwatersheds of the Mississippi River





**Figure 4: Subwatersheds on the Carp and Ottawa Rivers**



## 4.0 Regulatory and Policy Context

Before reviewing opportunities to improve the existing monitoring program, it is important to understand the regulatory and policy context.

### 4.1 Conservation Authorities Act, 1990

The *Conservation Authorities Act* (CAA) provides for the “delivery of programs and services that further the conservation, restoration, development and management of natural resources...” To facilitate this, Section 21 of the CAA states that conservation authorities (CA) may “research, study and investigate the watershed to support the development and implementation of programs and services...” and Section 28 provides for the permitting of all development within regulated areas (hazard lands and wetlands). MVCA’s current monitoring program was developed within this context.

More recently, *Ontario Regulation 686/21* under the CAA prescribes activities that all CAs must undertake, which includes:

- **collecting and submitting samples for analysis** from wells, streams, and groundwater sites that are part of the Ministry of Environment Conservation & Parks (MECP) provincial groundwater and stream monitoring programs.
- **acting on behalf of the Ministry** of Natural Resources and Forestry (MNRF) to help ensure that planning decisions are consistent with natural hazards policies contained in the Provincial Policy Statement.

MVCA has been providing field service support to provincial monitoring programs since 1964 and compliance monitoring services since 2001. In order to fulfil these responsibilities, MVCA must ensure that it has the knowledge required to conduct reviews, which is obtained in part through monitoring, assessing, and mapping key attributes of the watershed.

The above activities are considered mandatory “Category 1” services.

### 4.2 Legislative Responsibility of Municipalities

Bill 26 and subsequent changes to the CAA and O.Reg. 596/22 place responsibility for reviewing and commenting on the natural heritage impacts of applications under the *Planning Act* exclusively with municipalities. Previously, CAs were permitted to provide comments to member municipalities using data collected via our natural systems monitoring programs.<sup>1</sup> As of January 1, 2023, it is the responsibility of municipalities to ensure that they have the data required to review and ensure compliance with natural heritage policies of the *Provincial Policy Statement, 2020* specifically:

- Section 2.1.2 “The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.”

---

<sup>1</sup> If not directly, then to the consultants of applicants.

- Section 2.2.1 That “planning authorities shall protect the quality and quantity of water” through a number of measures including: using the watershed scale to measure cumulative impacts of development, evaluating and preparing for the impacts of a changing climate to water resources, ensuring consideration of environmental lake capacity, etc.

At present, natural system monitoring programs that support the review of applications under the *Planning Act* are the following:

- Lake monitoring
- City Stream Watch inventories
- Ontario Stream Assessment Protocol (OSAP) monitoring
- Headwater monitoring
- Stream temperature monitoring
- Benthic and fish community monitoring

MVCA also integrates monitoring data that is received via Environmental Impact Studies (EIS) into its database. These reports include natural heritage data (wetland information, species present, other natural features present) and observational data on species and features on site. The data is spatially referenced in MVCA’s GIS system, with point data linked to attribute tables and is used to inform planning and regulations reviews.

Currently, these data collection and management services are funded using the General Levy. As they are used to support mandatory planning review functions of municipalities they will be considered “Category 2” programs going forward.

#### 4.3 Mississippi River Water Management Plan (MRWMP)

The *Mississippi River Water Management Plan* is a provincially approved document that sets water management objectives and the operational and monitoring obligations of those who own water control structures in the Mississippi River basin. Under the MRWMP, MVCA is required to work with MNRF and MECP to:

- Monitor and maintain spring spawning opportunities for pike, walleye and bass.<sup>2</sup>
- Monitor Walleye spawning to ensure that fisheries on Crotch Lake and at the inlet to Dalhousie Lake are protected, as much as possible, during spring operations.
- Monitor Lake Trout spawning to assess long-term impact of operating regime on populations.
- Assess spawning shoal assessment annually or bi-annually in the fall using the standard provincial Spring Littoral Index Netting (SLIN) protocol.
- Monitor the assimilative capacity of the lower river system during low flow conditions.<sup>3</sup>
- Enhance hydrometric monitoring across the watershed.<sup>4</sup>

<sup>2</sup> Spawning opportunities are managed at the dams by providing a consistent flow during spawning season. MVCA monitors for spawning periods using water temperature at gauge stations.

<sup>3</sup> This work is largely carried out by local municipalities discharging to the river, with MVCA providing review and comment on technical studies.

<sup>4</sup> Hydrometric monitoring is carried out by the Engineering Unit and was not addressed in this program review.

- Monitor socio-economic variables particularly as they relate to recreational tourism.<sup>5</sup>
- Track water-taking permits in the watershed.<sup>6</sup>
- Engage with First Nations and review impacts of fluctuating water levels wild rice beds.
- Conduct shoreline surveys to identify areas of potential damage.

All the above activities are considered mandatory “Category 1” services, however, they are largely led by the province, with MVCA activities occurring at intervals.<sup>7</sup> Clearer delineation of roles and responsibilities given the resource limitations of all three agencies is needed.

#### 4.4 MVCA Corporate Strategic Plan

MVCA’s 2021-2025 *Corporate Strategic Plan*<sup>8</sup> identifies several objectives that should influence the review and any changes to existing monitoring programs:

- Strengthen our risk analysis and management capacity to include climate change and development impacts.
- Implement priority actions identified in the *Mississippi River Watershed Plan*.
- Plan for the next phase of asset development and management.
- Demonstrate MVCA to be a trusted, client-centered, resourceful, and helpful partner.
- Strengthen relationships with municipalities and community stakeholders, First Nations, the agricultural sector, developers, not-for-profits, and academia.

#### 4.5 Mississippi River Watershed Plan

The 2021 *Mississippi River Watershed Plan* (MRWP)<sup>9</sup> was developed through extensive consultation with other levels of government and a cross-section of groups and individuals representing a broad range of interests. The Plan identifies growing concern over:

- current and future impacts of climate change
- more frequent and severe floods and droughts
- development pressure in waterfront areas
- rapid urbanization in the west end of the watershed
- impairment of water quality (i.e. warming, algae blooms, invasive species)
- impacts to natural features and systems (i.e. drying wetlands, changes in forest composition).

These stressors can have undesirable impacts on water quality, wetlands, forests and both aquatic and terrestrial ecosystems, which can impact drinking water supplies and recreational tourism.

The Watershed Plan highlighted the role that wetlands, certain forested areas, and groundwater recharge areas have in mitigating floods and droughts and building resiliency to climate change and

<sup>5</sup> This work was carried out during update of the *Mississippi River Watershed Plan* (MRWP) and will be updated with subsequent updates of the Plan.

<sup>6</sup> MECP issues and tracks these permits. MVCA used available information when updating the *Mississippi River Watershed Plan* (MRWP).

<sup>7</sup> Fish assessments such as SLIN and BsM are done by MNRF on a rotational basis.

<sup>8</sup> <https://mvc.on.ca/wp-content/uploads/2021/07/2021-2025-Corporate-Strategic-Plan.pdf>

<sup>9</sup> [https://mvc.on.ca/wp-content/uploads/2022/03/MVCA-MississippiWatershedPlan\\_Final.pdf](https://mvc.on.ca/wp-content/uploads/2022/03/MVCA-MississippiWatershedPlan_Final.pdf)



development impacts. It also recognized the value of environmental monitoring in tracking and assessing those changes and their impact on the watershed environment and communities. Appendix A - Table A provides a list of MRWP recommended actions pertaining to natural system monitoring efforts.

#### 4.6 Mississippi-Rideau Source Protection Plan

The *Mississippi-Rideau Source Protection Plan*<sup>10</sup> (MRSP) identifies several risks to municipal (and other) drinking water supplies. These can be generally divided into two types as shown in Table 1:

**Point Source:** usually site specific with a designated point of discharge that can be monitored by the owner/operator for environmental compliance and effects.

**Non-point Source:** associated with a variety of land uses where discharges are not discrete and focused, but occur over a broad area and are less easily traced and monitored.

While designed to protect municipal drinking water supplies, the MRSP risk analysis can also be applied to private individual wells and surface water intakes. Not listed above are toxicity risks to water used for consumption, bathing, and recreation arising from blue-green algae<sup>11</sup> die-off.

**Table 1: Threats to Drinking Water<sup>12</sup>**

| Point Source  | Non-point Source   |
|---|--|
| <ul style="list-style-type: none"> <li>• Waste Disposal Sites</li> <li>• Sewage Works<sup>13</sup></li> <li>• Road Salt and Storage of Snow</li> <li>• Dense Non-aqueous Phase Liquids (DNAPLs) and Organic Solvents</li> <li>• Fuel</li> <li>• Aircraft De-icing</li> <li>• Aquaculture</li> </ul> | <ul style="list-style-type: none"> <li>• Commercial Fertilizer</li> <li>• Pesticide</li> <li>• Outdoor Livestock Areas (<i>e coli</i>)</li> <li>• Agricultural Source Material (ASM)</li> <li>• Non-agricultural Source Material (NASM)</li> <li>• Transportation Corridors</li> </ul> |

<sup>10</sup> [https://www.mrsourcewater.ca/images/Documents/Mississippi-Rideau-Source-Protection-Plan/Text/Mississippi-Rideau\\_SPP.pdf](https://www.mrsourcewater.ca/images/Documents/Mississippi-Rideau-Source-Protection-Plan/Text/Mississippi-Rideau_SPP.pdf)

<sup>11</sup> Cyanobacteria.

<sup>12</sup> These pollutants can be released at a single point or over wide areas. This table is intended to show the most likely source within the watershed.

<sup>13</sup> This could include septic systems and pit latrines.

## 5.0 MVCA's Current Monitoring Program

MVCA's monitoring, reporting and stewardship programs currently focus on water quality. The current monitoring program collects data on lake, stream and river surface water quality indicators through a variety of standardized programs. In the west shield area, the focus is largely on lake monitoring, and in the eastern lowlands the focus is on stream monitoring, with additional monitoring occurring within the City of Ottawa under a special levy. The remainder of the programs are applied throughout MVCA's jurisdiction.

Existing monitoring and reporting services are summarized in Tables 2 and 3, with existing sites illustrated in Figure 5. The information collected through MVCA's monitoring program is shared with provincial, federal, academic and public partners.

### 5.1 Staff Expertise and Resources

MVCA has a full-time Aquatic Biologist who designs, oversees, and leads delivery of the Natural Systems Monitoring Program. Our biologist is certified to conduct wetland evaluations, electrofishing, benthic and fish collections, and has an Ontario Boating License.

Each year, at least two summer students are hired from May to August to support seasonal data collection. When available, MVCA planning and regulations technicians provide monitoring program support, particularly during the shoulder seasons. For health and safety reasons, all monitoring site visits are carried out by two people (except to download PGMN dataloggers, or when meeting with lake steward volunteers).

MVCA has a canoe as well as a boat with outboard motor to collect lake samples, and regularly uses the following field sampling and analysis equipment:

- Digital probes: to assess basic surface water chemistry variables (pH, Dissolved Oxygen, Temperature, Conductivity, Turbidity)
- Digital dissolved oxygen and water temperature sensor: assess lake fish habitat conditions
- Secchi disk: determine lake water clarity and colour
- Kremmer bottle: collecting deep discrete lake samples
- Backpack electrofisher: assess fish communities in wadable streams
- D-nets: collect benthic community samples

The Authority also has a lab that is capable of storing water samples before they are sent to accredited chemistry labs for analysis. Biotic samples (fish and invertebrates) can be stored until the off season for inhouse analysis.

Testing for the following water chemistry parameters must be sent to a private lab:

- Total Phosphorus
- Chlorides
- Metals

MECP pays for analysis of water samples collected from 14 sites (12 within MVCA and 2 that are outside of CA jurisdiction but near existing MVCA sites) under the PWQMN, and 9 sites under the PGMN programs. MVCA pays for all other analyses. In 2022, annual laboratory fees for external analyses was \$28604.24.

