

NOTICE TO

CLOCA BOARD OF DIRECTORS

Please find enclosed the **agenda** and supporting documents for the **CLOCA Board of Directors Meeting** on **Tuesday, June 20, 2023, at 5:00 p.m.** This meeting will be a **Hybrid meeting**. Members can join either virtual through zoom or attend in-person at the Authority's Administrative Office - 100 Whiting Avenue, Oshawa.

The list below outlines upcoming meetings and events for your information.

UPCOMING MEETINGS & EVENTS

DATE	TIME	EVENT	LOCATION
Tuesday, June 20/23	5:00 p.m.	CLOCA Board of Directors Meeting	Hybrid Meeting
Friday, June 23/23	8:00 p.m. to 10:00 p.m.	A Night with the Fireflies Register at https://www.cloca.com/events	Purple Woods Conservation Area 38 Coates Road East, Oshawa
Friday, July 7/23	10:00 a.m.	Ontario Trillium Foundation Funding Recognition Event	Enniskillen Conservation Area 7274 Holt Road, Enniskillen
Tuesday, July 18/23	5:00 p.m.	CLOCA Board of Directors Meeting	Hybrid Meeting
Tuesday, September 19/23	5:00 p.m.	CLOCA Board of Directors Meeting	Hybrid Meeting
Tuesday, October 17/23	5:00 p.m.	CLOCA Board of Directors Meeting	Hybrid Meeting
Tuesday, November 21/23	5:00 p.m.	CLOCA Board of Directors Meeting	Hybrid Meeting
Tuesday, December 19/23	5:00 p.m.	CLOCA Board of Directors Meeting	Hybrid Meeting

LATEST NEWS

Check Out our website! www.cloca.com

Discover your local Conservation Area.

"Healthy Watersheds for Today and Tomorrow"

CENTRAL LAKE ONTARIO CONSERVATION AUTHORITY

A G E N D A

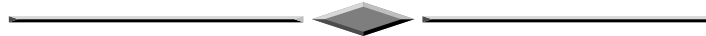
AUTHORITY MEETING

Tuesday, June 20, 2023 - 5:00 P.M.

HYBRID MEETING LOCATION: VIRTUAL THROUGH ZOOM (ACCESS DETAILS TO BE PROVIDED)
OR 100 WHITING AVENUE, OSHAWA, AUTHORITY'S ADMINISTRATIVE OFFICE, BOARDROOM

CIRCULATION LIST

Authority	Elizabeth Roy, Chair	Authority	C. Darling, Chief Administrative Officer
Members:	Bob Chapman, Vice Chair	Staff:	B. Boardman, Executive/Accounting Administrator/Recording Secretary
	Marilyn Crawford		R. Catulli, Director, Corporate Services
	Sami Elhajjeh		J. Davidson, Director, Watershed Planning & Natural Heritage
	Bruce Garrod		R. Gerber, Senior Hydrogeologist
	Ron Hooper		L. Hastings, Communications Specialist
	Rick Kerr		D. Hope, Conservation Lands & Education Manager
	Chris Leahy		C. Jones, Director, Planning & Regulation
	Tito-Dante Marimpietri		P. Sisson, Director, Engineering, Field Operations & Education
	Ian McDougall		L. Vaja, Executive Assistant/Health & Safety Administrator
	Rhonda Mulcahy		R. Wilmot, Information Management & Technology Manager
	John Neal		
	David Pickles		
	Corinna Traill		
	Steve Yamada		
		Others:	



AGENDA ITEM:

SUPPORTING DOCUMENTS

1. CHAIR'S WELCOME

We acknowledge that our watershed is located on the Lands of the Great Mississauga Nations who are signatories to the Williams Treaties. These communities include the Mississaugas of Scugog Island, First Nations of Alderville, Beausoleil, Curve Lake, Hiawatha, Chippewas of Georgina Island and Rama. We believe it is important that we learn, and work to reconcile the impact we, and those before us, have had on the original inhabitants. On behalf of CLOCA, we want to thank them for sharing this land and all its resources. At CLOCA, our goal is to respectfully share in the responsibility of the stewardship and protection of these ancestral lands and waters and continue towards truth and reconciliation as we move forward as friends and allies with all First Nations, Inuit, and Metis people.

2. DECLARATIONS of interest by members on any matters herein contained.

3. ADOPTION OF MINUTES of May 16, 2023

pg. 1

4. PRESENTATIONS – None

5. CORRESPONDENCE – None

6. SENIOR HYDROGEOLOGIST, OAK RIDGES MORAINÉ GROUNDWATER PROGRAM

(1) Staff Report #5837-23

Re: 2022 Annual Report and 2023 Work Plan

Staff Presentation – Rick Gerber, Senior Hydrogeologist, Groundwater Program

pg. 5

7. DIRECTOR, PLANNING & REGULATION

- (1) Staff Report #5835-23 pg. 23
Re: Permits Issued for Development, Interference with Wetlands, and Alteration to Shorelines and Watercourses – May 1 to 31, 2023

8. DIRECTOR, WATERSHED PLANNING & NATURAL HERITAGE – *None*

9. DIRECTOR, ENGINEERING, FIELD OPERATIONS & EDUCATION

- (1) Staff Report #5839-23 pg. 25
Re: Conservation Education Update – September 2022 to June 2023

10. DIRECTOR, CORPORATE SERVICES – *None*

11. CHIEF ADMINISTRATIVE OFFICER

- (1) Staff Report #5836-23 pg. 33
Re: Board of Directors Meetings – Start Time

- (2) Staff Report #5838-23 pg. 34
Re: Memorandum of Understandings to Govern Municipal Funding for Programs and Services provide by CLOCA

12. CONFIDENTIAL MATTERS – *None*

13. NEW AND UNFINISHED BUSINESS – *None*

14. ADJOURNMENT

A G E N D A

SUPPORTING DOCUMENTS

MEETING OF: Authority

DATE: Tuesday, June 20, 2023

TIME: 5:00 p.m.

LOCATION: Hybrid – Virtual through Zoom or
100 Whiting Avenue, Oshawa

CENTRAL LAKE ONTARIO CONSERVATION AUTHORITY

MINUTES NO. 4

AUTHORITY MEETING

Tuesday, May 16, 2023 - 5:00 P.M.

MEETING LOCATION: HYBRID – Virtual through Zoom and/or in person at 100 Whiting Avenue, Oshawa

Authority	Elizabeth Roy – Chair	Authority	C. Darling, Chief Administrative Officer
Members:	Bob Chapman – Vice Chair	Staff:	A. Cunning, Financial Services Coordinator
	Marilyn Crawford		B. Boardman, Executive/Accounting Administrator
	Bruce Garrod		R. Catulli, Director, Corporate Services
	Ron Hooper		J. Davidson, Director, Watershed Planning & Natural Heritage
	Rick Kerr		L. Hastings, Communications Specialist
	Chris Leahy		D. Hope, Conservation Lands & Education Manager
	Rhonda Mulcahy		C. Jones, Director, Planning & Regulation
	John Neal		D. Moore, Aquatic Biologist
	David Pickles		P. Sisson, Director, Engineering & Field Operations & Education
	Corinna Traill		L.Vaja, Executive Assistant/Health & Safety Administrator/ Recording Secretary
	Steve Yamada		R. Wilmot, Information Management & Technology Manager

Absent:	Sami Elhajjeh	Others:	Nigel Allen, BDO
	Tito-Dante Marimpietri		Adam Delle Cese, BDO
	Ian McDougall		

The Chair called the meeting to order at 5:02 p.m.

LAND ACKNOWLEDGEMENT STATEMENT

Chair Roy recited the Land Acknowledgement Statement on the Fund Agenda.

DECLARATIONS of interest by members on any matters herein contained - *None*

ADOPTION OF MINUTES (Agenda pg. 1)

Res. #36 Moved by B. Garrod
Seconded by B. Chapman

THAT the Authority minutes of April 18, 2023, be adopted as circulated.
CARRIED

PRESENTATIONS

D. Moore gave a staff presentation on Integrated Watershed Monitoring Program Update.

M. Crawford arrive at 5:06 p.m.
D. Pickles joined virtually at 5:09 p.m.
C. Traill joined virtually at 5:14 p.m.

CORRESPONDENCE – *None*

DIRECTOR, PLANNING & REGULATION

(1) Staff Report #5828-23 (Agenda pg. 3)
Re: Permits Issued for Development, Interference with Wetlands, and Alteration to Shorelines
and Watercourses – April 1 to 30, 2023

Res. #37 Moved by R. Kerr
Seconded by B. Garrod

THAT Staff Report #5828-23 be received for information.
CARRIED

DIRECTOR, PLANNING & REGULATION (Cont'd)

- (2) Staff Report #5829-23 (Agenda pg. 5)
Re: Provincial Consultation on Replacing Provincial Policy Statement and Growth Plan

Res. #38 Moved by D. Pickles
Seconded by R. Hooper

***THAT the Commentary in Staff Report #5829-23 and attachments be endorsed and submitted to the Province of Ontario and Conservation Ontario as CLOCA's comments regarding Environmental Registry Posting 019-6813;
THAT Staff Report #5829-23 be circulated to Members of Provincial Parliament, Members of Parliament, Conservation Ontario and adjacent Conservation Authorities for their information.***
CARRIED

DIRECTOR, WATERSHED PLANNING & NATURAL HERITAGE

- (1) Integrated Watershed Monitoring Program Update – Wildlife Monitoring (staff presentation)

Res. #39 Moved by R. Kerr
Seconded by B. Garrod

THAT the Staff Presentation be received for information.
CARRIED

- (2) Staff Report #5831-23 (Agenda pg. 78)
Re: Integrated Watershed Monitoring Program Update

Res. #40 Moved by M. Crawford
Seconded by B. Chapman

THAT Staff Report #5831-23 be received for information.
CARRIED

Councillor Neal inquired about that residents reported last year that illegal water taking was occurring and if this was corrected, or if any notices or memos that might have gone out. Chris Darling responded indicating that he was not aware of any recent concerns from the public regarding illegal water taking.

- (3) Staff Report #5832-23 (Agenda pg. 83)
Re: CLOCA 2023 Earth Day Event: Bowmanville Westside Marshes

Res. #41 Moved by C. Traill
Seconded by R. Hooper

THAT Staff Report #5832-23 be received for information.
CARRIED

R. Hooper thanked the staff, sponsors and volunteers for hosting the Earth Day event.

DIRECTOR, ENGINEERING AND FIELD OPERATIONS

- (1) Staff Report #5830-23 (Agenda pg. 86)
Re: Winter / Spring 2023 – Conservation Areas Update

Res. #42 Moved by M. Crawford
Seconded by R. Kerr

THAT Staff Report #5830-23 be received for information.
CARRIED

DIRECTOR, CORPORATE SERVICES

(1) Staff Report #5833-23 (Agenda pg. 91)
Re: 2023 Budget

Res. #43 Moved by B. Chapman
Seconded by B. Garrod

***THAT the recommended 2023 budget be approved, as presented;
THAT copies of the 2023 Budget Report, as approved, be circulated to the Region of Durham; and
THAT a copy of the approved budget be posted on the Authority's website.***
CARRIED

(2) Staff Report #5834-23 (Agenda pg. 136)
Re: Draft 2022 Audited Financial Statements

Res. #44 Moved by R. Mulcahy
Seconded by B. Chapman

***THAT the Audited Financial Statements for the year ended December 31, 2022, be approved as presented;
THAT a copy of the 2022 Audited Financial Statements be posted on the Authority's website and forwarded to the Region of Durham; and
THAT BDO Canada be appointed as CLOCA Auditors for the year ending December 31, 2023.***
CARRIED

CHIEF ADMINISTRATIVE OFFICER – None

CONFIDENTIAL MATTERS – None

NEW AND UNFINISHED BUSINESS

B. Garrod inquired to the Chair if there was opportunity to change the time of day the Board Meetings are held. Chair Roy advised that staff will send out a poll to enquire if an earlier time is agreeable first then narrowing down a suitable time is there is consensus and will remain the third Tuesday of each month. C. Leahy noted that he would like to keep the meetings as is. C. Darling clarified that a poll was done several years ago and at that time, it was determined to keep it as it is.

C. Traill asked it to be noted on the record, since Home Hardware in Bowmanville was granted their MZO to proceed with constructing their flagship facility in Bowmanville, C. Traill is advised that CLOCA has been singularly unhelpful with respect to their proceeding in a timely manner. The latest that C. Traill has been advised of is that Home Hardware has been asked to plant several trees even though almost no mature trees were destroyed during the construction and wanted the Board to know that Home Hardware has devised over the last 30 years a province-wide tree-planting program. C. Traill would like staff to follow up with her as to why this requirement was put in place when it does not seem to make sense and also it does not give any consideration to the fact that Home Hardware has in fact planted something around 40,000 trees across Ontario just out of its own corporate governance, good corporate citizenship. C. Traill noted again that she would like this noted on the record because she doesn't know if it's because of the Ministerial Zoning Order that perhaps there has been some push back on this but going forward, in light of their extensive contributions to beautifying the Province through free tree planting, she'd like it on the record that she doesn't think the current requirement makes any sense.

C. Darling noted that the requirement for the tree planting on the Home Hardware site was a municipal requirement and not a CLOCA requirement and noted that her concerns should be directed to the municipality

ADJOURNMENT

Res. #45 Moved by J. Neal
 Seconded by C. Leahy

THAT the meeting adjourns.
CARRIED

The meeting adjourned at 5:25 p.m.

ELIZABETH ROY, CHAIR

CHRIS DARLING, CHIEF ADMINISTRATIVE OFFICER

DRAFT

REPORT

CENTRAL LAKE ONTARIO CONSERVATION AUTHORITY

DATE: June 20, 2023

FILE: ACAD10

S.R.: 5837-23

TO: Chair and Members, CLOCA Board of Directors

FROM: Steve Holysh, Senior Hydrogeologist, Oak Ridges Moraine Groundwater Program (ORMGP)
Rick Gerber, Senior Hydrogeologist, Oak Ridges Moraine Groundwater Program (ORMGP)

APPROVED BY C.A.O. 

SUBJECT: **2022 Annual Report and 2023 Work Plan**

Attached is the Oak Ridges Moraine Groundwater Program (ORMGP) 2022 Annual Report and 2023 Work Plan. The ORMGP was initiated in 2001 and is a coalition of 16 agencies working together to better understand and manage groundwater resources. The Oak Ridges Moraine focused program stretches from the Halton and Nottawasaga Watersheds in the west to the Trent River in the east and reaches from the shores of Lake Ontario northwards to beyond Lake Simcoe and the Kawartha Lakes. The Program provides a multi-agency, collaborative approach to collecting, analyzing, and disseminating water resource knowledge as a basis for effective stewardship of water resources. Agencies and consultants look to the program to provide the regional geological and hydrogeological context for their ongoing technical studies and management initiatives.

RECOMMENDATION:

THAT Staff Report #5837-23 be received for information.

Attach.



Credit Valley Conservation
 Nottawasaga Valley Conservation
 Toronto and Region Conservation
 Lake Simcoe Region Conservation
 Central Lake Ontario Conservation
 Kawartha Conservation
 Ganaraska Region Conservation
 Otonabee Conservation
 Lower Trent Conservation
 Conservation Halton

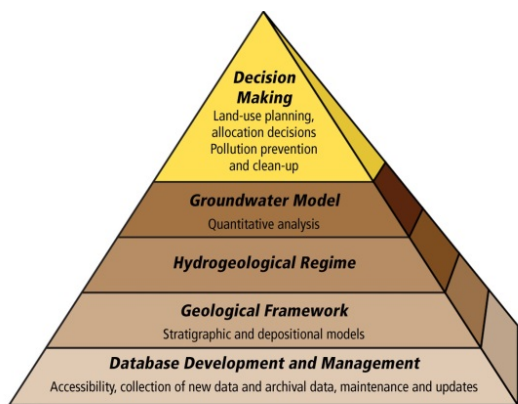


ANNUAL PROGRAM OVERVIEW (2022)
&
WORK PLAN (2023)

TO: ORMGP Executive Steering Team
FROM: Steve Holysh and Rick Gerber
DATE: May 9, 2023
RE: 2022 Overview/2023 Work Plan – Oak Ridges Moraine Groundwater Program (ORMGP)

Background

The Oak Ridges Moraine Groundwater Program (ORMGP) was initiated in 2001, driven by the encroachment of development onto the Oak Ridges Moraine and the recognition of an absence of high-quality environmental data and analyses, particularly with respect to groundwater. Since inception, the program has provided partner agencies with an actively managed water-related database and the regional geological and groundwater context for on-going day-to-day water resource management activities (e.g., development review, PTTW review, watershed management, source water protection, etc.). The framework for the program is succinctly summarized in the adjacent figure, taken from the Council of Canadian Academies 2009 report: The Sustainable Management of Groundwater in Canada.



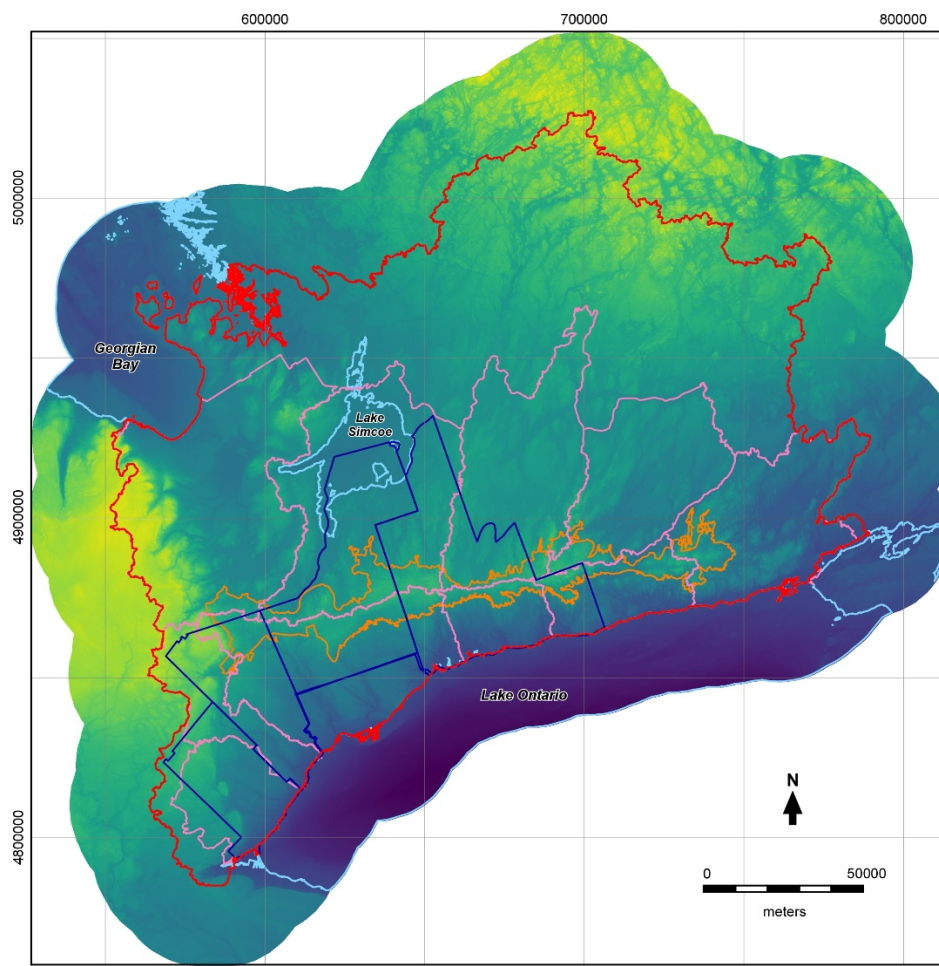
Mandate

The mandate of the ORMGP partnership is to provide a multi-agency, collaborative approach to collecting, analyzing and disseminating water resource data as a basis for effective stewardship of water resources. The ORMGP builds, maintains and provides to partnered agencies the regional geological and hydrogeological context for ongoing groundwater studies and management initiatives within the partnership area.

As such the program will:

- Build and maintain a master database of water-related information that is accessible to all partner agencies;
- Build and maintain a digital geological construction of the interpreted subsurface layers that is accessible to all partner agencies;
- Build, maintain and disseminate numerical groundwater flow models that can be used to address any number of issues that arise at any of the partner agencies;
- Coordinate and lead investigations that will acquire new field data that will strategically infill key data gaps;
- Provide technical support to Drinking Water Source Protection teams to ensure that interpretations used in source protection technical work are consistent with the current regional understanding;
- Provide technical support to planning authorities to ensure that Official Plan policies are developed in a manner which makes them consistent with up-to-date groundwater science as derived from the project;
- Provide technical support to all partnered agencies for addressing other Provincial legislation.