MVCA has also purchased 5 Water Ranger Water Testing Kits that are distributed each year to participating lake association volunteers. These kits allow for more regular analysis of the following parameters:

- Secchi depth
- Surface dissolved oxygen concentrations
- Temperature
- Conductivity
- Taking notes on invasive species or potential algae blooms

Table 2: Current Monitoring Programs

| Type   | Program<br><i>Data collected</i>   | Program<br>Partners | Reg.<br>Cat. <sup>14</sup> | Benefits   |
|--------|--|---------------------|----------------------------|--|
| Stream | <b>Provincial Water Quality Monitoring Network (PWQMN)</b><br><i>Water Chemistry</i>   | MECP                | 1                          | <ul style="list-style-type: none"> <li>• Long term record of robust, consistent data at key locations across watershed.</li> <li>• Consistent protocol across province.</li> <li>• Data useful for tracking long term changes, scientific research and modelling, and is widely used.</li> <li>• Province pays for chemical analyses, shipping and supplies the YSI sensor.</li> </ul> |
|        | <b>City Baseline Water Quality (CBLWQ)</b><br><i>Water Chemistry</i>   | City of Ottawa      | 2                          | <ul style="list-style-type: none"> <li>• Long term record of robust, consistent data at key locations in City of Ottawa.</li> <li>• Consistent protocol across the City.</li> <li>• Data useful for tracking long term changes, scientific research and modelling.</li> <li>• The City pays for staff time, mileage and lab fees.</li> </ul>   |
|        | <b>MVCA WQ</b><br><i>Water Chemistry</i>   | None                | 1                          | <ul style="list-style-type: none"> <li>• Long term, continuous record of data that is easily merged with PWQMN data.</li> <li>• Locations chosen to fill gaps in PWQMN.</li> <li>• Data useful for tracking long term changes, scientific research and modelling, and is widely used.</li> <li>• Cost effective as an add-on to PWQMN (MVCA covers lab fees).</li> </ul>               |
|        | <b>Ontario Stream Assessment Protocol (OSAP)</b><br><i>Aquatic vegetation, fish, benthic macroinvertebrates and land use</i> | MNRF, FWIS          | 2                          | <ul style="list-style-type: none"> <li>• Level of detail provides for stream characterization.</li> <li>• Data useful for long term monitoring of trends, and informing planning and regulations reviews.</li> <li>• Standardized protocol allowing assessment within a broad provincial context.</li> </ul>   |
|        | <b>City Stream Watch</b><br><i>Land use, riparian and stream characteristics</i>   | RVCA, SNCA          | 2                          | <ul style="list-style-type: none"> <li>• Provides for detailed record and assessment of stream conditions within urban areas.</li> <li>• Associated reporting useful for planning/development review.</li> <li>• Excellent information to target stewardship efforts.</li> <li>• Cost effective to implement if done with community volunteers.</li> </ul>                             |

<sup>14</sup> Regulatory Category per Section 21 of the *Conservation Authorities Act* and *O.Reg 686/21*.

| Type | Program<br><i>Data collected</i>                                      | Program<br>Partners           | Reg.<br>Cat. <sup>14</sup> | Benefits   |
|------|---|-------------------------------|----------------------------|--|
|      | <b>Headwaters</b><br><i>Morphology and flow characteristics</i>       | RVCA,<br>FWIS                 | 2                          | <ul style="list-style-type: none"> <li>• Provides seasonal details for habitat classification of stream reaches.</li> <li>• Supports the implementation of management recommendations through the development process.</li> <li>• Informs planning and regulations reviews.</li> </ul>   |
|      | <b>Stream Temperature Monitoring</b>                                  | MRNF,<br>FWIS                 | 2                          | <ul style="list-style-type: none"> <li>• Easy and cost effective to implement.</li> <li>• Data needed for stream classification of cool and cold-water systems and supports the protection of sensitive habitats.</li> <li>• Potential indicator of changes in water quality and/or climate change impacts.</li> <li>• Informs planning and regulations reviews.</li> </ul>  |
| Lake | <b>Lake Monitoring</b><br><i>Parameters related to trophic status</i> | Lake Stewards<br>(volunteers) | 2                          | <ul style="list-style-type: none"> <li>• Focus is on populated main stem lakes, secondary lakes are representative of sub catchments, and highly sensitivity lakes.</li> <li>• Beneficial for observing general trends in lake trophic status.</li> <li>• Program and data are greatly valued by lake communities.</li> <li>• A primary tool to support lake community education and outreach.</li> <li>• Informs planning and regulations reviews.</li> </ul> |
|      | <b>Seine Netting</b><br><i>Near shore fish population</i>             | Lake Stewards                 | 3                          | <ul style="list-style-type: none"> <li>• Fills data gaps on the presence of nearshore non-sport fish species.</li> <li>• Program and data are valued by lake communities.</li> <li>• A tool to support lake community education and outreach.</li> </ul>   |
|      | <b>Lake Water Temperature</b>   | None                          | 1                          | <ul style="list-style-type: none"> <li>• Easy and cost effective to implement.</li> <li>• Potential indicator of changes in water quality and/or climate change impacts.</li> <li>• Program and data are greatly valued by lake communities.</li> </ul>  |
|      | <b>Algae Monitoring</b><br><i>Incidental observations</i>             | None                          | 3                          | <ul style="list-style-type: none"> <li>• Important information where there is little current or historic documentation of algae.</li> <li>• Potential indicator of changes in water quality and/or climate change impacts.</li> <li>• Information of interest to waterfront communities/ residents.</li> <li>• Easy and cost effective to implement.</li> </ul>  |

| Type             | Program<br><i>Data collected</i>  | Program<br>Partners | Reg.<br>Cat. <sup>14</sup> | Benefits   |
|------------------|---|---------------------|----------------------------|--|
| Groundwater      | <b>Provincial Groundwater Monitoring Network (PGMN)</b><br><i>Water level and chemistry</i> | MECP                | 1                          | <ul style="list-style-type: none"> <li>• Developing a long-term record at key locations across watershed.</li> <li>• Consistent protocol across province.</li> <li>• Data useful for tracking long term changes, and scientific research and modelling.</li> <li>• Province funded (except MVCA staff time).</li> <li>• Potential indicator of changes in water quality and/or climate change impacts.</li> <li>• Provides some data where there is an overall lack of groundwater information.</li> </ul> |
| Invasive Species | <b>Invasive Species Hit Squad</b><br><i>Incidental observations</i>                         | OFAH                | 3                          | <ul style="list-style-type: none"> <li>• Incorporates community education/outreach events.</li> <li>• Potential indicator of changes in water quality and/or climate change impacts.</li> <li>• Information of interest to waterfront communities/residents.</li> <li>• OFAH funds summer student wages.</li> </ul>  |

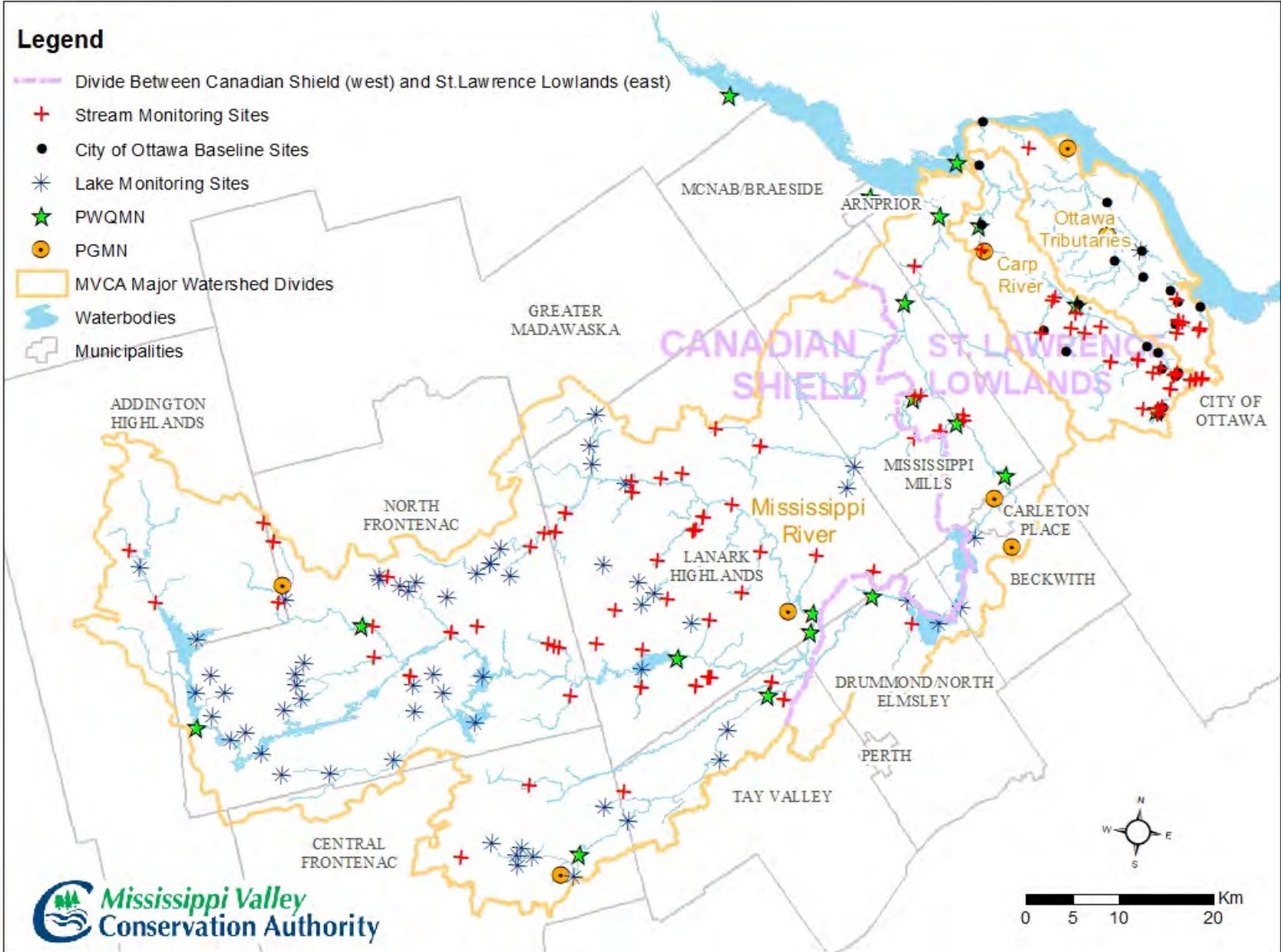
Table 3: Current Reporting Programs

|  | Frequency                                   | Data Reported         | Source of Information                                       | Scale   | Product Format and Benefits   |
|--|---|-----------------------|---|---|---|
| <b>Watershed Report Card</b>   | Every five years                            | Surface Water Quality | PWQMN, CBLWQ  | Entire watershed area presented by subwatershed           | <ul style="list-style-type: none"> <li>• A watershed scale report produced every 5 years that grades the state of the watershed using five key indicators (surface water quality, wetland cover, forest cover, riparian cover and lake health) using a province-wide template and grading system.</li> <li>• Summary pamphlet plus a full report (approx. 40 pg.) using standardized Conservation Ontario template.</li> <li>• Useful for broadly raising awareness with an easy to read document that is well promoted through Conservation Ontario and all of the CAs.</li> <li>• Standardized grading allows for all 36 CAs to measure watershed conditions relative to each other.</li> </ul> |
|  |   | Groundwater Quality   | PGMN  |   |   |
|  |   | Forest Cover          | ArcMap GIS Data   |   |   |
|  |   | Riparian Cover        | ArcMap GIS Data   |   |   |
|  |   | Wetlands              | ArcMap GIS Data   |   |   |
|  |   | Lake Conditions       | Lake Monitoring   |   |   |
| <b>Integrated Monitoring Reports (Mississippi River Subwatersheds)</b> | One report per year on a five-year rotation | Water Quantity        | Stream flow and staff gauges, rain gauges, snow course data | Subwatershed (usually report on 2 subwatersheds per year) | <ul style="list-style-type: none"> <li>• Sub-watershed scale reports produced annually that are monitored on a 5-year rotation</li> <li>• Reports report on lake and stream data with each year focusing on a single subwatershed. Presented as ~40-page report.</li> <li>• Provides a good snapshot of both overall subwatershed conditions as well as lake level results.</li> <li>• Provides some additional assessment of other conditions, such as seasonal weather and flow conditions that may have influenced data results.</li> </ul>  |
|  |   | Water Quality         | Lake Monitoring   |   |   |
|  |   | Stream Assessments    | OSAP  |   |   |
| <b>City Stream Watch Reports</b>                                       | One report per                              | Stream Morphology     | Macro Stream Assessment                                     | Report by stream  |   |

|                                       | Frequency                         | Data Reported | Source of Information    | Scale     | Product Format and Benefits   |
|---------------------------------------|-----------------------------------|---------------|--------------------------|-----------|---|
| <b>(City of Ottawa Subwatersheds)</b> | catchment on a five-year rotation |               | Data                     | catchment | <ul style="list-style-type: none"> <li>• Subwatershed condition assessments of stream conditions in urban areas and future expansion areas, which are monitored on a 5-year rotation</li> <li>• Presented as 15 – 20-page report/catchment.</li> <li>• Provides information used to support review of planning applications.</li> <li>• Excellent tool for targeting stewardship efforts within the City of Ottawa.</li> <li>• Designed so that volunteers can be recruited to assist in monitoring, providing for education and outreach opportunities.</li> </ul> |
|                                       |                                   | Fish          | Fish Sampling Data, OSAP |           |   |
|                                       |                                   | Benthics      | OBBN Protocol            |           |   |
|                                       |                                   | Temperature   | OSAP                     |           |   |



Figure 5: Existing Monitoring Sites (2022)



## 6.0 Other Natural System Monitoring in the Watershed

The following sections summarize monitoring programs of other organizations.