Further information regarding the program can be found at oakridgeswater.ca.



Program area - Note that for data management purposes the program area comprises: 1) the entirety of three Source Water Protection (SWP) Regions: a) Credit Valley/Toronto and Region/Central Lake Ontario (CTC); b) South Georgian Bay - Lake Simcoe (SGBLS); and c) Trent Conservation Coalition (TCC); and 2) the Halton Region and Conservation Halton portion of the Hamilton Halton SWP area. Focus of work is largely directed to the GTA municipalities (York, Peel, Durham, Halton and Toronto) and their associated Conservation Authorities.



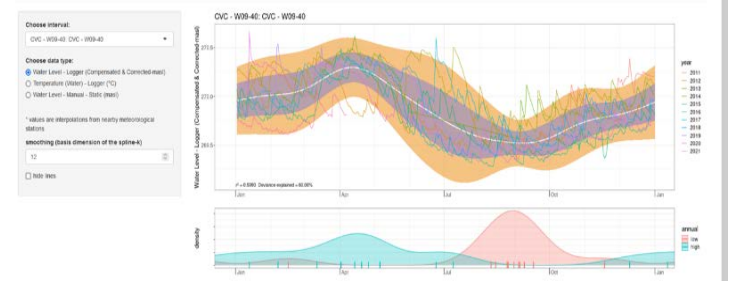
1. Database

- added this year – over 18,000 borehole records; 392 reports; 19 million temporal records;
- 2022 logins to website: Consultants = ~5,000; Agency Staff = ~5,000; Public = ~4,000;
- work initiated with City of Barrie to import data to database;
- incorporation of new geological picks and re-organization of database “Picks” tables;
- Added MNR stream temperature data;

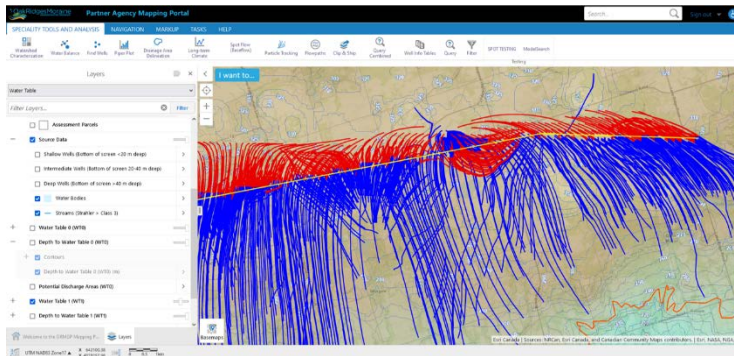
2. Analysis & Modelling

- incorporation of numerical modelling results to website with enabling of particle tracking;
- ‘Area of Concern’ mapping in Stouffville;
- continued work on geology ‘harmonization’ with organization and incorporation of geological picks;
- introduction of spot flow analysis tool on website mapping platform;
- technical insights and contributions to modelling studies for Halton, Peel and CVC;

Annual variability/High-Low Occurrence



3. Other



- completed GW flux and salt loadings to L. Ontario report for MECP;
- Communications – invited to present to the Internet of Water;
- 2 ORMGP related video presentations (STORM and NGWA) made available via link on website;
- continued collaborative partnerships with consultants (20 firms in total);
- Data Snapshots added to Home Page

4. Budget

- Program delivered within available funds - no planned increase for 2023;

Program Component	2022
Staff Costs (Wages + Benefits)	\$736,535
Office Costs + Disbursements	\$43,358
Computer + Software	\$36,513
Consultant/Services	\$51,058
Administration	\$25,220
Total	\$892,684



Review – 2022 (Detailed Summary)

The following provides a more detailed overview of activities undertaken through the Oak Ridges Moraine Groundwater Program through 2022.

1. DATABASE/WEBSITE

Through 2022 the program's database structure/schema remained robust. The information contained within the database was refined and improved through 2022 with continued use of SQL 2016 to facilitate database management. The discussion of database and website issues has been broken into four categories: Additions; Corrections; Accessibility and Software/Hardware Management.

1a Additions

- An updated WWIS database was obtained in March 2022 from the MECP and 15,234 new well records (including decommissioning records and well upgrades) were brought into the database – at the time of this import the MECP wells were up to date as of about March 2021;
- New boreholes: i) from Region of Halton databases acquired with modelling related projects; ii) tied to older City of Toronto geotechnical and hydrogeology reports; iii) older wells missing from Halton Region or new wells drilled in Peel, Durham and/or York Region; iv) other miscellaneous BHs entered from documents in the report library were added to the database over 2022; and v) boreholes and outcrops from the Ontario Geological Survey study in south Simcoe County were added. In addition to the MECP wells, approximately 2,950 additional wells/boreholes were added in 2022;
- Archived stream temperature data (obtained in early 2000s using HOBO loggers) was acquired from MNR and added to the database. Data was linked to existing spot flow stations if they were already in the database;
- Approximately 398 new documents were brought into the library over 2022;
- Nearly 500 new surface water locations were added, many of them spot flow stations that were provided from Conservation Halton, but also some stations from CVC;
- New climate stations, largely collecting only rainfall data, from Peel and York Regions were also added to the database along with their data;
- PGMN wells updated more regularly with linkage to Provincial Wiski system
- In total approximately 19 million temporal records (chemistry, water levels, climate, stream flow, etc.) were added in 2022 – this number reflects the import of regional data (from York, Peel, Durham and Halton), updating of the PGMN water levels and chemistry, as well as the updating of climate and stream flow data from Environment and Climate Change Canada;

1b Corrections

- In moving forward with a review and update of the geological and hydrogeological surfaces, program staff continued to review and correct MECP wells with respect to: i) discrepancy between metric and imperial units and ii) poor geological interpretations; iii) checking to ensure decommissioning records were properly identified (not misidentified as wells) and iv) incorrect locations. Most of the unit issues have been corrected, however it is expected that future wells with more subtle unit issues will reveal themselves as they are inspected;

1c Accessibility

- Through 2022, 20 consultant companies were partnered with the ORMGP under consultant agreements (Azimuth, WSP, exp, Golder, GEMS, Dillon, Burnside, Hatch, IBI, Jacobs, Gaman, Terraprobe, Soil Engineers, Matrix Solutions, SLR, Aqua Insight, Salas O'Brien, Thurber, Watermark, GW Environmental Management);
- 455 individual accounts now exist for consultant partners;
- user accounts for technical agency staff remained relatively stable at 384 accounts - several staff turnovers/moves have resulted in a small number of accounts deleted and others created; several staff from local municipalities, primarily in York Region (Vaughan, Richmond Hill, etc.) have requested accounts to the ORMGP website and have been periodically using the site;
- similar to past years, the 2nd year engineering course in Water Resources Engineering at the University of Guelph used the ORMGP website for required hydrology assignments. Temporary student accounts were created so that students could access the site to complete assignments. Staff are looking at ways to expand this student/University interaction. In fall 2022 Queen's University also engaged with the ORMGP to make use of one of the ORMGP held numerical models for a 4th year hydrogeology assignment;
- Part way through 2022 the way in which the website tracks visitors (both partners on the passworded side and also on the public side) was somehow changed, such that users didn't have to log in as frequently (i.e. bookmarking maybe was improved). As a result, the log in numbers for 2022 are all estimates based on the limited data that was acquired from the site. New software will be used in 2023 to improve the counting of visitors and how they make use of the ORMGP website. On the public side of the website, the number of visits is estimated to be approximately the same as in 2021 at around 3,500 - the website continues to attract general users looking for water related information;
- Building upon the introduction of non-MECP (MOE) BH logs in .PDF format (go to Boreholes Map – choose "Boreholes with Supplementary Log") to the website, around 170 new PDFs were uploaded and added in 2022 with the total of available non-MECP BH logs now reaching 2,939. This initiative allows for these consultant logs and other older logs from GSC or OGS staff to be readily accessed on the website;
- In 2022, the process of building a new tool to allow for staff at partner agencies to import logger data into the master database continued. Building on the work of the 2021 summer student, significant progress was made completing the coding for this tool. The task is anticipated to be ready for use in the summer of 2023.
- The many 'R' based statistical tools available for groundwater level hydrograph analyses, piper plots, as well as for climate and surface water analyses on the website have continued to be adjusted and refined to deliver high quality analyses to technical staff visiting the ORMGP website;
- The Citrix Xendesktop platform, which allows for partner agency staff and ORMGP staff to access the program's database and ORMGP files continues to be one of the main ways for staff to interact and update the ORMGP database.
- 2022 also saw a large increase in metadata and information sheets (built in GitHub to allow for easy updating and editing) that describe maps and analyses available on the ORMGP website. This will continue through 2023 (see [ORMGP Metadata and Information](#))

1d Software/Hardware Management

In order to keep the database up-to-date and readily accessible to the partner agencies there is continual maintenance and review of the program's software and hardware capabilities. Two new laptop computers were

required in 2022. The many software licences required to maintain the program were all renewed as required throughout 2022.

Through 2022, with the waning of the Covid pandemic, ORMGP staff returned to the office on a regular schedule, with most work taking place remotely. Remote access to the program's servers, operated out of CLOCA's offices, was smooth and remained seamless throughout 2022.

The following tasks continue to be undertaken with respect to the program's software and hardware management:

- database management workflows that were reconfigured to work within Citrix platform in 2017 have continued to be used through the 2022 calendar year. As in the past, the backing up of the database continues to be a focus of the program and was unchanged in 2022:
 - The database resides on a server at CLOCA which is continually backed up through VEEAM backup system server software – should there be a power failure or database glitch, the database can be restored from a short-term backup in very short order; the VEEAM software stores multiple versions of the database which are eventually overwritten with subsequent, more recent backups;
 - on a weekly basis (every Sunday) the following steps are automatically transacted:
 - the database is backed up to a separate CLOCA based fileserver (this copy is dubbed the “weekly database”) and is subsequently made available: i) for use via the program's website to share data with the outside community; and ii) as the ‘weekly’ database which may be accessed by the partners through the ORMGP Citrix machines. This database has both read and write access and can be used for training and testing purposes.
 - a copy of this backup is placed on a separate ORMGP server (newly introduced at CLOCA) that functions as a central storage facility holding database versions dating back in time. These older backups are available on a monthly basis. The previous eight weekly backups are also stored here.
 - this database is automatically transferred/written to an ORMGP server at TRCA's offices (used by ORMGP staff to interact with, review and check the database);
 - over the long term, backup copies of the database are held off-site (along with backups at CLOCA) should they be required;
 - The primary numerical model archive (part of the model custodianship program) is held on a server at CLOCA. A duplicate archive is kept off site and synchronized regularly. For added redundancy, two additional copies of the archive are also kept in separate locations off-site, however they are synchronized less regularly.
- To ensure partners have the ability at their own offices to use software products (e.g., Viewlog, Sitefx, and others) and to review/access/QA/evaluate their data held in the ORMGP database, a cut of each partner agency data set is usually distributed (in SQL and/or Access format) at the ORMGP technical meetings (i.e., usually twice per year or more often if requested). In 2022 this database access was provided remotely using Drop Box.

2. ANALYSIS & MODELLING

Technical Modelling Contributions

Through 2022, in addition to the numerous analyses highlighted below, ORMGP staff continue to communicate with software developers to discuss modelling code, at a high technical level, and to provide input regarding suggested fixes and/or improvements to existing software codes (e.g., discussions continue to be held with the developers of Geocortex, GSFLOW, HydroGeoSphere, Raven, and CSHS HyDRology).

Peel Region Numerical Model

Peel Region’s numerical modelling project, with a revised focus and a new modelling team (Aqua Insight) was also ongoing throughout most of 2022. The modelling initiative was revised to focus on the update/revision to the delineation of WHPAs for several Peel communities. ORMGP staff assisted Peel as required during this work.

Storage of Gridded Data (FEWS)

Work within the Delft-FEWS environment progressed through 2022 with efforts advanced in refining water budgets in preparation for updates to the water budget tool, and in being able to directly read/display FEWS results via the website. The program’s ability to manage gridded sets of information continued to improve in 2022.

Time Series/sHydrology Analyses

Through 2022 the groundwater, surface water and climate time series analysis packages, including the graphs and statistics, that are currently running on the program’s website have been continually enhanced and refined, based on the recommendations and needs of partner agencies. Stream flow and climate data from Environment and Climate Change Canada’s website continues to be regularly uploaded into the program’s database. As new data are regularly added nightly, the statistical analyses are automatically updated. Users continue to be able to select a stream gauge or climate station location and then undertake a wide variety of analyses of the data (e.g., seasonal and monthly trend analyses, baseflow analysis, return period, flow frequency, etc.). As an example of the applicability, website visitors can now quickly determine whether the previous month was either hotter/colder or wetter/drier than the long-term average.

The following aspects of the time series/mapping analyses or what is being internally referred to at ORMGP as the “sHydrology” toolkit, were worked on in 2022:

- Many of the tools that were under development over the past few years came to fruition in 2022 and were incorporated into the ORMGP mapping portal under the “Specialty Tools and Analysis” button, these include:
 - “Particle Tracking” tool that allows for users to make use of the insights gained from earlier consultant-led numerical modelling studies to see how groundwater moves beneath any area of interest;
 - “Flowpaths” tool was incorporated so that users can quickly ‘see’ upstream and downstream of their sites of interest to see where water is flowing to/from in nearby streams;
 - “Long-Term Climate” and “Drainage Area Delineation” were given higher profile by adding them to the Tool bar;
 - “Clip and Ship” tool was added, allowing users to download data/maps directly to their home/office computers;

These tools are shown in the figure below which is a screen capture from the ORMGP website.



Screen capture of “Specialty Tools and Analysis” bar from website

- The addition of the Original Static Water Level to the hydrograph plots (check box in lower left corner of hydrograph screen) allows users to quickly see if water levels are similar to original conditions when the well was drilled;
- groundwater level variability, both spatially and temporarily, continues to be investigated;

Geological Layer Harmonization

Work on the geological surfaces in 2022 was aimed at regenerating the geological surfaces in Surfer software. Towards this goal, the geological picks that are used to constrain the surfaces were reorganized within the database. An additional “Picks_External” table was created to host polyline/constraint picks (as opposed to more standard picks made at wells) that were previously held within older software. The Picks_External table also now holds picks tied to the surficial geology mapping published by the Ontario Geological Survey. Polygons that delineate the exposure of certain units at the ground surface were assigned elevations from the DEM and vertex points along the polygon were imported into the table within the ORMGP database. Construction and refinement of geological surfaces into the future can now make use of these picks to better reflect the layers.

Groundwater eBook

Through 2022 work continued on an Oak Ridges Moraine focused eBook to be submitted to an international entity known as the “Groundwater Project” (see [Groundwater Project](#)). The Oak Ridges Moraine will be the only Canadian contribution to the Aquifers of the World section of the Project. The Groundwater Project is an international effort led by Dr. John Cherry to provide free educational groundwater related materials to the global community. The eBook provides an opportunity to showcase the collective ORMGP efforts to a broad global audience. Through 2022, considerable efforts were expended in harmonizing geological/hydrogeological interpretations between different partners contributing to the eBook.

“Areas of Concern” Mapping/Analyses

In 2022 work continued on the “Areas of Concern” mapping (see [ORMGP - Areas of Concern](#)). Work in Whitchurch-Stouffville continued through the year with a draft report circulated late in 2022. In general, this work has a focus on the artesian conditions that naturally exist on the slopes of the Oak Ridges Moraine. This condition occurs as a result of the pinching out of the Oak Ridges Moraine aquifer sediments in moving away from the crest of the moraine as the elevation declines. The Oak Ridges Aquifer pinches out between the overlying surficial aquitard layers (e.g., Halton Till) and the underlying Newmarket Till. Excavations or wells drilled along this part of the moraine, should they breach the upper confining aquitard, can lead to considerable groundwater problems that frequently cost significant time and money to resolve. Mapping is prepared that shows areas where proposed developments/excavations might result in ‘unexpected’ groundwater problems (and by extension, associated increased costs).

Miscellaneous technical support

Due to the Covid work at home directives, support and communication with partner agency staff was conducted via phone and/or on-line through 2022.

York

- attended liaison meeting with York staff to present and exchange ideas and hear of ongoing work plans at York Region;
- attended Green Lane project meeting to provide modelling input/support;
- assisted with the logging of two cored BH logs from Nobleton area;
- assisted in reviewing data (water levels) when flowing conditions emerged in Aurora;
- worked with York staff to update/synchronize wells in both York and ORMGP databases;
- worked with York staff to transfer annual monitoring data into ORMGP database;
- provided technical input re the geological setting in the Aurora area;
- provided hydrogeological and geological technical support on Whitchurch-Stouffville “Areas of Concern” mapping;

Peel

- Provided technical assistance and review of source water protection modelling and reports;
- Worked with Peel staff to access Peel climate data and to coordinate data access with CVC;
- Provided overview of ORMGP and website to new student staff;
- Along with Peel staff, coordinated the review, correction and updating of pumping/chemistry/water level data for Peel's groundwater-based communities;

Durham

- Incorporated geological picks from recently completed modelling project into the database;
- continued support to Region and Burnside staff to ensure process for migration of monitoring data into database is working and accessible for uploading of data;
- undertook an overview of longer-term data at Durham's groundwater based communities – data was corrected and updated as needed;
- updated private well water levels in southern Durham Region;
- assembled groupings of wells interpreted to be affected by pumping – the WLs from these wells will be made available together on a single graph in 2023;

Toronto

- continued to input reports and boreholes from Toronto into the ORMGP database;
- met with staff to discuss lakebed geology with respect to installation of new chlorination pipe for zebra mussel control to protect water intakes;

Halton

- working with modelling team (Aqua Insight) to provide/exchange data and knowledge;
- providing ongoing technical input and support on modelling, geology, and database corrections to modelling team (Aqua Insight) – this also included the fixing and re-positioning of many key Halton wells in Campbellville, Georgetown and Acton - and the reconsideration of the bedrock valley through Georgetown and Acton;
- compared several external databases acquired from Conservation Halton to look for new wells to import into ORMGP database;
- imported over 100 consultant reports that were made available by Halton staff into ORMGP library;
- incorporation of geological picks from external databases into ORMGP database;
- continued to work with Halton staff to identify/name key wells in the ORMGP database that are important for the Region;

TRCA

- provided overview ORMGP/Sitex training to new staff;
- prepared aquifer maps to support initiative to further develop geothermal energy sources across TRCA jurisdiction;
- provided chloride data from website in support of watershed plans;
- continued to link to TRCA database thus allowing all TRCA surface water stations to have statistical analyses performed via the program website;
- provided a review of screened formations for PGMN wells;
- assisted staff in ensuring monitoring data (Seaton, PGMN, etc.) was brought into database properly and is accessible on the website;

CLOCA

- continued to provide technical support with respect to the Ontario Hydro One facility (i.e., establishment and operation of long-term groundwater monitoring location) in the Municipality of Clarington;

- provided updates from Durham model to CLOCA staff for incorporation into their water budget development review process;

CVC

- provided technical input and review to the Risk and Return on Investment (RROIT) procedure;
- continued to provide technical support for: i) MIKE SHE water quality focused modelling being undertaken in cooperation with University of Guelph;

LSRCA

- provided technical input into several groundwater related projects: Roger’s Reservoir wetland, Horseshoe Valley WHPA, ESGRAs.

Conservation Halton

- provided an overview of the ORMGP to technical staff and offered accounts on website;
- incorporation of Conservation Halton wetland and drive point WL data;
- import of Conservation Halton spot flow data;

Barrie

- provided technical training/advice re the capturing of borehole and well information to City staff as they move to integrate many new City wells into the ORMGP database;

MECP

- completed report for MECP staff on groundwater discharge to Lake Ontario (both direct and indirect) as well as the potential contaminant (salt) loading to the lake ([Final Report](#)).

3. OTHER PROGRAM INITIATIVES

Over the course of 2022 several other initiatives also formed part of the overall ORMGP work program.

Website – Partnership agreements with consulting firms were initiated in early 2018 and have continued, with the end of 2022 marking the fifth year of this program. Through 2022 there were twenty consulting firms partnered with the ORMGP whose staff are now actively using the password protected side of the website to aide in their consulting practice. ORMGP staff track the number of consultant logins to the website by each consulting firm and provide that information back to the consulting firm so they can be kept apprised of the value they receive from their ORMGP partnership.