### 6.1 Facilities Monitoring

Point source water and air withdrawals and discharges are monitored by facility<sup>15</sup> owners and operators in accordance with their provincial licenses. Monitoring programs usually focus on planned withdrawals from ground and surface water, and discharges to ground or surface following a prescribed treatment process. They are intended to track compliance, identify incidents of non-compliance, and assess short and long-term environmental impacts. These data are not usually made available to the public unless prescribed by a license or part of a Corporate Environmental, Social and Governance (ESG) program. Water quality data is available from the Town of Carleton Place, Mississippi Mills, and City of Ottawa to support delivery of its mandate. These data provide detailed point-source bio-chemistry and other analyses on an almost continuous basis, but are not representative of the watershed.

### 6.2 Natural System Inventories and Monitoring for Land Development

Most approval agencies require Environmental Impact Statements (EIS) or Environmental Assessments (EAs) to be completed as part of their planning and review processes. Inventory data are largely obtained by specialists under contract to the applicant, provide a snapshot in time, and do not always capture seasonal differences and variations over time. Some consultants contact local CAs for more detailed and longitudinal data. Data contained in EIS and EAs are provided to approval agencies review, but are not always consolidated into a comprehensive data based for use by others. MVCA records key EIS findings to help build a composite understanding of proposals, mitigating measures, and impacts in areas of growth.<sup>16</sup>

### 6.3 Other Conservation Authority Programs

As noted previously, all 36 CAs participate in MECP's Provincial Water Quality Monitoring Network and the Provincial Groundwater Monitoring Network programs. Table 4 summarizes the scope of other monitoring programs carried out by a selection of CAs surveyed for this report.

MVCA consults with other CAs for program expertise and support as needed. By using similar protocols, CAs are able to provide their municipalities with comparable data and information. CA programs vary in the scope and focus due to differences in local landscapes, priorities, and resources.

---

<sup>15</sup> For example, a sewage treatment plant, lumber mill, gravel pit, and plant manufacturing plant.

<sup>16</sup> The file number and report author are recorded so more detail can be obtained if required.

**Table 4: Scope of CA Monitoring Programs**

| <b>Eastern Ontario Conservation Authorities</b> | <b>PWQMN</b> | <b>PGWN</b> | <b>City Baseline</b> | <b>Other W. Qual</b> | <b>Lakes</b> | <b>Shorelines</b> | <b>City Stream Watch</b> | <b>Stream Benthics</b> | <b>Stream Fish</b> | <b>Invasive Species</b> |
|---|--------------|-------------|----------------------|----------------------|--------------|-------------------|--------------------------|------------------------|--------------------|-------------------------|
| Rideau Valley                                   | Y            | Y           | Y                    |                      | Y            |                   | Y                        | Y                      | Y                  | Y                       |
| South Nation                                    | Y            | Y           | Y                    |                      |              |                   | Y                        | Y                      | Y                  | Y                       |
| <b>MVCA</b>                                     | <b>Y</b>     | <b>Y</b>    | <b>Y</b>             |                      | <b>Y</b>     |                   | <b>Y</b>                 | <b>Y</b>               | <b>Y</b>           | <b>Y</b>                |

#### 6.4 Provincial and Federal Agency Programs

Natural resource management is a provincial responsibility under Canada's *Constitution Act*, with primary responsibility for resource monitoring and assessment in Ontario residing with the Ministry of Natural Resources & Forestry (MNR). In addition to the PGMN and PWQMN programs delivered by conservation authorities, the province directly<sup>17</sup> and indirectly<sup>18</sup> monitors fish<sup>19</sup>, wildlife and habitats for the purpose of setting harvest limits and land management objectives.<sup>20,21</sup>

Provincial broad-scale fish monitoring is to be carried out at a selection of lakes once every five years, however, coverage is sparse in MVCA's jurisdiction.<sup>22</sup> The province also prepares Forest Management Plans<sup>23</sup> for crown lands including the Mazinaw-Lanark forest.<sup>24</sup> These plans provide data regarding the condition of a forest and how it will be harvested and replanted over time.

At the federal level, monitoring and research are used to inform the drafting and update of federal policies and regulations to protect and conserve Canadian species and habitats from toxic substances, diseases, unsustainable commercial practices, climate change and other threats.<sup>25</sup> Environment & Climate Change Canada (ECCC) has primary responsibility, with other federal departments and agencies often responsible for self-monitoring.

<sup>17</sup> <https://www.ontario.ca/page/broad-scale-monitoring-program#section-1>

<sup>18</sup> E.g. <https://www.lioapplications.lrc.gov.on.ca/fishonline/Index.html?viewer=FishONLine.FishONLine&locale=en-CA>

<sup>19</sup> E.g. [https://www.publicdocs.mnr.gov.on.ca/fwsb/BsM/BsM-EN-Mississippi\\_Lake-FMZ18-Cyc03-18-4082-49908/BsM-EN-Mississippi\\_Lake-FMZ18-Cyc03-18-4082-49908.html](https://www.publicdocs.mnr.gov.on.ca/fwsb/BsM/BsM-EN-Mississippi_Lake-FMZ18-Cyc03-18-4082-49908/BsM-EN-Mississippi_Lake-FMZ18-Cyc03-18-4082-49908.html)

<sup>20</sup> <https://www.ontario.ca/page/natural-resources-science-and-research>

<sup>21</sup> <https://www.ontario.ca/page/natural-heritage-information-centre>

<sup>22</sup> This project considers the largest of MVCA's lakes.

<sup>23</sup> [https://nrp.mnr.gov.on.ca/s/fmp-online?language=en\\_US](https://nrp.mnr.gov.on.ca/s/fmp-online?language=en_US)

<sup>24</sup> [https://nrp.mnr.gov.on.ca/s/published-submission?language=en\\_US&recordId=a0z3g000000ofS9AAI](https://nrp.mnr.gov.on.ca/s/published-submission?language=en_US&recordId=a0z3g000000ofS9AAI)

<sup>25</sup> <https://www.canada.ca/en/environment-climate-change/services/wildlife-research-landscape-science/research-topics.html>

The Mississippi Lake National Wildlife Area & Bird Sanctuary is the only federal site in MVCA's jurisdiction where monitoring is known to occur.<sup>26</sup> In 2022, Agriculture & Agri-food Canada carried out a herbarium inventory at MVCA's Morris Island Conservation Area.

## 6.5 Indigenous Knowledge

The Indigenous Peoples of Ontario hold valuable knowledge about the Watershed and may be able to help enhance the data we have collected and to assist in data interpretation. For example, in 2009 Plenty Canada assisted with an American Eel assessment by providing traditional knowledge and local insights. Plenty Canada has also recently undertaken projects to map Wild Rice in parts of the watershed.

When work began on the MRWP, MVCA undertook to prepare an Indigenous Engagement Plan (IEP) under the guidance of Cambium Indigenous Professional Services (CIPS). MVCA, through CIPS, will engage with Indigenous Communities/groups to discover any information sharing and potential collaborations in monitoring of environmental conditions. As initiatives are identified, MVCA will recommend amendments to the Natural Systems Monitoring Plan to the Board as well as seek funding to support these initiatives.

## 6.6 Other Organizations

### 6.6.1 Local universities

Both Carleton University and L'Université d'Ottawa have carried out short-term studies of specific species/habitats at MVCA properties, including migratory shorebirds, trilliums, dragonflies and turtles in recent years. There is occasionally a challenge obtaining final reports due to the timeframes involved to finalize projects.

### 6.6.2 Ontario Power Generation (OPG)

OPG sponsors bio-inventories at its sites, which in 2022 included a bio-blitz at the Morris Island Conservation Area. These data represent a single point in time, and are good for identifying the species present on the day, but do not account for overall use of a site over the course of a year or throughout their lifecycles.

### 6.6.3 Nature Conservancy of Canada, Ducks Unlimited, Ottawa River Keeper

The following is a summary of programs known to occur within MVCA's jurisdiction.

- Nature Conservancy of Canada provides resources of pollinator habitat creation/restoration.
- Canadian Wildlife Federation also provides pollinator habitat resources, as well as turtle monitoring and habitat creation support.

---

<sup>26</sup> They will be monitoring the amphibian populations and other habitat variables in 2023. This is a follow up to the 2021 season of their Protected Areas Wetland Monitoring Program.

- Ducks unlimited provides wetland restoration/creation advice and funding programs. They often work directly with private landowners in our area.
- Ottawa River Keeper focuses on citizen science collection of data along the full Ottawa River Catchment. We have partnered on sharing water temperature monitoring efforts and share data where our zones overlap. Our monitoring programs do not overlap as we do not monitor the sites they do.

#### 6.6.4 Volunteer Monitoring Programs

The following is a summary of volunteer programs known to occur within MVCA's jurisdiction.

- Water Rangers is a citizen science-based program focused on monitoring surface water quality (streams and lakes) with simple parameters that can be done by volunteers onsite. MVCA promotes the program to lake communities and lends out equipment each season. Where in place, volunteers are able to gather data at more frequent intervals than MVCA staff.<sup>27</sup> Water Rangers has been adopted by several but not all lake associations.
- MECP's Lake Partner Program<sup>28</sup> works with lake stewards who take an annual spring water sample for total phosphorus analysis at the MECP lab. The volunteers also take monthly Secchi depth readings. This program includes lakes that fall outside of MVCA's lake program, but has gaps in that it only samples nutrients in the spring and does not include a dissolved oxygen-water temperature profile analysis.
- Watersheds Canada's volunteer "Love Your Lake" programs provides waterfront property owners with shoreline assessments and recommendations.

The risk of becoming reliant on volunteer programs is a lack of year over year consistency due to waning interest, variable capacity, and volunteer aging out and burnout.

#### 6.6.5 i-Naturalist, eBird, Eddmaps

Professional and amateur naturalists are encouraged to share their observations on websites such as I-Naturalist, eBird, Eddmaps etc. These data are generally *ad hoc*, variable in data quality, geographic and temporal representation, can show strong "interest" bias, and are limited by the skills of the participants. For these reasons, they are not a reliable source of consistent data for localized analysis and decision making.

---

<sup>27</sup> MVCA staff monitor sites on a rotating basis, i.e. not every year; and will visit the site 3 times/year to support seasonal analysis.

<sup>28</sup> <https://www.ontario.ca/document/lakeshore-capacity-assessment-handbook-protecting-water-quality-inland-lakes/monitoring-lake-water-quality>

## 7.0 Program Needs, Goals and Objectives

Based upon a review of the regulatory and operational needs of MVCA, municipal partners<sup>29</sup> and the information requested by residents and consultants over time, the following is a summary of the questions to be answered by MVCA's Natural System Monitoring and Reporting Program.