The ongoing partnership between ORMGP and the GIS staff from Central Lake Ontario Conservation Authority (CLOCA) continued with a focus on enhancing the program’s mapping section of the website. Enhancements to the Geocortex mapping tool on the website continue to improve the ability of users to efficiently explore the vast data and information sets assembled under the program.

In 2022, some of the more significant updates to the website included the following:

- the Home Page of the ORMGP was revamped and re-organized. Key ORMGP documents were made available via the Publications and Reports/ORMGP path;
- a series of new training videos were also initiated in 2022 and are available via the ORMGP home page - ORMGP Support/Website Training path;
- a series of new ‘Data Snapshots’ was initiated in 2022 to provide quick access to a number of graphs and maps that synthesize key story lines that are emerging from analyses of data held in the ORMGP database. The snapshots are unique because they can be readily refreshed and updated as new data comes into the database. At the end of 2022, seven Data Snapshots have been made available on the ORMGP home page: Chemistry – Isotope Summary; Climate Summary; Climate – Historical Station Count; Geology – Geological Picks; Groundwater Level Variability; Numerical Models; and Streamflow – Hydrograph Separation;

- addition of “Particle Tracking” tool under "Speciality Tools and Analysis" toolbar. This tool fulfils an important part of the ORMGP’s mandate by broadening accessibility to the insights and knowledge that has been gained by the numerous numerical modelling studies undertaken since the early 2000s. Knowledge and insights from the numerical models are largely forgotten and not capitalized upon because the numerical models themselves are very sophisticated and very few staff, either at partner agencies or at the consulting firms, have the expertise to run the models;
- Strahler ordered streams, that are topologically correct, were added to the Surface Water Theme Map, and in addition, the modelled groundwater discharge (from the 2006 Regional Model) was added to the Surface Water Theme Map;
- addition of a “Flowpaths Tool” to the "Speciality Tools and Analysis" toolbar. This tool allows website users to view upstream and/or downstream flow paths from any point. It can also be accessed by right-clicking on the map;
- Source Water Protection data was made available for Trent Conservation Coalition, CTC, Halton-Hamilton and South Georgian Bay-Lake Simcoe regions and is available within the Land Use theme map;
- a Long-Term Estimated Climate Data tool has been added to the "Speciality Tools and Analysis" toolbar, allowing users to explore graphs and analysis of long-term estimated climate data. The tool can also be accessed by right-clicking on any map;
- addition of a Spot Flow (Baseflow) tool to the "Speciality Tools and Analysis" toolbar that allows users to access stream spotflow data from the ORMGP database for any chosen year. The tool shows the gaining and losing stream reaches (and the volume gained or lost per km of stream between measurement points);
- all of the geological picks that have been made over the years were made visible/accessible on the Geology Theme map on the website;
- new Metadata button has been added to the "Feedback and Help" toolbar. The documentation here allows users to search and explore the ORMGP metadata for legend items on each of the different theme maps;
- addition of a “Clip and Ship” tool available in the "Speciality Tools and Analysis" toolbar. The tool allows for the direct download of data and maps from the ORMGP website onto the user’s computer. Three packages of information are available for download (Geology; Hydrogeology; and Hydrology) – the tool focused on site specific studies and is restricted to areas of 18 km² or less;
- significant improvements were made to the Cross-Section tool to allow for more interactive use of the tool (e.g., dynamic push/pull of sections through space, dynamic vertical exaggeration changes, ability to cosmetically change sections by adding/removing grid lines, well names, etc.);

Report Library – early in 2022, the library search interface was adjusted to integrate the two previous methodologies (Library Search and Document Search) into a single search interface. “Library Search” was designed to look for documents using key attributes in the ORMGP database (e.g., author, author agency, title, year, etc.) whereas “Document Search” was designed to make use of the OCR scanning of the .PDF documents, looking for any user-entered word contained within all library documents. With the redesign, these two search routines have now been integrated into a single efficient interface.

Opportunities for partner agencies to hire summer students to help inputting reports and data to the ORMGP remained limited in 2022, owing to Covid still being a concern in the early part of 2022. As a result the number of reports entered into the library was lower than in the past, never-the-less, some 392 reports were added to the program library over 2022, many provided by Halton Region.

Lake Ontario Flux Project – through the early part of 2022 staff worked on a project to assist the MECP in characterizing groundwater movement to Lake Ontario, as well as with estimating the salt flux to the lake via groundwater. A final report was prepared for the MECP in 2022 and is available on the ORMGP website (See [Final Report](#))

Field Work – Staff continue to monitor a suite of approximately 40 wells to help in characterizing specific hydrogeological settings that have been identified across the study area. Some of these monitoring locations have continuous measurements extending back to 1994.

Ontario Climate Advisory Committee – as part of the task of considering the future use and updating of the available groundwater flow models across the program study area, in 2022 staff continued to attend and contribute to this working group that advocates for best management practices in terms of collecting, managing, and distributing climate information in Ontario.

Standards Council of Canada – Being recognized as leaders in environmental data management, ORMGP staff were invited to serve on the SCC’s technical committee for drafting data standards for automated meteorological stations in Canada. Through 2022 ORMGP staff chaired two sub-committees related to the project (NSC3 and NSC4), successfully leading to the preparation of standards that have been circulated to stakeholders for review.

Communications/Analyses

In 2022 ORMGP staff were invited to present or meet with various external agencies on behalf of the partner agencies.

- Assisted with the organization of, and presented at the annual Ontario Geological Survey (OGS)/Geological Survey of Canada (GSC)/Conservation Authority Open House held online in February 2022;
- Continued to be active in SoSmart – in 2022 received stream temperature database from MNR;
- Assisted with TA training and set up ORMGP website accounts for students at University of Guelph enrolled in a fall 2022 engineering hydrology course;
- Provided in person or on-line ‘Lunch and Learn’ or similar talks to the following groups to promote increased use of the ORMGP website: Toronto Inspection, Soil Engineers, Sirati, Thurber, Dillon, Wood, Richmond Hill, Conservation Halton, Jacobs, Geosource, Simcoe, Groundwater Project;
- Provided a professional talk to the Internet of Water, a U.S.-based academic group that is looking to promote the better management and sharing of water related data across the U.S.;
- Invited to present a technical talk on modelling aspects of ORMGP to the hydrology modelling group at the University of Waterloo;
- Invited to present a talk on the ORMGP to York University;
- Met on several occasions with City of Ottawa staff to provide technical support to their Groundwater Information Project (GIP);
- Provided technical review for two papers, one for the Groundwater Project on the use of water wells, and a second for the Canadian Journal of Earth Sciences on characterizing Hydrogeologic Terrains;
- Continued to contribute to the Greenbelt Foundation by serving on the Advisory Committee that reviews incoming proposals;
- Joined Canadian Hydrological Model Stewardship (CHyMS): a Canadian collaboration/web server hosted by the National Research Council Canada to assist in the development of the Raven model.

4. BUDGET SUMMARY

In 2022 the five senior partners (City of Toronto, Regional Municipalities of York, Peel, Durham, and Halton) each contributed \$175,000, and in addition, the program received \$77,184 from consultant subscriptions to the ORMGP website, resulting in a total revenue of \$952,000 to the program. The program’s expenses for the 2022 are summarized below. 2021 costs, as well as estimated 2023 costs are also provided.

Program Component	2021	2022	2023 (est.)
Staff Costs (Wages + Benefits)	\$729,900	\$736,534	\$796,000
Office + Disbursements	\$82,208	\$43,358	\$45,000

Computer + Software	\$42,630	\$36,513	\$50,000
Consultant/Services	\$27,065	\$51,058	\$80,000
Administration	\$16,187	\$25,220	\$26,000
Total	\$897,990	\$892,684	\$997,000

The program was completed within an acceptable budget in 2022. Program costs were similar in 2022 to 2021. The cost estimate for 2023 is projecting an increase in Consultant/Services as additional hours have been projected for a recently added consultant staff member to contribute more significantly to the program. Additional services from CLOCA GIS/IT staff are also projected for 2023.

Given the tight budget conditions in 2020, and that staff costs/benefits rise by a minimum of the cost of living, staff initiated the process of adding a ‘cost of living’ adjustment to the ORMGP budget for 2021. Covid derailed this attempt in 2020 and with Halton Region joining the program in 2021, the need for this became less pressing and it was temporarily pushed back. Staff will be looking to add this cost-of-living adjustment to the requested funds from the funding partners going forward.

2023 WORK PLAN – ONGOING/UPCOMING TASKS

As in previous years, key initiatives for 2023 will relate to enhancing: i) the program’s database; and/or ii) communication and outreach. Tasks will generally focus on continued enhancement of the program’s website to deliver data, information, and knowledge in an easily accessible manner. The long-term goal for the website is to build upon earlier successes by offering newer and better ways to access, view and analyze data, all to benefit technical staff in improving decision making. The technical content currently available on the website will continue to be enhanced by providing additional insight pieces that succinctly summarize different hydrogeological analyses that have made effective use of the vast store of data in the database. An ongoing goal of the program’s website continues to be to reduce the need for extensive knowledge of various individual specialized software packages (e.g., Sitefx, GIS, SQL Management Studio, etc.).

With no suggestions as to the order of importance, through 2023 work will take place on the following aspects of the program.

Work Area 1 – Halton Region and Upper CVC

Throughout 2021 and 2022 work was undertaken to either rename or enter borehole records that were of interest to Halton Region. With this effort largely complete, and with Halton continuing to move forward on their Tier 3 numerical modelling effort, 2023 will see continued work with Halton Region to populate temporal data (water levels, pumping data, and water quality data into the database). At the same time the CTC is looking to incorporate data from the upper parts of the Credit River Watershed (e.g. Orangeville, Erin, Hillsburgh, etc.). ORMGP will work with CTC to capture municipal data into the database. To assist CTC source water team, staff will also assist with technical insights and assistance with renewed source water protection modelling in the upper CVC watershed (Erin area).

- **Benefits:** Provides data so that hydrographs, pumping quantities and water quality can be readily accessed/viewed on ORMGP website. Also, improved understanding of groundwater conditions in the upper parts of the Credit River Watershed will improve overall understanding of the watershed down to Lake Ontario.