- What impacts are water control structures having on natural heritage features and functions and are mitigation measures working?
- What are baseline natural heritage conditions across the three watersheds, and how are conditions changing over time?
  - Water quality (surface and ground water for domestic and recreational use)<sup>30</sup>
  - Aquatic and hydrophilic species (native and invasive)
  - Lakes and tributaries (headwaters and those experiencing growth pressures)
  - Forests and wetlands
- What are the potential causes of impairment where observed?
- How is climate change affecting natural heritage features and functions?
- What areas require targeted stewardship support and educational outreach?
  - To protect valued natural heritage features and functions.
  - To rehabilitate and restore degraded habitats.
- What impact do mitigation, stewardship, and compensation measures have in protecting existing landscapes, restoring impaired habitats, and replacing destroyed habitats?

Appendix 1 identifies how MVCA's current program and other monitoring programs address these requirements. This analysis distinguishes between (P)primary reliable data sources, and (S)secondary incidental data sources. Review of this table demonstrates the need for MVCA to continue its monitoring and reporting program, and to consider enhancing efforts to address information gaps.

### 7.1 Program Goals

Recommended goals of the Natural System Monitoring & Reporting Program are the following:

1. Provide municipal planners, MVCA staff, and other user groups with reliable and geographically representative baseline natural system data to support short and long-term decision-making.
2. Identify and monitor the condition of sensitive natural features and functions, and vulnerable

---

<sup>29</sup> To administer approvals under the *Planning Act*, 1990 in accordance with the *Provincial Policy Statement*, 2020

<sup>30</sup> Testing of individual supplies is the responsibility of Public Health. MVCA's role is confined to identification of trends in water quality and potential risks to the supply.



waterbodies.

3. Identify gaps in data sets and address gaps where resources allow.
4. Conduct specialized studies to address questions of concern (re: specific locations, species, or pollutants) where resources allow or on a cost recovery basis.
5. Analyze and report on current conditions, trends, threats, and opportunities to mitigate negative impacts on natural heritage features and functions.
6. Assess the efficacy of mitigation, stewardship and compensation measures.
7. Consolidate MVCA data with data from other sources to serve as the repository for natural heritage information within our jurisdiction.
8. Make data, meta data, and analyses easily accessible for all audiences and user groups.

## 7.2 Program Objectives

Recommended objectives of the Natural System Monitoring & Reporting Program are the following:

1. Use standardized protocols for monitoring, data management, and reporting that are consistent with partner agencies.
2. Deliver mandatory monitoring under the *Conservation Authorities Act*, namely the PWQMN and PGMN programs of MECP and tracking of wetland<sup>31</sup> to fulfill Section 28 requirements.
3. Review monitoring requirements of the *Mississippi River Water Management Plan* with the province to confirm roles and responsibilities and expectations for effects monitoring of MVCA and other water control infrastructure. Adjust monitoring program, if required to address program gaps.
4. Optimize delivery of baseline water quality, habitat, and species monitoring programs to address geographic and temporal variability, include sensitive and vulnerable areas, and identify changes and trends over time.
5. Identify and determine means for addressing data gaps.
6. Develop a program for assessing the effectiveness of mitigation and compensation measures and MVCA's stewardship program, and integrate into annual workplans as resources permit.
7. Review and prioritize monitoring needs of the *Mississippi River Watershed Plan*, and integrate into annual workplans as resources permit.
8. Conduct analysis and reporting at the watershed, subwatershed and stream levels, and across

---

<sup>31</sup> Aerial photography is used to verify the presence, evolving shape, and destruction of wetlands over time.

geographic regions: upper, middle and lower watershed.

9. Share MVCA data, and obtain partner organization data including provincial and federal agencies, academia, and non-government organizations (e.g. lake associations).
10. Collaborate monitoring efforts with other organizations to strengthen collective capacity, and leverage funding and cost-sharing opportunities.
11. Encourage community participation and use citizen science-based volunteer monitoring to increase MVCA's monitoring capacity, and maintain and enhance community relationships, stewardship, education and outreach.
12. Continue and enhance public education and the health of the watershed and what they can do as stewards of the watershed.



## 8.0 Current Program Challenges and Opportunities

A number of challenges have influenced delivery of the monitoring program in recent years. This section reviews the challenges, opportunities to address them and discusses ways to optimize monitoring across the watershed to ensure efficient use of limited resources to the areas of greatest need. Key challenges can be grouped into the following themes, which are reviewed in Tables 5, 6 and 7 below.

- Watershed size and diversity
- Limited staff and other resources
- Data management and use

**Table 5: Watershed Size and Diversity**

| Key Considerations & Challenges  | Objectives  | Opportunities & Solutions  |
|--|---|--|
| <p>Resources spread over a large and geographically diverse watershed.</p> <p>Development pressures concentrated in urban areas in the east, and waterfront areas in the west.</p> <p>Limited current monitoring within urban/developed areas outside of the City, (i.e. Carleton Place, Mississippi Mills and Beckwith).</p> <p>Hundreds of lakes in west – need to be strategic in determining which to monitor and the frequency.</p> <p>Overall lack of surface water quality and other monitoring in agricultural areas.</p> <p>Overall lack of groundwater quality data – implications in built up areas relying on private wells and septic systems.</p> <p>Carp Watershed and tributaries to the east show poor water quality results compared to the rest of the watershed.</p> <p>Forest cover (overall cover and interior forest cover) meets environmental targets<sup>32</sup> in the west watershed but are at or below targets in the east.</p> | <p>Provide <u>long term</u> data sets from core representative sites.</p> <p>Focus monitoring to where it is most needed.</p> <p>Use standardized protocols.</p> <p>Collaborate with other organizations.</p> <p>Fill monitoring gaps where needed and reduce duplication/redundancy.</p> | <p>Priority on PWQMN, CBLWQ, and MVCA’s Lake Monitoring to: provide a long-term record of data from core sites, enable collaboration, and use standardized protocols (<i>on-going</i>).</p> <p>Assess monitoring needs specific to differing geography (<i>new</i>, <a href="#">Appendix A Figure 1 and Table 2</a>).</p> <p>Lake monitoring was already revised to optimize sampling frequency concentrating on larger more developed lakes. There may be scope for further revision (<i>on-going</i>).</p> <p>Assess viability of additional water quality monitoring focused in agricultural areas (<i>new</i>).</p> <p>Assess groundwater data needs and solutions to augment data where need is identified (<i>new</i>).</p> <p>Support frequent updates to mapping/GIS products to enable assessment of forest and wetland cover, through partnerships and external funding opportunities (<i>on-going</i>).</p> |

<sup>32</sup> Based on Environment Canada “How Much Habitat is Enough” environmental targets.

**Table 6: Staff and Resources**

| Challenges & Considerations   | Objectives  | Opportunities & Solutions   |
|---|---|---|
| <p>Monitoring is coordinated by the staff biologist and carried out with the help of 1 to 2 summer students, and other staff as needed based on availability.</p> <p>Reliance on external funding to hire summer students – amount is not guaranteed from year to year.</p> <p>Reliance on sufficient core staff to complete the spring and fall work when students are not available (min. two required) with limited full-time staff trained in monitoring protocols.</p> <p>Wetland, Forest, and Riparian cover components of the Watershed Report Card are dependent on availability of updated mapping which is expensive to produce and analysis requires GIS time/expertise.</p> | <p>Efficient and cost-effective delivery of programs.</p> <p>Collaboration and partnerships to share resources.</p> | <p>Cross-train one or more full-time staff on monitoring protocols to provide assistance during peak periods and support data management during the off-season.</p> <p>At times, MVCA's budget has supported hiring a monitoring technician to provide support to both monitoring and planning and regulations (periodic).</p> <p>Seek additional external funding/grants to support existing and new monitoring initiatives (on-going/new).</p> <p>Seek additional partnership arrangements to offset costs (new).</p> |

**Table 7: Data Management and Use**

| Challenges & Limitations   | Objectives   | Opportunities & Solutions  |
|--|--|--|
| <p>Focus has been on the collection of data, with less time spent on the analysis, reporting and sharing of the data.</p> <p>Data is managed through MVCA's WISKI system (program shared with other CAs). Requires significant staff training and ongoing use to be used efficiently.</p> <p>Continued loss of in-house WISKI expertise through staff turn-over.</p> | <p>Support land use planning and decision making.</p> <p>Support the actions of the Mississippi River Watershed Plan.</p> <p>Enable effective targeting of stewardship and restoration efforts.</p> <p>Support public education and outreach.</p> <p>Share data with broad range of partners (listed under 3.3).</p> | <p>Increased emphasis on the analysis, use, sharing and reporting of the data collected (<a href="#">ongoing/new</a>).</p> <p>Standardize data storage formats and ensure staff training in use of WISKI (<a href="#">ongoing, through use of WISKI?</a>).</p> <p>Make monitoring data publicly accessible through suitable formats (<a href="#">new</a>).</p> <p>Standardized reporting formats to provide the public and other agencies with easily comparable data (<a href="#">on-going</a>).</p> <p>More emphasis on volunteer-based citizen science programs, to heighten community interest and broaden the collection of baseline information (<a href="#">new</a>).</p> |

### 8.1 Geographic Priorities

As described previously, MVCA's watersheds have marked physiographic differences in landform and associated ecosystems. This means that it is neither beneficial nor practical to have all monitoring programs applied equally across the MVCA's jurisdiction. To help address this, a geographic assessment of the pressures, monitoring priorities and identified gaps in monitoring is presented in Appendix 2. The assessment is based on dividing the watershed into the upper, middle, and lower watershed as described in Section 3.

Monitoring priorities in each area should be determined according to the local landscape, pressures and needs. Sites are selected based on program applicability, property access permission, proximity to the road network and providing representation across the subwatersheds.

### 8.2 Partnerships and Funding

Funding for MVCA's monitoring programs and initiatives comes from the following sources:

- MVCA general budget (municipal levy).
- Federal Government – Canada Summer Jobs grant to cover summer student wages (not guaranteed, variable from year to year).
- Ontario Federation of Anglers and Hunters (OFAH) – funds hiring of summer student through Invasive Species Hit Squad program.

- Other special grants and funding opportunities are also periodically sought to support specific projects (ex. updated mapping products such as DRAPE air photography and more recently LiDAR).

Several monitoring programs are carried out by MVCA with financial, technical and other in-kind support from partner agencies such as the Province of Ontario (PWQMN, PGMN) and the City of Ottawa (CBLWQ). MVCA has also had collaborative relationships with universities, many lake associations, and a variety of stewardship organizations. These collaborations become increasingly important as Provincial resources and services continue to diminish at the local level.

Enhanced partnering opportunities to be explored include the following:

- **Conservation Authorities:**
  - Review management of volunteer programs
  - Review approach to determining lake carrying capacity thresholds
  - Review data management and reporting tools
- **Municipalities:**
  - Identify preferred methods of obtaining baseline data for plan reviews
  - Provide regular reporting of findings for each municipality
  - Identify particular issues of concern for potential targeted study
- **Environmental Organizations and Citizen Science Programs:**
  - Continue to promote and facilitate participation in 3<sup>rd</sup> party programs
  - Enhance feedback loops to volunteers
- **Academia:**
  - Identify information gaps and approach local universities regarding specific study needs and partnering opportunities, such as:
    - Lakes at greatest risk due to climate change
    - Invasive species presence and management
    - Algae risks and management

## 9.0 Program Recommendations

### 9.1 Monitoring Activities

MVCA will continue to place priority and focus on surface water quality monitoring through the implementation of existing program based on their value in providing robust long-term data that supports municipal planning work support of related studies and other research. Groundwater monitoring will be limited to participation in provincially managed program in support of MVCA's

Source Protection responsibilities.

### Category 1

- **Provincial Water Quality Monitoring Network – PWQMN**
- **Provincial Groundwater Monitoring Network - PGMN**

### Category 2

- **Stream and Lake Monitoring Program<sup>33</sup>**, recognizing its primary value in identifying general trends over time and supporting municipal planning, consultant studies, and public education and outreach. It would be beneficial to assess data usage and undertake another review of the number and frequency of lakes being sampled.
- **Stream Watch Program** recognizing its value in providing detailed stream condition data in areas experiencing growth and urban pressures in support of municipal planning, consultant studies, public education and outreach, and design of MVCA stewardship programs.

### Category 3

The following are monitoring activities are carried out on an opportunistic basis, have negligible incremental costs, and provide enhanced information regarding changes occurring in the watershed, and support the interests and work of lake associations.

- Continue **Stream Temperature and Lake Temperature Monitoring** programs as easy and cost-effective means of providing data that is relevant to assessing climate change impacts.
- Continue to implement the **Invasive Species Hit Squad** subject to funding from OFAH.
- Continue **Algae Monitoring** on an opportunistic basis in partnership with lake associations.
- **Seine Netting** Program is considered low priority and will only continue where resources permit.

## 9.2 Monitoring Approach and Tools

The following actions are recommended to enhance the quality of the

- Review monitoring requirements set out in the **Mississippi River Water Management Plan** with provincial agencies and confirm scope of monitoring to be carried out by MVCA.
- Undertake a program priority assessment of the **Ontario Stream Assessment Protocol - OSAP** to review data use, resources requirements (staff time, incidental costs, etc.) and overall benefits. Implement as resources permit with possible refocusing towards urban, urban fringe and agricultural areas.
- Undertake a program priority assessment of the **Headwater Drainage Feature Protocol**.

---

<sup>33</sup> This includes the existing City Baseline Monitoring Program, which is already subject to an MOU.

Implement as resources permit with a limited number of sites surveyed per year in line with the City Stream Watch rotation.

- Actively pursue partnerships and external funding opportunities to support frequent updates to mapping/GIS products to enable assessment of forest and wetland cover.
- Continue to use the three standardized reporting formats listed in Table 2 to provide the public and other agencies with easily comparable data.
- Continue to standardize data storage formats and ensure a minimum of two full time employees within the Planning Department are fully trained in the use of WISKI.
- Budget for a part-time Monitoring Technician to support work on monitoring protocols and provide assistance during peak periods. Work and objectives as outlined in this document require seasonal support from additional staff resources.

### 9.3 Potential New Initiatives

The following have been identified, primarily through the Mississippi River Watershed Plan, as potential further actions and/or initiatives:

- Reassess monitoring program allocations based on local indicators and pressures (development and results). Considerations to include:
  - Viability of additional water quality monitoring focused in agricultural areas and urban/urbanizing areas outside of the City of Ottawa (Carleton Place, Mississippi Mills and surrounding areas).
  - Potential expansion of City Stream Watch and/or refocusing of OSAP into urban and agricultural areas that aren't currently being monitored.
- Assess groundwater data needs and identify solutions to augment data as needed to support MVCA responsibilities in Source Protection (Cat 1). This may include tracking and warehousing of data already collected through other means, such as monitoring wells for development proposals, or through periodic sampling of private wells in strategic locations.
- Seek additional external funding/grants and partnership arrangements to support existing and new monitoring initiatives.
- Work with MVCA Water Management Department to increase the analysis/use, sharing and reporting of the data collected through the following:
  - Tracking of data requests (who is using the data and for what purpose).
  - Consider use of Open Data
- Increase emphasis on volunteer-based citizen science activities and programs, to heighten community interest and broaden the collection of baseline information.

### Appendix 1: Data Needs versus Availability (primary and supplemental sources)

| Primary vs.<br>Secondary | MVCA |              |      |          |                   | Province |      |                            |                 |                        |                                   | Feds                           | Municipal<br>health<br>units | NGOs incl. lake associations |   |                                |                 |                   |
|--------------------------|------|--------------|------|----------|-------------------|----------|------|----------------------------|-----------------|------------------------|-----------------------------------|--------------------------------|------------------------------|------------------------------|---|--------------------------------|-----------------|-------------------|
|                          | Lake | Stream Watch | Fish | Benthics | Water Temperature | PWQMN    | PGMN | Fish (BsM, SLIN,<br>Creel) | Managed Forests | Habitat Classification | Lake Capacity<br>(nutrient model) |                                |                              | Site Specific                | Drinking water<br>(surface intakes,<br>wells, beach safety) | Ontario Anglers and<br>Hunters | Ducks Unlimited | Watersheds Canada |
| 1. Water Quality         |      |              |      |          |                   |          |      |                            |                 |                        | P                                 | Enviro.<br>Canada<br>standards | P                            |                              |   |                                | X               | X                 |
| a. Drinking Water        |      |              |      |          |                   | S        | S    |                            |                 |                        |                                   |                                | P                            |                              |   |                                | X               |                   |
| b. Nutrients             | P    |              |      |          |                   | P        | P    |                            |                 |                        | X                                 |                                |                              |                              |   |                                | X               |                   |
| c. Aquatic life          | P    |              | P    | P        | P                 |          |      | P                          |                 |                        |                                   | DFO                            |                              |                              |   |                                | X               | X                 |
| 2. Habitat               | P    | P            | P    | P        | P                 |          |      |                            |                 |                        |                                   | DFO                            |                              |                              | P   | P                              | X               |                   |
| a. Shorelines            |      | P            |      |          |                   |          |      |                            |                 | X                      |                                   |                                |                              |                              | S   | P                              | X               |                   |
| b. Tributaries           |      | P            | P    | P        | P                 |          |      |                            |                 |                        |                                   |                                |                              |                              |   |                                |                 | X                 |
| c. Lakes                 |      |              |      |          | P                 |          |      | P                          |                 | X                      |                                   | DFO                            |                              |                              |   |                                | X               | X                 |
| d. Forests               |      |              |      |          |                   |          |      |                            | P               | X                      |                                   |                                |                              |                              |   |                                |                 |                   |
| e. Wetlands              |      | M            |      |          |                   | M        |      |                            |                 | P                      |                                   |                                |                              |                              | P   |                                |                 |                   |
| 3. Species               |      | P            | P    | P        | P                 |          |      | P                          | P               | P                      |                                   | DFO/Enviro<br>Can              |                              |                              | P   |                                |                 |                   |

| Primary vs. Secondary | MVCA |              |      |          |                   | Province |      |                         |                 |                        |                                | Feds | Municipal health units | NGOs incl. lake associations |   |                             |                 |                   |
|-----------------------|------|--------------|------|----------|-------------------|----------|------|-------------------------|-----------------|------------------------|--------------------------------|------|------------------------|------------------------------|---|-----------------------------|-----------------|-------------------|
|                       | Lake | Stream Watch | Fish | Benthics | Water Temperature | PWQMN    | PGMN | Fish (BsM, SLIN, Creel) | Managed Forests | Habitat Classification | Lake Capacity (nutrient model) |      |                        | Site Specific                | Drinking water (surface intakes, wells, beach safety) | Ontario Anglers and Hunters | Ducks Unlimited | Watersheds Canada |
| a. Species at Risk    |      |              |      |          |                   |          |      |                         | P               |                        |                                | X    |                        |                              |   |                             |                 |                   |
| b. Invasive species   | S    | S            |      |          |                   |          |      | S                       | S               |                        |                                | X    |                        | P                            |   |                             | X               |                   |
| 4. Lake Capacity      |      |              |      |          |                   |          |      |                         |                 | P                      |                                |      |                        |                              |   |                             | X               |                   |



## Appendix 2: Monitoring Program Details

| Program   | Program Partners           | Data Collected   | No. of Sites, Frequency & Months Sampled  |
|---|----------------------------|--|---|
| Provincial Water Quality Monitoring Network (PWQMN) | MECP                       | Water Chemistry  | 14 sites<br>8 times/year<br>Spring – fall   |
| City Baseline Water Quality (CBLWQ)                 | City of Ottawa             | Water Chemistry  | 17 sites<br>8 times/year<br>Spring – fall   |
| MVCA WQ   | None                       | Water Chemistry  | 2 sites<br>8 times/year<br>Spring – fall  |
| Ontario Stream Assessment Protocol (OSAP)           | MNR, FWIS                  | Fish, aquatic vegetation, surrounding land use                                   | 25 – 30 sites per year<br>May, July, August   |
| City Stream Watch                                   | RVCA, SNCA                 | Land use, riparian & bank conditions, fish/wildlife, pollution, max. water temp. | 2 - 3 streams per year<br>Summer  |
| Headwaters  | RVCA                       | Morphology and flow  | 15 to 20 sites per year<br>Early spring, August                                       |
| Stream Temperature Monitoring                       | MNR, FWIS                  | Water temp.  | 20 sites, 15 mins intervals<br>May, July, August                                      |
| Lake Monitoring                                     | Lake Stewards (volunteers) | Phosphorus, pH, Dissolved Oxygen, Temp Profiles                                  | 44 lakes/62 sites 2-8 yr. cycle<br>10 to 12 sites 3 times/yr.<br>Spring, Summer, Fall |
| Seine Netting                                       | Lake Stewards              | Near shore fish population   | 3-5 sites 1 day/year<br>Summer  |
| Lake Water Temperature                              | None                       | Near surface water temp.   | 6 sites, 15 min intervals<br>Spring – fall  |
| Algae Monitoring                                    | None                       | Incidental observations about occurrences  | Throughout watershed<br>Continuous<br>Ice off period                                  |
| Provincial Groundwater Monitoring Network (PGMN)    | MECP                       | Water level, water chemistry   | 9 sites - well checks 2-3/year, chemistry 1/year<br>Spring – fall                     |
| Invasive Species Hit Squad                          | OFAH                       | Incidental observation occurrences<br>Community education events.                | Throughout watershed.<br>Stream and lake focused.<br>Continuous<br>Ice off period     |

### Appendix 3: Geographic Assessment of Program Delivery

|                         | Key Pressures Identified   | Current Priorities   | Gaps and Additional Needs   |
|-------------------------|--|--|---|
| <b>Upper Watershed</b>  | <ul style="list-style-type: none"> <li>• Lake/waterfront development</li> <li>• Invasive aquatic species</li> </ul>  | <ul style="list-style-type: none"> <li>• Monitoring of large highly developed lakes, cold water lakes, and lakes representative of each of the main rivers (water quality and invasive species)</li> <li>• Stream sites – cool and cold water</li> </ul> | <ul style="list-style-type: none"> <li>• None identified</li> </ul>   |
| <b>Middle Watershed</b> | <ul style="list-style-type: none"> <li>• Lake/waterfront development</li> <li>• Rural development (mostly lot creation) – impacts to natural systems (wetlands and forested areas).</li> <li>• Some agricultural activity, mostly in south and east</li> </ul>   |  | <ul style="list-style-type: none"> <li>• Stream sites within or adjacent to urban boundary</li> <li>• Mississippi Lake water quality and invasive species monitoring</li> </ul> |
| <b>Lower Watershed</b>  | <ul style="list-style-type: none"> <li>• Urban and urban expansion area development</li> <li>• Mississippi Lake development</li> <li>• Waterfront properties along rivers</li> <li>• Agricultural activity</li> <li>• Development impacts to natural systems (wetlands and forested areas).</li> </ul> |  |   |

This table presents a general overview and geographic assessment of the pressures, monitoring priorities and identified gaps in monitoring based on the three areas shown in Figure 2. The **Upper Watershed** represents the Canadian Shield area, the **Middle Watershed**, is the transition area between the Canadian Shield and St. Lawrence Lowlands and the **Lower Watershed** is the Lowlands area.

## REPORT

3323/23

|       |   |
|-------|---|
| TO:   | MVCA Policy & Priorities Advisory Committee   |
| FROM: | Alexis Perrin, Regulations Officer & Matt Craig,<br>Manager of Planning and Regulations |
| RE:   | <b>Section 28 Compliance Strategy</b>   |
| DATE: | April 21, 2023  |

**For information.****1.0 BACKGROUND**

A principal mandate of the Conservation Authority is to protect life and property from natural hazards such as flooding and erosion as required under Section 28 of the Act. Compliance activities play a pivotal role in achieving this goal by ensuring the requirements of approvals under Ontario Regulation 153/06 are enforced. Application of the permitting system ensures that development does not impact natural hazard lands or interfere with wetlands or watercourses within the Mississippi Valley watershed.

Regulations staff are designated under the *Conservation Authorities Act* for the purpose of enforcing Section 28 of the Act as Provincial Offences Officers. They inspect and ensure compliance of the terms and conditions of permits that have been issued. They also inspect, investigate and report on complaints of non-compliant development activities within the Mississippi Valley watershed.

**2.0 COMPLIANCE STRATEGY**

MVCA's Compliance Strategy sets out program objectives and approach to compliance promotion and enforcement. See Attachment 1.

A critical step in the compliance process is ranking permits for compliance inspections. This Strategy directs that new structures and projects with significant site alteration undergo compliance inspections. These types of projects also require the submission of final topographic plans and flood proofing requirements where applicable. The Strategy requires that consideration be given to the risk, scale and scope of each project in determining the

requirement for final topographic plans. Other types of activities and compliance requirements are discussed in the attached Strategy.