Work Area 2 - Continued improvement and expansion to the database

The database is now over 100 gigabytes in size and continues to grow as new information is appended. Up-to-date climate and streamflow data are regularly acquired from Environment and Climate Change Canada and input to the database. As updates are made available from the Province, the WWIS, PGMN, PWQMN data and PTTW will be updated in 2023. Temporal data from the partner agencies will also be updated through the year.

- **Benefits:** Improved data quality and additional data input to the database will enhance any work undertaken in the ORMGP area, whether it is in support of partner agency initiatives, Source Water Protection, development, construction activities, or other.

Work Area 3 – Report Library Capture

In 2023 program staff will resume to work with Hunter GIS staff to input additional reports into the library. The reports cover a broad geographic range and will help to infill many areas where no previous work has yet been made available. In addition, if students are retained by partner agencies, ORMGP staff will also assist with training and the processing of consulting or other relevant reports. Data capture from these documents into the database will also continue.

- **Benefits:** Improved access to and availability of subsurface information across program area.

Work Area 4 – Fostering and Enhancement of Partner Agency and Consultant Website Use

Over the course of 2023, using the newly installed analytics software, staff will better monitor external partner agency use of the program website and encourage further use of the site. This feedback will assist with

focussing improvement efforts relating to information accessibility and analysis tools that are made available on the website. In 2023, staff will be exploring means (on-line or face to face) for developing and implementing additional training for technical staff at both consulting companies and partner agencies. One example of an initiative that will be available to partner agencies is the idea of having ORMGP staff work for a day at a partner agency, allowing for a mix of informal and formal meetings and training that can: i) increase partner staff awareness of the breadth of information available on the ORMGP website; and ii) provide ORMGP staff with a better idea of the water resources analytical and mapping needs of partner agencies. Staff will continue to encourage other companies to join the partnership. Partner agency staff are also urged to encourage consulting companies to make use of the ORMGP.

- **Benefits:** This task, especially training/education initiatives, will help to ensure that consultant partners remain engaged in the program in a meaningful way, allowing them to maximize their use of the information and data available through the website and to contribute back to the program.

Work Area 5 – Geological Layer Harmonization

With over 80 numerical models having been generated across the geographical study area of the program, staff continue to work towards a single “authoritative” geological framework across the study area by incorporating insights from these models. With the consolidation of all the geological picks in 2022, ORMGP staff are now in a better position to bring together geological insights across the broad ORMGP study area. In 2023, it is anticipated that work will be focused on updating the bedrock surface, with a focus on bedrock valleys and their orientation, with a strong focus on a check of water well records and their position, which has been found to potentially alter bedrock valley thalwegs.

In 2023 staff will continue conversations with staff from the Ontario Geological Survey as well as the Geological Survey of Canada to discuss and possibly incorporate geological layers from the 2020 OGS South Simcoe study, as well as the bedrock geological layering from the recent modelling work undertaken by the OGS and the GSC.

- **Benefits:** This task continues efforts to consolidate geological frameworks from various initiatives as well as new data into an “authoritative” set of surfaces that will extend across the entirety of the study area. For each agency, this will continue to prove to be a significant benefit in that they can confidently provide a set of interpretive geological layers to any ongoing capital works project that involves subsurface excavation or tunneling. When provided to consultants, the set of layers allows for all parties (including staff and consultants working in adjacent agencies) to speak with a common language when referring to the subsurface stratigraphy.

Work Area 6 – Addition/Refinement of Mapping Web Portal

Over the course of 2023 several planned initiatives will be moved forward to enhance the mapping portal on the ORMGP website. Ideas that will be explored include:

- **Chemistry** – although preliminary work has been undertaken on a new tool to better extract and display results of water quality tests, the tool has not been sufficiently developed to enable on the website. Work will continue in 2023 to get this tool website ready.
- **Groundwater Level Variability** – Building upon the Groundwater Level Variability Data Snapshot, ORMGP staff will look to link certain hydrogeologic behaviours observed at different wells situated within various hydrogeological settings. The long-term goal would be to better understand the expected groundwater response in different settings to both seasonal water availability as well as single storm events. These insights would then be transferred to the website either at the well level (different coloured wells) and/or at the landscape scale.
- **Water Budget** – in 2023, making use of newly developed Delft FEWS system, efforts will be extended to work on a renewed water budget tool that will extend water budget coverage westward through the Halton area.

- **Training Videos** – through 2023 additional videos will be prepared and made available on the ORMGP You Tube channel to highlight various aspects of the ORMGP website, and to demonstrate techniques for effective use of the site;
- **GitHub/Metadata** – 2023 will also see continued work on the site’s metadata and technical descriptions on the procedures used to develop products that are made available on the ORMGP website;
- **Online Model Insights** – With the introduction of the Clip and Ship tool in 2022, interest continues in ensuring that hydrogeological insights from the numerical models developed over recent years are made available for more widespread use. Towards this goal ORMGP will continue to explore additional ways that will allow partners to take advantage of the past investments in numerical modelling. Some ideas to consider include allowing for users to explore well drawdown via the ORMGP mapping portal. This could allow for non-modellers to gain insights from models for various water management decision-making and quickly assess potential impacts to their water supply
- **Integrated Planning Map**
In discussions with planners over the past couple of years, it has become apparent that the ORMGP mapping portal, with its many different themed maps, offers the possibility to assist planners with making better land use change decisions from a water management perspective. By overlaying maps such as the surficial geology, depth to water table, and flowing wells it may be possible to colour code certain areas as being either more or less suitable for different types of land use change proposals. ORMGP staff will investigate the possibility of developing an effective planning themed map that can be accessed on the website.
- **Dynamic Maps** – In 2023, expanding upon the introduction of the “Dynamic Data Snapshots”, ORMGP will look to publish more of these maps onto the website.

Benefits: all actions directed to the website will be focused on providing smarter and easier ways to explore the data within the database and associated analyses/estimates, thereby reducing the time needed to acquire data for decision making.

Work Area 7 - Mapping of Known Groundwater Problem Areas

Mapping of groundwater “Areas of Concern”, (i.e., those areas where subsurface construction works could lead to considerable problems and excessive costs), was initiated in 2019. In 2023 mapping will be completed in Whitchurch-Stouffville and work will continue in Uxbridge Township. There has been an indication from partner agencies that this kind of mapping is beneficial.

- **Benefits:** By understanding of subsurface conditions prior to project commencement, partner agency staff (both consultants and government) can provide preliminary knowledge regarding overall project cost and necessary efforts. Such regional maps can provide a screening tool prior to the detailed work necessary for project design.

Work Area 8 – eBook

In 2023 work will wrap up on the ORMGP eBook contribution to the Groundwater Project. The eBook will synthesize much of the hydrogeology of the Oak Ridges Moraine area and will be unique in that it will directly link to the ORMGP website allowing readers to explore data as they read through the book.

- **Benefits:** As the only Canadian contribution to the Groundwater Project’s overview eBooks on major global aquifers, the opportunity exists to showcase the work of the program and partner agency staff that have contributed to the program over the years.

Work Area 9 –Website Metadata

The past two years have seen the development of ORMGP’s GitHub built metadata and ‘fact sheets’. 2023 will see the continued development of additional metadata/fact sheet writeups, and to better organize the information

available so it is readily findable on the site. This will provide technical visitors with assurance and documentation as to how specific map products have been produced.

- **Benefits:** having metadata available on the website will allow users to see data sources and how specific maps and analyses were created. This will provide additional confidence and support to website users such that they are more reliant on using the website's products.

Work Area 10 – Communication Strategy

With the support of the Greenbelt, in 2023 ORMGP staff are looking to engage a marketing/strategic communications firm to assist in identifying paths and opportunities to improve the overall awareness of the work being undertaken through our program and to have the program's website become a more regular 'go to' tool to inform land use and water management decision making across the GTA.

DATE: June 20, 2023
FILE: RPRG3974
S.R.: 5835-23
TO: Chair and Members, CLOCA Board of Directors
FROM: Chris Jones, Director, Planning & Regulation
SUBJECT: **Permits Issued for Development, Interference with Wetlands and Alteration to Shorelines and Watercourses – May 1 to 31, 2023**

APPROVED BY C.A.O. 

Attached are Development, Interference with Wetlands and Alterations to Shorelines and Watercourses applications, pursuant to Ontario Regulation 42/06, as approved by staff and presented for the members' information.

RECOMMENDATION:

THAT Staff Report #5835-23 be received for information.

Attach.