### **3.0 CORPORATE STRATEGIC PLAN**

Implementation of the Compliance Strategy will support the achievement of:

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

Attachment 1: Section 28 Compliance Strategy

# Section 28 Compliance Strategy

Mississippi Valley Conservation Authority

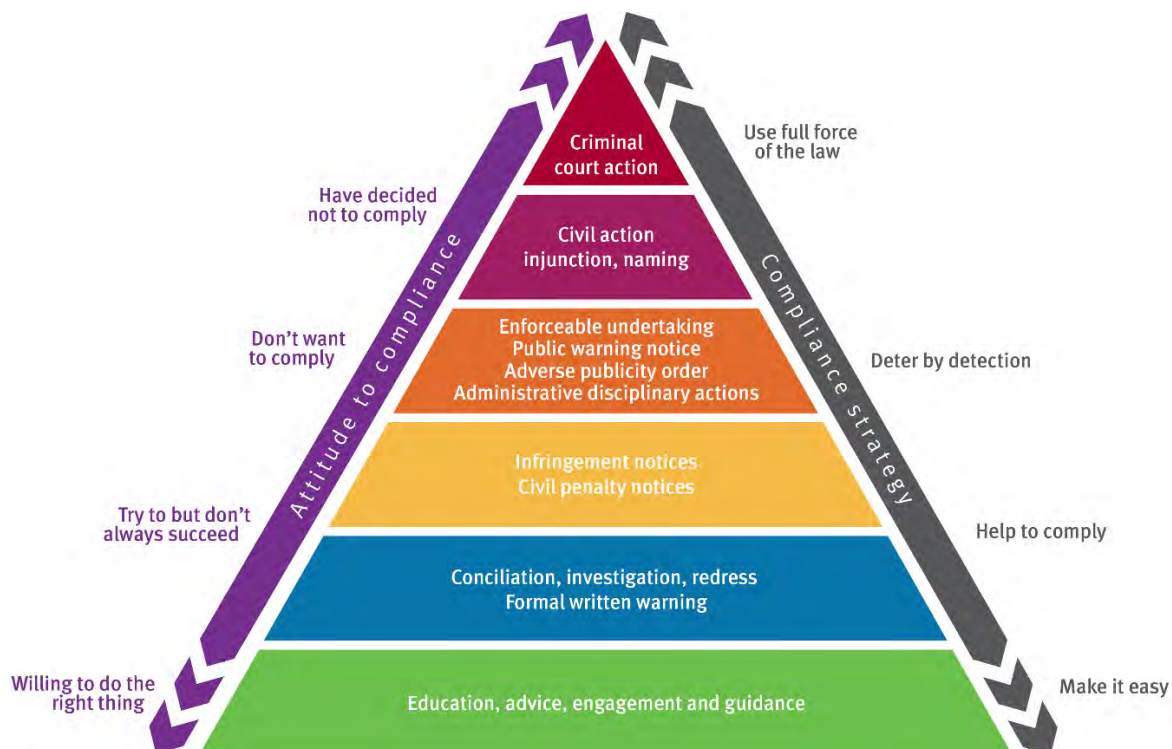
## 1. Background and Purpose

Conservation Authorities (CA) are required to administer a permit system for regulated areas within their jurisdiction, promote compliance, and enforce regulations made under Sections 28 and 29 of the *Conservation Authorities Act* R.S.O. (1990).

Section 28 activities govern development in regulated areas defined as river and stream valleys, hazardous lands, alterations to shorelines and watercourses, and interference with wetlands. The regulations also extend to other areas where development could interfere with the hydrologic function of a wetland, such as areas within 120 metres of all Provincially Significant Wetlands and areas within 30 metres of other wetlands.

Figure 1 illustrates the approach taken by most regulatory agencies to promoting and ensuring compliance.<sup>1</sup> The purpose of this strategy is to outline the Section 28 regulatory compliance program at the Mississippi Valley Conservation Authority (MVCA).

**Figure 1: Typical Enforcement Continuum**



<sup>1</sup> Source: <https://www.qld.gov.au/law/laws-regulated-industries-and-accountability>

## 2. Goals

The goals of Section 28 of the *Conservation Authorities Act* (CAA) and of this Strategy are to protect people and property from natural hazards, and to limit interference with and impacts to wetlands. Specifically, it is MVCA's goal to ensure compliance with O. Reg. 153/06 under the CAA and the terms and conditions of permits issued by the Authority.

## 3. Objectives

The objectives of this strategy are the following:

- Ensure regulatory staff competency and accreditation.
- Provide information and promote awareness of Section 28 regulations, regulatory requirements, and development restrictions.
- Provide regulatory training and support to municipalities and key stakeholders.
- Make application and approval processes easy to understand and timely.
- Support applicants in finding solutions at difficult sites.
- Monitor for compliance with requirements set out in permits issued.
- Respond to complaints regarding non-compliance.
- Inspect and investigate potential violations.
- Resolve minor infractions in cooperation with landowners.
- Work with landowners to successfully resolve cases of non-compliance.
- Support the Regulations Committee in the consideration of appeals.
- Pursue egregious cases of non-compliance using the legal tools available.

The regulations team uses a combination of activities to achieve these objectives that include public communication, investigative fieldwork, conflict resolution and legal responsibilities.

## 4. Employee Training and Accreditation

Staff engaged in regulatory compliance and enforcement receive in-house training on Section 28 regulations and policies; and are required to obtain officer designation through a Level 1 Provincial Offences Officer training. Thereafter, refresher training and participation in the Conservation Ontario Regulations Committee are used to ensure that staff keep abreast of regulatory changes, evolving practices, and case law.

## 5. Stakeholder Awareness Raising and Training

There is a continual need to inform/educate landowners, developers, real estate agents, lawyers, and municipal partners about regulatory requirements. While stakeholders are required to exercise their own due diligence concerning work on their property, it is incumbent

upon MVCA to publicize and inform the public of current regulation and policies, and any changes thereto. Compliance promotion activities at the MVCA include the following:

- Meetings with member municipality staff (ongoing since 2012);
- Information sessions targeting developers, consultants and real estate agents (ongoing since 2012 and in partnership with the RVCA since 2019);
- Provision of Property Clearance Letters (ongoing; typically, at the time of property purchase; currently not required in any real estate laws); and
- Social media posts to raise awareness at key times of the year.

## 6. Permit application and processing

MVCA makes regulatory information easily visible on the landing page of the corporate website. All required information is available on the website, including:

- Interactive regulations map
- Property enquiry form
- Fillable PDF permit application form
- Permit process flow chart
- Permit policies for different application types
- Flood proofing requirements for specific waterbodies

MVCA strives to achieve the voluntary Conservation Ontario target timeline as shown in Table 1. MVCA reports on its processing times to the Board of Directors at least twice annually.

**Table 1: Permit Processing Time Standard and Target**

| <b>Application Type</b> | <b>Conserv. Ontario Target</b> |
|-------------------------|--------------------------------|
| <b>Major</b>            | 49 days                        |
| <b>Minor</b>            | 35 days                        |
| <b>Routine</b>          | 24 days                        |

When an application cannot be approved by staff due to contravention of MVCA policies, regulations staff inform landowners of the option to put their application before MVCA's Regulations Committee. Committee hearings allow applicants and staff to submit evidence for and against the policy exemption. Committee decisions are final and cannot be appealed.

## 7. Compliance Monitoring and Management

MVCA uses four primary means for monitoring and bringing landowners into compliance:

- Document reviews and inspection
- Responding to public complaints

- Investigations
- Prosecutions

a. Document reviews and inspections

Due to limited resources, MVCA prioritizes spot checks and the submission of as-built drawings and grading plans using the following priority setting criteria:

1. Risk to life, safety and property.
2. Risk of erosion and pollution of the watershed's natural features.
3. Environmental vulnerability and project's potential impact of failure.
4. Regulatory responsibility.
5. The complexity of the project.
6. The compliance history of the applicant.
7. Complaints from the public/surrounding residents.

The priority setting system is presented in more detail in Table 2.

b. Public Complaints

Members of the public are actively involved in the MVCA compliance and enforcement process. They remain key contacts in reporting activities related to development, unauthorized work, and/ or permit non-compliance within the watershed. Individuals can report their concern through the "Report a Concern" form found on the MVCA website, mail in letters, or call the office and report what they have seen. All concerns received by the MVCA are confidential and are triaged based on the scale, scope, sensitivity and potential impact.

c. Investigations

Investigations are carried out in response to incidents of non-conformance with a permit, and contravention with the CA Act. The primary objectives of investigations are to collect information and assess impacts. The following steps are required as part of any investigation:

- Issue a letter notifying them of the non-compliance or infraction under the Act.
- Visit the site with the applicant or their representatives to:
  - identify and discuss options to conform with their permit; or
  - identify what works would be required in order to obtain a permit.
- Engage with municipal planning and by-law enforcement offices to allow for a coordinated and consistent response.
- Provide reasonable timelines to permit holders and landowners to carry out remedial works and conform with or to obtain a permit.

d. Prosecutions

Only the most egregious cases are pursued through the courts.



**Table 2: MVCA Risk-Based Prioritization Categories, Ranking, and Descriptions**

| Order of Priority                  | Description/Criteria   | Inspection Required?   | As-built/ Final Grading Plan Required? |
|------------------------------------|--|--|--|
| <b>1. Floodplain</b>               | All residential rebuilds, redevelopments, additions or new development within a Regulatory Floodplain are to be inspected for confirmation that floodproofing elevations have been achieved, excess fill has not been placed and approved site plan and/or grading and drainage plans have been adhered to.  | Yes  | Yes                                    |
| <b>2. Cut &amp; Fill</b>           | Fill placement/cut & fill where control of flooding could be impacted. Submission of final as-builts and shape files are required and need to be documented (i.e. process developed for changing flood plain mapping after work completed).  | Yes  | Yes                                    |
| <b>3. Wetlands</b>                 | Development within unevaluated wetlands and the regulation limit of a PSW and/or other wetlands.   | Yes- if within wetlands; within 30m of a PSW; or 15 m of non-evaluated                       | Case-by-Case                           |
| <b>4. Municipal Infrastructure</b> | Major municipal/residential infrastructure projects (i.e. replacement ? culverts over 1 metre in diameter, new culverts, watermain extensions, watercourse alterations/relocations) where complex ESC measures, by-pass pumping or dewatering is required with an emphasis on those projects being conducted within highly sensitive areas or inherent risk of pollution. Private watercourse realignments are also included in this category. | Case-by-Case   | Case-by-Case                           |
| <b>5. Slope Stability</b>          | Erosion control works where slope stability is required to protect existing development.   | As needed basis.   | Case-by-Case                           |
| <b>6. Shorelines &amp; Docks</b>   | Shoreline permits within flood plain areas to ensure excess fill has not been placed as a part of the project.   | No (applicant to submit documentation)<br>Case by case (random selection) in some situations | No                                     |
| <b>7. Other</b>                    | Development in regulation limit (FP, MB, SH), development in the regulation limit of PSWs (greater than 50m), like-for-like culvert replacements under 1-meter diameter, culvert repairs, attached decks, most development in slope hazard.  | As needed basis. But typically, not required.  | No                                     |

## REPORT

3324/23

|       |   |
|-------|---|
| TO:   | MVCA Policy & Planning Advisory Committee             |
| FROM: | Sally McIntyre, General Manager                       |
| RE:   | <b>Conservation Strategy: Scope &amp; Methodology</b> |
| DATE: | April 24, 2023  |

**For information****1.0 BACKGROUND & APPROACH**

MVCA owns four conservation areas and operates a further two sites in partnership with the City of Ottawa. As well, the Authority operates eleven water control structures with variable land ownership of the dams and points of access. And, MVCA owns the lands of 14 former residential properties that were expropriated in the 1980s due to persistent flooding<sup>1</sup>. Over the past two years several key undertakings at the local, provincial, and federal levels have prompted the need for MVCA to prepare a strategy to guide management of CA properties now and in future. They include:

- completion of the *Mississippi River Watershed Plan*,
- changes to the *Conservation Authorities Act* with new regulations, and
- federal commitment to meet United Nations goals for conservation.

**1.1 Mississippi River Watershed Plan**

In June 2021, the MVCA Board approved the *Mississippi River Watershed Plan*<sup>2</sup> to document the current and projected state of the watershed, identify issues and challenges, and present recommended actions. Climate change, urban growth, aging or inadequate infrastructure, and related challenges with flooding and droughts, impairment of water quality, and impacts natural features and systems, were identified as key issues. Recognizing the importance of natural systems and functions in mitigating and building resiliency to those impacts, Action NS1 of the

<sup>1</sup> These sites were acquired by the Authority with funding previously available from the Province.

<sup>2</sup> While the Mississippi River Watershed Plan (2021) focused specifically on the catchment area of the Mississippi River, many themes and recommendations of the Plan are relevant to MVCA's entire jurisdiction which also includes the watersheds of the Carp River and several other small watercourses that outlet directly into the Ottawa River.

Plan recommends that MVCA “Develop a Land Conservation Strategy to mitigate flood, erosion and other natural hazards, and to support the ecological services provided by natural systems.”

## 1.2 O. Reg. 686/21

Also in 2021, the Province adopted *Ontario Regulation 686/21* to implement changes that were made to the *Conservation Authorities Act* in 2020. It prescribes the mandatory programs and services that CA’s are responsible for, which include requiring each CA to prepare a Conservation Area Strategy for lands owned and controlled by the authority. The Strategy is to include:

- Objectives to inform decision-making related to the lands it owns and controls, including decisions related to policies governing the acquisition and disposition of such lands.
- Identification of the mandatory and non-mandatory programs and services on those lands.
- Where needed, an assessment of how those lands
  - augment any natural heritage located within the authority’s area of jurisdiction, and
  - integrate with other provincially or municipally owned lands or other publicly accessible lands and trails within the authority’s area of jurisdiction.

The strategy is to be completed by the end of 2024 and has specific requirements for consultation, the preparation of an inventory of all CA owned and managed lands, and public posting and periodic updated of the strategy.

## 1.3 UN Biodiversity Agreement Target “30 by 30”

In December 2022, Canada presented its conservation goals at the 15<sup>th</sup> Conference of the Parties (COP15) to the United Nations Convention on Biological Diversity. In support of the UN Biodiversity Agreement’s “30 by 30” target to protect at least 30 percent of the world’s lands and waters by 2030, Canada has pledged to conserve a quarter of its lands and a quarter of its oceans by 2025, and to work toward conserving 30% by 2030.<sup>3</sup> The federal government is using an internationally recognized mechanism to manage and track performance towards this target called “Other Effective area-based Conservation Measures” (OECM).<sup>4</sup>

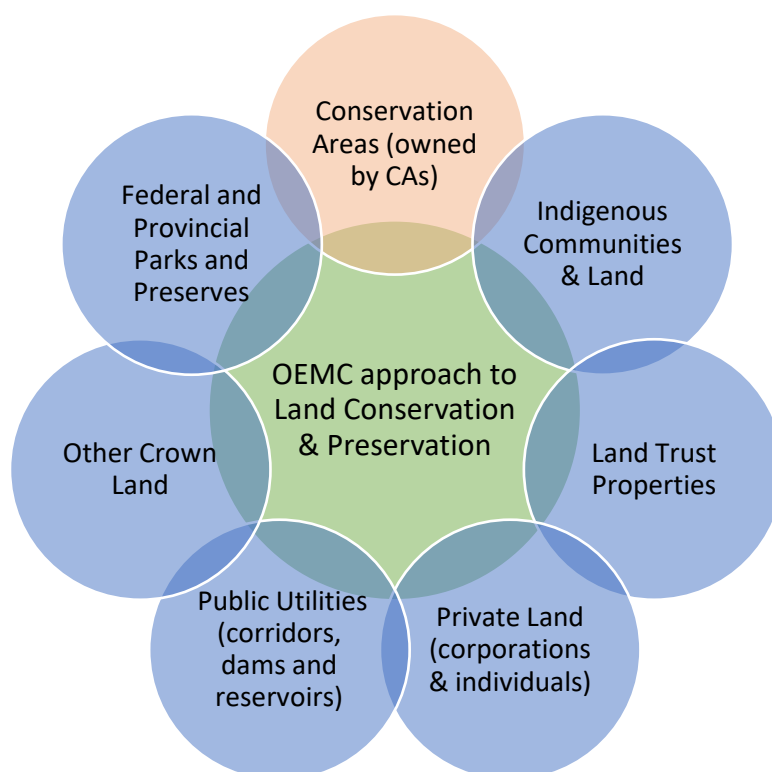
---

<sup>3</sup><https://www.canada.ca/en/environment-climate-change/news/2022/12/government-of-canada-recognizing-federal-land-and-water-to-contribute-to-30-by-30-nature-conservation-goals.html>

<sup>4</sup> Established by the [International Union for the Conservation of Nature](#).

OEMCs are a means of “recognizing the conservation efforts of others”<sup>5</sup> and are intended to achieve biodiversity conservation even when the land is managed for different purposes (i.e. outside of protected areas). They are described as “a model for how people can manage and steward the land sustainably, in ways that allow nature to thrive, achieving the same biodiversity results as a protected area”. As illustrated by Figure 1, OEMCs offer “significant opportunity to increase recognition and support for de facto effective long-term conservation that is taking place outside currently designated protected areas under a range of governance and management regimes, implemented by a diverse set of actors, including by Indigenous peoples and local communities, the private sector and government agencies.”<sup>3</sup>

**Figure 1: Integrated Approach to Land and Water Conservation & Preservation**



#### 1.4 Approach

An OEMC approach will be used to consider the entirety of MVCA’s jurisdiction but with a focus on land owned or controlled by MVCA per O.Reg. 686/21. Actions will be identified to enhance conservation and preservation such as stewardship program delivery in targeted areas. The

---

<sup>5</sup><https://www.canada.ca/en/environment-climate-change/services/nature-legacy/other-effective-area-based-measures.html>

Strategy will also consider future hazard management needs and opportunities within MVCA's jurisdiction, including the impacts of climate change and growing water demands.

## 2.0 METHODOLOGY

A five-step approach is proposed for the development of an MVCA Conservation Land Strategy:

**Step 1. Current State** document to outline:

- CAs mandate and why are we preparing the Strategy
- The scope of the strategy and the difference between conservation and preservation
- Dams and reservoirs, their catchment areas, and the wetlands and waterbodies within that provide reservoir capacity
- Core Natural Areas (forests and wetlands of a minimum size)
- Other areas that support water management and biodiversity objectives
- Lands owned and protected for water management, conservation, and preservation
- Role of public utilities and private land owners in land conservation and preservation
- Example initiatives in Eastern Ontario (Frontenac Reserve, A2A...)

Refer to Figures 1, 2, and 3 for some preliminary work that illustrate the following:

- Land that is already in designated for conservation or preservation purposes including MVCA properties.
- Core natural areas within MVCA's jurisdiction are which are crown-owned.
- Location of all water control structures owned or operated by MVCA and associated drainage areas.

**Step 2. Needs Assessment** that identifies and discusses in greater detail:

- Areas of natural hazards
- Existing and future water demands and impacts of climate change
- Areas at potential risk of climate and growth impacts
- Habitat needs of key indicator species over their lifecycle
- The importance of water and land corridors, and preserves

**Step 3. Goals and Objectives** for land acquisition, conservation, and preservation in our jurisdiction (all 3 watersheds), opportunities and constraints, and the scope of MVCA's role and where it should focus its resources.

**Step 4. CA Land Inventory** – providing more detail of each CA property with opportunities and barriers analysis, and proposals for next 10-20 years.

**Step 5. Draft a Conservation Strategy** that sets out:

- Goals and objectives for our jurisdiction
- MVCA’s role, and plan for existing CA properties (including dams.)
- Criteria for CA acquisitions and disposals
- Implementation Plan including recommended programs and services.

Figures 1, 2, and 3 illustrate a selection of information collected to date.

### **3.0 PROJECT TEAM**

The following staff will be participating in this project:

- Project Director: Sally McIntyre, General Manager
- Project Manager: Alyson Symon, Watershed Planner
- Data Collection and GIS for Natural Systems: Alex Broadbent, I&CT Manager
- GIS for Natural Hazards and Natural Reservoirs: Lauren Shupe, GIS Specialist
- Natural Systems Expertise: Kelly Stiles, Biologist
- CA Lands and Land Ownership: Scott Lawryk (and team), Property Manager
- Natural Hazards and Reservoirs: Juraj Cunderlik, Director of Engineering (and team)
- Peer Review: Matt Craig, Manager of Planning & Regulations

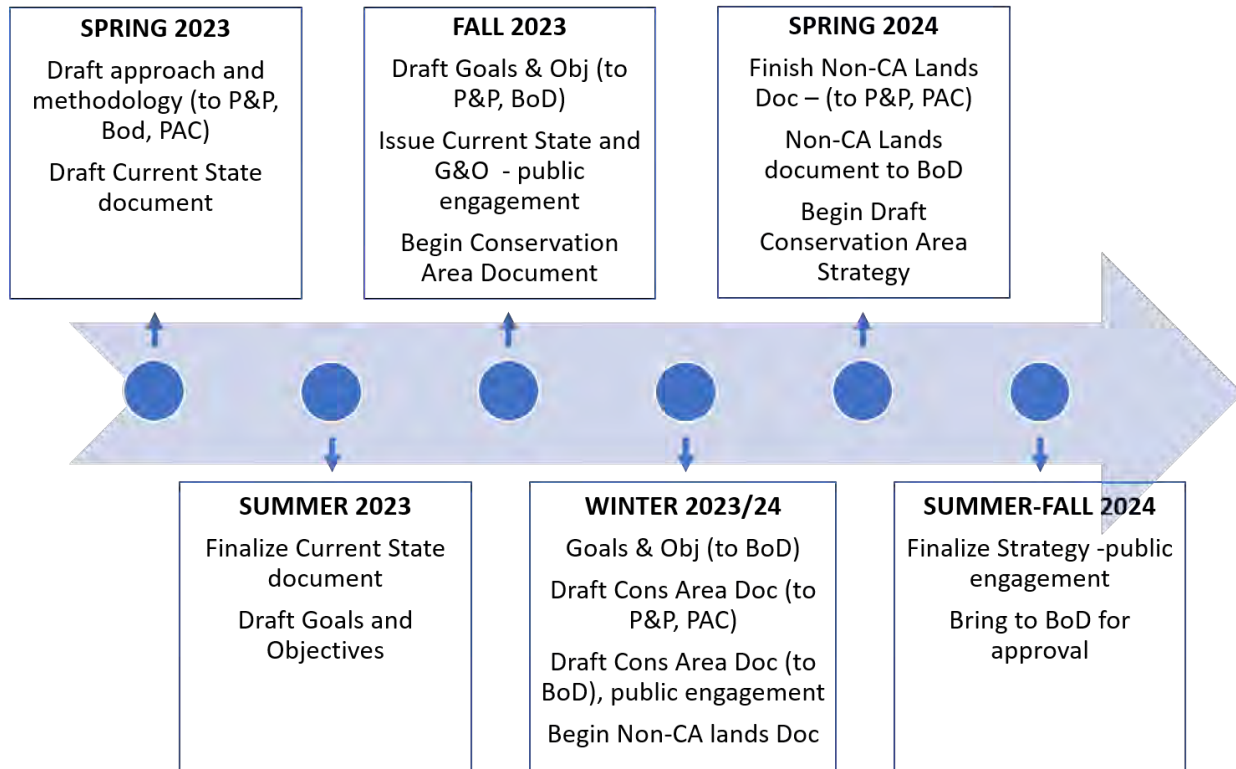
Ecologist Cathy Keddy was retained in 2022 to support identification of core natural areas. Sadly, Cathy died unexpectedly in the Fall, and the team is looking at options for replacing her expertise.

Other conservation organizations have expressed an interest in this work and will participate as resources allow to help build a strategy that is useful for all.

### **4.0 PROPOSED TIMELINES**

Refer to Figure 4 for the proposed project timeline. In summary, the project will begin in the Spring of 2023 and be completed in the Fall of 2024.