PERMITS TO BE RATIFIED, FROM 1 MAY 2023 TO 31 MAY 2023

Row	Municipality	Owner / Applicant	Street Lot Con	Permit No	Description
1	AJAX	PROPERTY OWNER	26 ONTORO BLVD/LOT 01/RANGE 02	A23-088-BH	RETROACTIVE APPROVAL TO RESOLVE A VIOLATION OF ONTARIO REGULATION 42/06 FOR COMPLETION OF A DECK AT REAR OF HOUSE WHERE CONSTRUCTION WAS COMMENCED WITHOUT THE NECESSARY PERMIT
2	AJAX	PROPERTY OWNER	26 ONTORO BLVD/LOT 01/RANGE 02	A23-087-SHF	RETROACTIVE APPROVAL TO RESOLVE A VIOLATION OF ONTARIO REGULATION 42/06 FOR A ROCK REVETMENT SHORELINE WALL PREVIOUSLY CONSTRUCTED WITHOUT THE NECESSARY PERMIT
3	AJAX	ROGERS COMMUNICATIONS/TELECON DESIGN INC.	TAUNTON RD E & LAKE RIDGE RD N/LOT 01 & 35/CON 03	A23-086-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH RE: PLACED PROPOSED CONDUIT & EQUIPMENT
4	AJAX	ROGERS COMMUNICATIONS/TELECON DESIGN INC.	AUDLEY RD/LOT 02 & 03/CON 04	A23-090-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH PLACEMENT OF PROPOSED CONDUIT & EQUIPMENT
5	CLARINGTON DARLINGTON	PROPERTY OWNER/AVTECH	48 JACKMAN RD/LOT 13/CON 02	C23-081-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH THE CONSTRUCTION OF AN ACCESSORY DWELLING INCLUDING A GARAGE
6	CLARINGTON DARLINGTON	FAR SIGHT INVESTMENTS/GHD	WEST OF LAMBS RD, NORTH OF KING ST E, SOUTH OF CONCESSION ST/LOT 7 & 8/CON 01	C23-070-GFHA	DEVELOPMENT ACTIVITIES ASSOCIATED WITH RE: CONSTRUCTION OF TWIN SANITARY SEWERS ACROSS SOPER CREEK TO SERVICE TIMBER TRAILS
7	CLARINGTON DARLINGTON	PROPERTY OWNER/HERITAGE STONE	18 MERRYFIELD CRT/LOT 09/CON 01	C23-072-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH THE INSTALLATION OF AN INGROUND POOL
8	CLARINGTON DARLINGTON	PROPERTY OWNER	3820 TRULLS RD/LOT 31/CON 03	C23-080-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH RECONSTRUCTION OF AN EXISTING GARAGE DESTROYED BY FIRE
9	CLARINGTON DARLINGTON	HYDRO ONE NETWORKS INC.	VARIOUS LOCATIONS	C23-073-H	DEVELOPMENT ACTIVITIES ASSOCIATED WITH GEOTECHNICAL INVESTIGATIONS (DRILLING OF BOREHOLES & SOIL CORE SAMPLING) AT FOUR LOCATIONS
10	CLARINGTON DARLINGTON	PROPERTY OWNER	167 NELSON ST/LOT 12/CON 01	C23-093-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH THE INSTALLATION OF AN IN-GROUND POOL
11	OSHAWA	PROPERTY OWNER/NIA ARCHITECTS INC.	1438 SIMCOE ST S/LOT 07/BFC	O23-083-GBFW	DEVELOPMENT ACTIVITIES ASSOCIATED WITH RE: CONSTRUCTION OF 4 STACKED APARTMENTS
12	OSHAWA	ENBRIDGE DISTRIBUTION	CONLIN RD E/LOT 03/CON 05	O23-092-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH THE INSTALLATION OF A PROPOSED GAS MAIN
13	OSHAWA	PALMER/DURHAM REGION	1640 RITSON RD N/LOT 9 & 10/CON 04	O23-068-A	ALTERATION OF A WATERCOURSE - OSHAWA CREEK FOR EROSION MITIGATION AND CHANNEL RESTORATION AT "SITE 7" ADJACENT TO THE OSHAWA LANDFILL
14	OSHAWA	CSPAC INDUSTRIAL THORNTON WOODS, L.P./WESTON CONSULTING	1565 THORNTON RD N/LOT 16/CON 04	O23-089-GBHAW	DEVELOPMENT ACTIVITIES INCLUDING SITE ALTERATION AND GRADING, SERVICING, CONSTRUCTION AND TRIBUTARY REALIGNMENT WORKS ASSOCIATED WITH THE CONSTRUCTION OF AN INDUSTRIAL BUILDING, OUTFALL INSTALLATION AND RESTORATION PLANTINGS
15	OSHAWA	PROPERTY OWNER	197 BLUE HERON DR/LOT 03/CON 02	O23-069-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH THE CONSTRUCTION OF A NEW EXTERIOR DECK
16	WHITBY	FIELDGATE DEVELOPMENTS	625 COLUMBUS RD W/LOT 27 & 28/CON 06	W23-082-GW	DEVELOPMENT ACTIVITIES ASSOCIATED WITH RE: PHASE 1 - FILL IMPORTATION AND STOCKPILING IN PREPARATION FOR RESIDENTIAL SUBDIVISION
17	WHITBY	ROGERS COMMUNICATIONS/TELECON DESIGN INC.	HALLS RD N/LOT 34 & 35/CON 02	W23-071-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH PLACEMENT OF A PROPOSED CONDUIT & EQUIPMENT
18	WHITBY	PROPERTY OWNER	153 TREMOUNT ST/LOT 22/CON 05	W23-079-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH THE INSTALLATION OF A FIBREGLASS POOL AND CONSTRUCTION OF A SHED
19	WHITBY	PROPERTY OWNER	38 FLINT CRES/LOT 21/CON 03	W23-076-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH REBUILDING OF AN EXISTING DECK
20	WHITBY	7150 THICKSON DEVELOPMENTS LTD/SCS CONSULTING GROUP LTD.	7150 THICKSON RD N/LOT 21/CON 07	W23-077-GHW	DEVELOPMENT ACTIVITIES ASSOCIATED WITH TOP SOIL STRIPPING AND BULK EARTHWORKS WITH TEMPORARY SEDIMENT CONTROL POND ON ADJACENT LANDS
21	WHITBY	SORBARA DEVELOPMENT GROUP/SCS CONSULTING GROUP LTD	100 COLUMBUS RD E/LOT 21/CON 07	W23-078-GHW	DEVELOPMENT ACTIVITIES ASSOCIATED WITH ROUGH GRADING, INCLUDING ISOLATED WETLAND REMOVALS, TOPSOIL STRIPPING AND BULK EARTHWORKS
22	WHITBY	TRANSCANADA PIPELINES LIMITED/TC ENERGY/DILLON CONSULTING LIMITED	LOT 22, 23, 24/CON 06 & 07	W23-075-AH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH RE: VEGETATION MAINTENANCE AND PIPELINE REPLACEMENT
23	WHITBY	PROPERTY OWNER/BIRKS LANDSCAPING INC.	408 FAIRVIEW DR/ LOT 09 / CON 02	W23-074-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH INSTALLATION OF WOOD PAVILLION
24	WHITBY	HEATHWOOD HOMES (COUNTRY LANE) LTD./CANDEVCON	540 TAUNTON RD W/LOT 31 & 32/CON 04	W23-084-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH RESTORATION AND ENHANCEMENT PLANTING; CONSTRUCTION OF A PEDESTRIAN TRAIL INCLUDING A BOARDWALK WATERCOURSE CROSSING; AND CONSTRUCTION OF A STORMWATER MANAGEMENT POND AND FINAL GRADING FOR PHASE 2 OF A NEW PLAN OF SUBDIVISION
25	WHITBY	PROPERTY OWNER	8900 ASHBURN RD/LOT 27/CON 08	W23-085-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH THE INSTALLATION/CONSTRUCTION OF AN INGROUND POOL
26	WHITBY	ENBRIDGE GAS INC.	CARNWITH DR W/LOT 24/CON 06	W23-091-GBH	DEVELOPMENT ACTIVITIES ASSOCIATED WITH INSTALLATION OF A PROPOSED BOREHOLE

DATE: June 20, 2023
FILE: ACEI6
S.R.: 5839-23
TO: Chair and Members, CLOCA Board of Directors
FROM: Dan Hope, Conservation Lands & Education Manager
Cara Gregory, Conservation Education Coordinator
SUBJECT: **Conservation Education Update – September 2022 to June 2023**

APPROVED BY C.A.O. **Introduction:**

Central Lake Ontario Conservation (CLOCA) provides education programs to share our watershed story and inspire our community to be watershed champions by taking action for real change. Our education programs are an important deliverable designed to fulfill CLOCA's fourth goal in its Strategic Plan (2021-2025), *to create a more knowledgeable and connected watershed through community engagement and education*. This includes connecting people with nature, culture, and greenspace to promote environmental awareness, appreciation, and action; increase school participation in environmental education and stewardship; provide programs that respond to and reflect a diverse community; and communicate a recognized brand that reflects our corporate culture, our goals, and strategic actions to our watershed audiences. Our suite of innovative education programs informs and raises awareness about the value of healthy watersheds, educating diverse audiences about CLOCA, what we do and who we are. The purpose of this report is to provide the Board with updates on the delivery of CLOCA's educational programs.

School Year September 2022 to June 2023: In Your Watershed Education Program**Watershed Connections – Outdoor Education**

Our Conservation Areas are not only places where we protect ecologically significant land within our watershed, but also where we educate and inspire future generations. Students visiting and exploring our Conservation Areas learn that they are part of a watershed community, and what we do on the land has an impact on the quality of our drinking water, and on aquatic habitats. They realize that we have a responsibility to recognize and manage our impacts to keep our watershed healthy.

Kindergarten to Grade 12

The sooner children become active and engaged in the outdoors, the stronger and more lasting their bond will be with the natural environment. That is why we start our conservation education programming at the kindergarten level. We offer programming to schools within our watershed including the Durham District School Board, Durham Catholic District School Board, Kawartha Pineridge District School Board and Peterborough Victoria Northumberland Clarington Catholic District School Board. We also offer programming to home-school and Montessori groups. It is important to nurture and strengthen that bond as children age, so we continue the learning through to Grade 12. All our school programs are connected to the current Ontario curriculum.

In-person Programs Return

In the Fall of 2022, we were excited to be able to return to offering in-person programming. Education staff contacted and met with, either virtually or in person, a contact from each of the four school boards we service, and delivered a presentation outlining our programming and letting them know that we were offering in-person programming again. To be equitable, a few curriculum-based virtual programs were created and made available for students continuing virtual learning. A Google Classroom was created to increase our reach and ease of communication with teachers about our program offerings. Education staff and planning staff met with DCDSB contacts to discuss plans for the use of land beside their board office for outdoor education, and how we could support them with the use of the land and outdoor program delivery for their students.

Cont'd

Number of Visiting Students:

Time Period	Visiting Student Numbers (approx.)
September to December (2022)	519
January and February (2023)	347
March 6 – April 6 (2023) – Maple Syrup Tours	1733
April 24 – June 21 (2023) - anticipated	2200
Evening Outreach Program	Visiting Group Number
January and February	58
May and June - anticipated	75

Note: Students were visiting from approximately 4 schools from PVNCCDSB, 6 from KPR, 20 from DDSB, 12 from DCDSB, and 5 others (French board, Christian School’s Montessori, and home school groups). These numbers do not include the number of visiting classes from each school.

New Conservation Education Staff Member – Education Associate

Breanna Hall started with CLOCA the last week of February and has been an asset to our educational programming. Breanna has a foundation in Wildlife Biology & Conservation from the University of Guelph. She is a Certified Interpretive Guide working in Natural Heritage Education over the past 12 years. Breanna facilitates opportunities for participants to engage as environmental stewards, sharing key conservation messages and sparking curiosity. She is looking forward to working with the CLOCA team.

Teacher Tour – Specialist High Skills Major, Outdoor and Experiential Learning – December 1st, 2022

An education event was held at the beginning of December, a teacher tour of CLOCA’s watershed, in coordination with the Ganaraska Conservation Authority. This event is a part of delivering the *Ontario Great Lakes Strategy* with the goal of engaging and empowering communities to act on protecting our Great Lakes. Specifically, the strategy includes a specific goal to build awareness as a focus for Ontario’s future action.