**Figure 4: Conservation Strategy Project Timelines**



## 5.0 CORPORATE STRATEGIC PLAN

Completion of the Conservation Strategy will support achievement of:

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

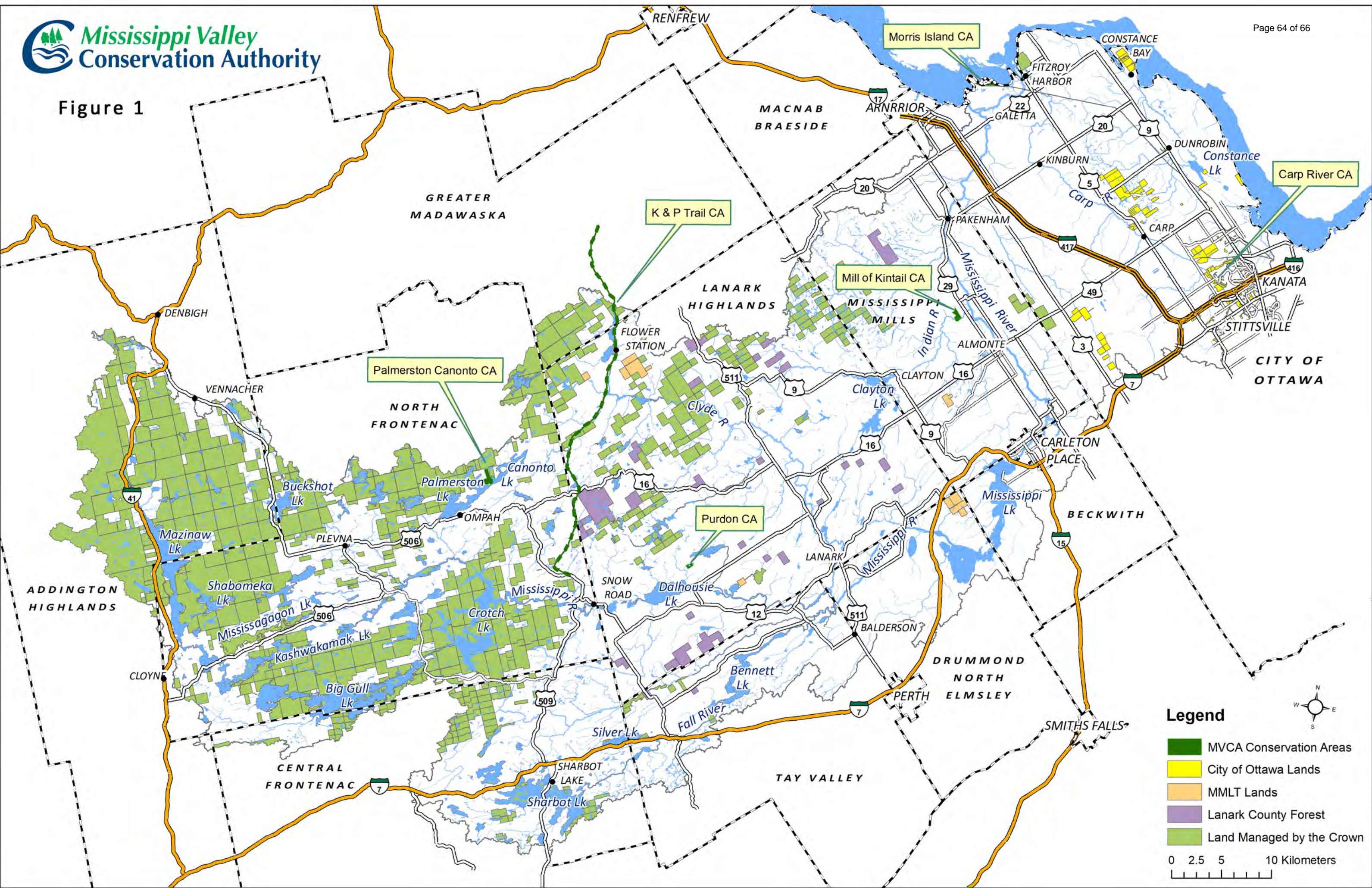
- b) Strengthen our risk analysis and management capacity to include climate change and development impacts.
- c) Implement priority actions identified in the *Mississippi River Watershed Plan*.
- e) Plan for the next phase of asset development and management.

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



Figure 1



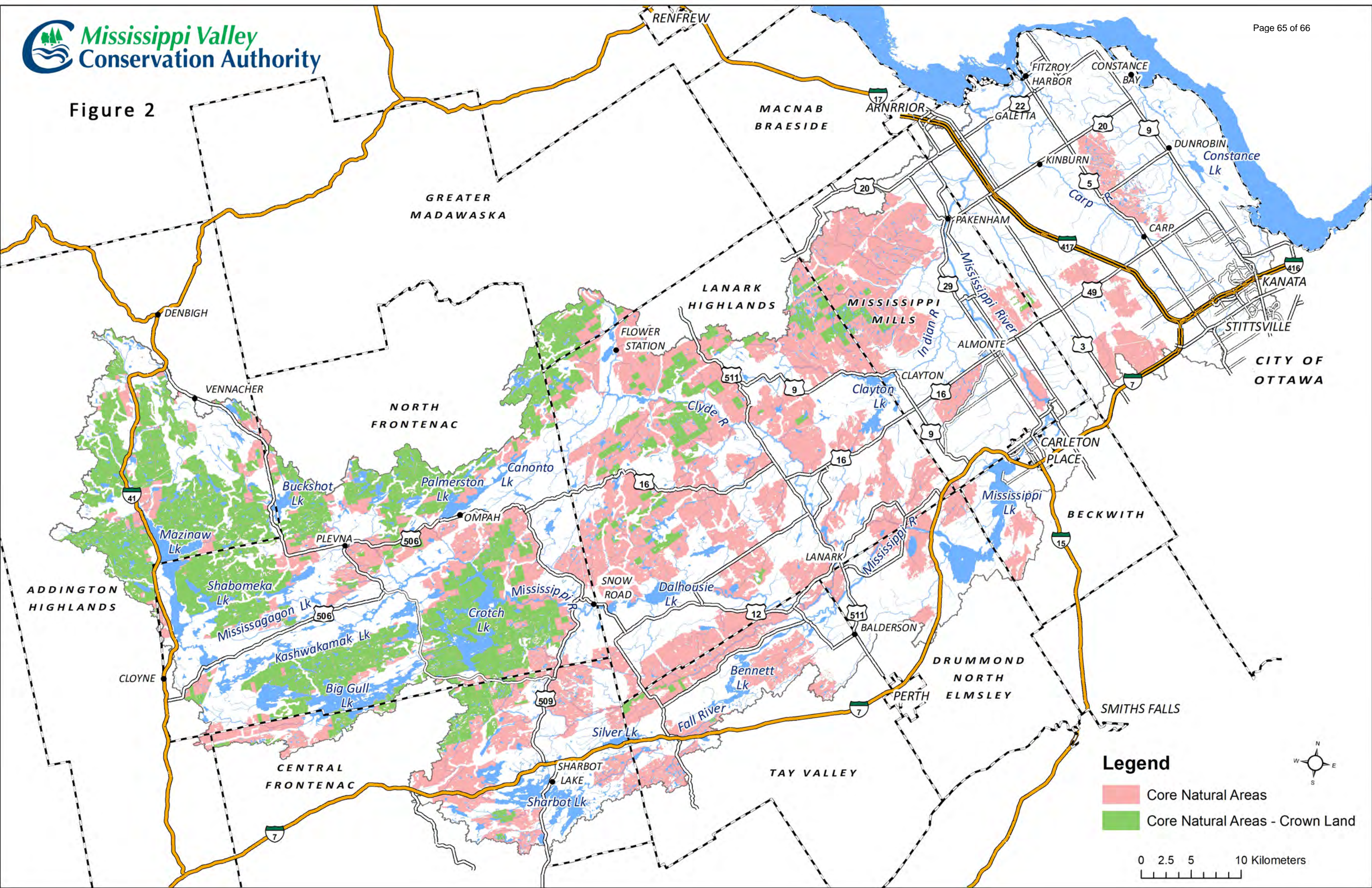
**Legend**

- MVCA Conservation Areas
- City of Ottawa Lands
- MMLT Lands
- Lanark County Forest
- Land Managed by the Crown

0 2.5 5 10 Kilometers



Figure 2



**Legend**

- Core Natural Areas
- Core Natural Areas - Crown Land

0 2.5 5 10 Kilometers

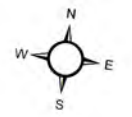
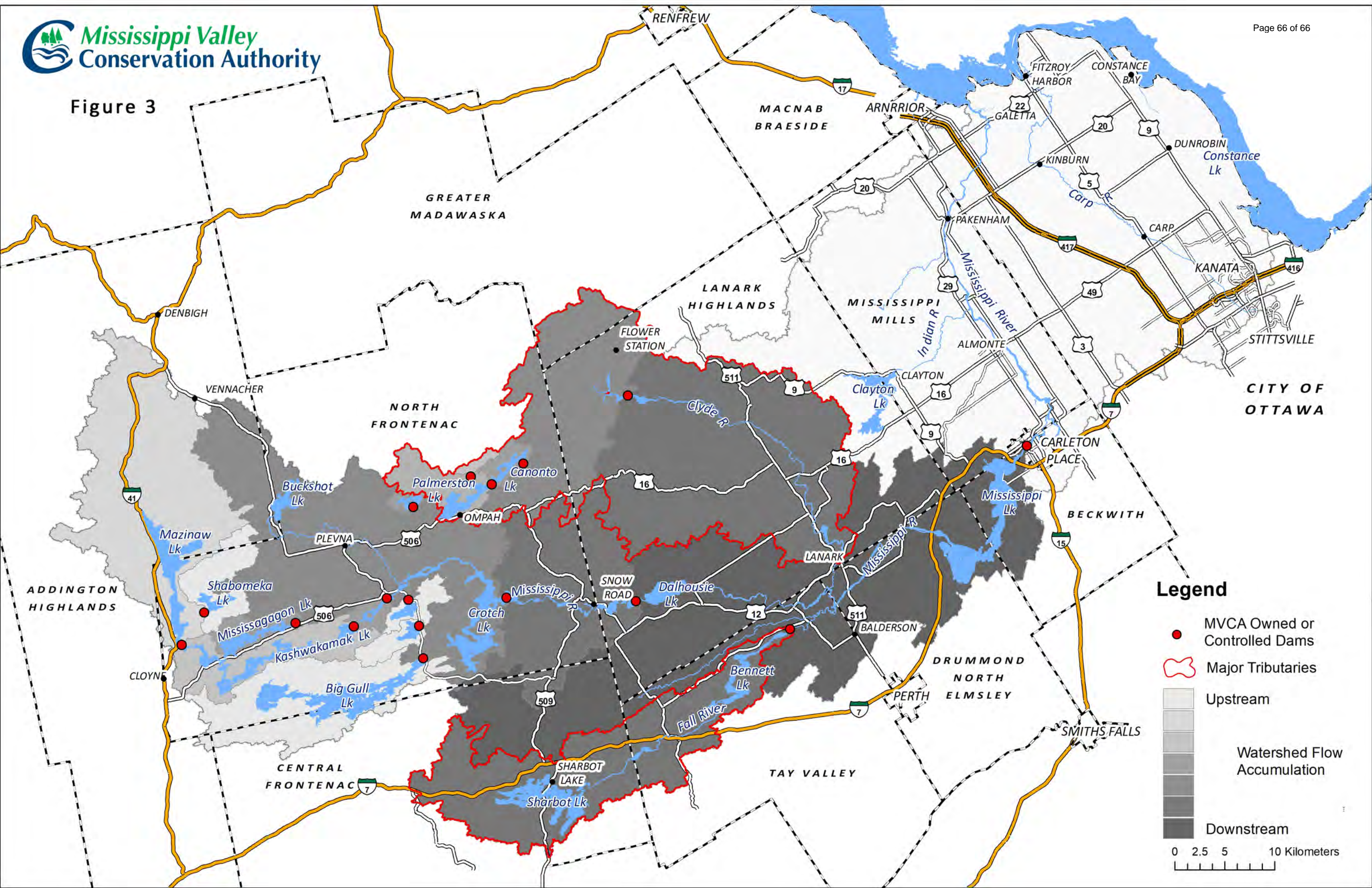




Figure 3



**Legend**

- MVCA Owned or Controlled Dams
- ▭ Major Tributaries
- Upstream
- Watershed Flow Accumulation
- Downstream

0 2.5 5 10 Kilometers