Secondary School Teachers participated in a guided tour of CLOCA’s watershed that highlighted authentic experiential learning opportunities that teachers can access through conservation authorities in their school communities, using the Great Lakes and its watersheds as a context for teaching and learning through conservation education. It also provided them with an opportunity to explore how the Great Lakes can anchor the curriculum in engaging and impactful lessons. The invitation was focused on teachers with Specialist High Skills Major, Outdoor Education and Experiential Learning classes.

Teachers participated in education stations led by CLOCA staff, in four conservation areas, as well as a *Headwater to Outlet* tour. The stations were as follows:

	Station Topic and Order	Leader (CLOCA staff)	Location
1)	Watershed Planning and Restoration Projects	Ian Kelsey, Aquatic Ecologist	Lynde Shores CA
2)	Design & Installation of the Accessible Maple Leaf Trail	Bryan Mistak, Senior GIS Analyst	Heber Down CA
3)	Biotic Sampling Techniques – Benthics & Electrofishing	Michael Grieve, Aquatic Crew Lead	Enniskillen CA
4)	Headwater to Outlet Tour (complementary catered lunch)	Jamie Davidson, Director, Watershed Planning & Natural Heritage	Enniskillen CA to Lynde Shores CA
5)	Victoria Street Engineering for Wildlife Passages & Ecosystem Connectivity	Jackie Scott, Wildlife Biologist	Lynde Shore CA

Connections made with teachers in the different school boards during this tour were incredibly valuable to our conservation education program, as well as the ideas shared. We received positive feedback from all who attended. It is our hope that these teachers will go back to their schools and share information about their experience with other teachers. The next step is for CLOCA to seek provincial funding to run a student watershed tour to raise awareness of Ontario Great Lake Strategy.

Nature Nook

This 'play space' at Enniskillen Conservation Area provides children with the opportunity to create their own play in a forest area equipped with natural play materials (loose parts, e.g., rails, sticks, stones, logs, tree cookies).

The play space is contained within cedar rail fencing and in a forested area with little vegetation on the ground, to minimize off-trail impacts. The Nature Nook was created with the knowledge that child-directed play helps with the development of the whole child — cognitive, social, emotional, and physical skills.

The intentionally irregular boundaries formed by the snaking cedar rail fence and internal fenced islands were designed to give students a sense of freedom and a desire to explore while containing them within a safe space with defined limits.

Construction on this 'play space' was recently completed (2023). The Nature Nook has already been reserved for use three times by visiting classes in the short period of time that it has been available and is enjoyed by members of the local community visiting Enniskillen CA. Use of the space during school field trips at lunchtime during a full-day booking is free of charge. A \$25 fee applies for the use of the space for a half-day booking.

Bring Back the Salmon with Stream of Dreams (2023)

OPG is a lead sponsor of the Bring Back the Salmon, Lake Ontario Atlantic Salmon Restoration Program. 55 students (grades 4, 5 and 6) from Central Public School in Bowmanville participated in the Lake Ontario Atlantic Salmon Restoration Classroom Hatchery Program. The program provided students with educational opportunities connected to fish biology, natural and cultural history, habitats, ecosystems, and environmental stewardship. Students learned about the importance of protecting the land and water in the Bowmanville Creek watershed from program partners: Ontario Power Generation (OPG), Ontario Federation of Anglers and Hunters (OFAH) and Central Lake Ontario Conservation Authority (CLOCA).

CLOCA participated in all stages of the program: learning about salmon life cycles and placing eggs in tanks, interpretive hikes, and garbage clean-up along the Bowmanville Creek, Stream of Dreams which is a collaborative public art initiative developed by the British Columbia based Stream of Dreams Mural Society, and activities surrounding the final release of the salmon fry into the Bowmanville Creek. The wooden fish painted by the students were used to create a mural on a fence outside their school, educating the community on the work they had done. Community education is a key element to reaching the goal of achieving a population of naturally reproducing Atlantic salmon in Lake Ontario.

Invasive Species Monitoring/Management Program: Garlic Mustard – Purple Woods Conservation Area

We created a secondary school program for the monitoring and removal of the invasive plant Garlic Mustard at Purple Woods CA. Students were given a presentation on invasive species and on Garlic Mustard. This was followed by an invasive species hike, and then stem counting in 8 quadrats (pre-marked by NH staff) and the removal of garlic mustard. The plan is for the program to occur annually in the same location to monitor the impacts of the removal.

Orienteering – Primary/Junior – Topographic Tabletop Maps

We also offer orienteering programs that give students the skills to get out and enjoy nature on their own. Ortho-photo handheld maps that were used for Intermediate Orienteering in the past, were replaced with a set of the new topographic maps for both Heber Down CA and Enniskillen CA orienteering courses. Large poster sized topographic maps were created for Heber Down CA and Enniskillen CA for use with primary and junior grades. Orienteering blazes for the new Primary/Junior course have been installed at Enniskillen CA. Orienteering blazes will soon be placed for the new primary/junior course at Heber Down CA, as well as a second tabletop map and course created. Students use topographic maps in the classroom when learning map and globe skills.

Education Animals

We adopted an Eastern Garter Snake from Reptilia (Whitby) and a Midland Painted Turtle from the Ontario Turtle Conservation Centre (Peterborough) to complement and enhance our school and outreach watershed programs. Students have an opportunity to see these animals up close, and pet/hold them while learning about them. This up-close, hands-on experience helps to dispel myths, alleviate fears, and allow students to make a personal connection to a species native to our watershed. It is our hope that through this learning opportunity students will have a greater appreciation for these animals, and the habitats within our watershed that they live in and become better stewards of these lands and take action to help wildlife.

Bird Boxes – Enniskillen CA

The bird boxes at Enniskillen CA are cleaned out annually by education staff. The boxes are useful in teaching students about threats to birds, and how we can help them, and give them an opportunity to view the nesting birds more closely. There are 49 nest boxes located on the Carruthers Tract at Enniskillen CA which were cleaned out in late February by education staff. We identified 21 Tree Swallow nests, 17 House Wren, 2 Unknown and 1 Eastern Bluebird nest with 3 unsuccessful eggs (inset) and 8 boxes were empty.

Conservation Education Outreach

Ontario Tech. University Environmental Education Conference – February 3rd, 2023

Teacher Candidates in the first year of the 2-year Bachelor of Education program participated in workshops led by a variety of Outdoor Educators collectively delivering 24 different workshops. CLOCA education staff delivered a 1.5-hour program on integrating outdoor environmental education into the curriculum. Participants learned a variety of different ways to integrate hands-on curriculum based outdoor environmental education activities into their teaching practice and discovered several helpful resources that could facilitate this type of learning. The program included a presentation followed by active engagement in hands-on activities their students would be involved in during a visit to one of our conservation areas. Many of the participants were not aware of the outdoor education opportunities offered by conservation authorities for students and were eager to take advantage of these opportunities for their students during their teaching career.

2023 Environmental Symposium PVNCCDSB and KPRDSB – Thursday April 20th, 2023

A 1-day virtual event was hosted by the Kawartha Pine Ridge District School Board and the Peterborough Victoria Northumberland Clarington Catholic District School board. CLOCA education staff delivered three 45 min. curriculum-based programs to students in kindergarten through to grade 4. The program involved an introduction to CLOCA, the importance of wetlands in the watershed, and learning about physical and behavioural adaptations of reptiles and amphibians who call this habitat home. Students were actively engaged in the learning through question-and-answer periods, a metamorphosis activity, frog calls, a live snake and turtle show with our education animals, a puppet, and song. It concluded with a message on threats to wetland animals and ways that humans can help them. We were one of 14 presenters, including other local conservation authorities, and had an audience of approximately 300 students (all three sessions combined).

Durham Farm Connections Primary Program and Open House Event – April 4th to April 6th, 2023

This annual event for grade 3 students provides an opportunity for them to meet local farmers, and learn about Durham Region farms in a fun, interactive way. CLOCA contributed items related to maple syrup production for use at a station teaching students about the maple syrup production process, also used for an evening open house for the community. A conservation education staff member taught a total of approx. 240 students in eight 20 min. sessions together with a staff member of Willow Tree Farm on April 5th. The event connects to the grade 3 social studies curriculum strand *People and the Environment: Living and Working in Ontario*.

Spring Teacher Clean-up – April 30th, 2023

20 teachers from All Saints Catholic Secondary School in Whitby volunteered to do a clean-up at Heber Down CA on their P.D. day, led by two of our conservation education staff. The clean-up was a success, with 2 full bags of garbage collected, and the event provided an opportunity to advertise our secondary school program offerings.

Watershed Wilderness Nature Hikes

Forest Therapy Hikes (September 18th, 23rd and October 30th, 2022)

Forest Therapy hikes were held at Enniskillen CA, and were led by Randi Micklewright, a certified forest therapy guide and a CATS (Conservation Area Trail Stewards) volunteer. Forest therapy, also known as forest bathing, Shinrin Yoku, green therapy, and eco-therapy, operates on the premise that we feel better both physically and mentally after spending time in natural settings. The hike held on September 23, 2022, was offered as a PD for staff, the other two dates were open to the community. A total of 28 people attended the hikes. Participants spent intentional time in the forest and took part in invitations that brought a mindful and deep connection with our natural environment.

Christmas Bird Count for Kids – November 26th, 2022

An annual Christmas Bird Count for Kids, registered with Birds Canada, was organized, and held at Enniskillen Conservation Area by CLOCA. This bird count was inspired by the original annual Christmas Bird Count started in 1900, which is North America's longest running community science event. In addition to Education staff leading the event, CLOCA's Wildlife Biologist Jackie Scott and North Durham Nature's Lynda Kamstra helped to lead young birders during the event. Participants were able to borrow a pair of our binoculars if they did not have their own.

The event was a success! 40 people registered for, and 24 participated in the count. Collectively, 10 different species of birds and a total number of 90 birds were counted. Count results were submitted to the Birds Canada website to aid in bird conservation through community science.

Family Snowshoe – February 17th, 2023 – Cancelled

This very popular annual event gives families an opportunity to experience snowshoeing on our trails at night at the Enniskillen CA. The participants who do not have their own snowshoes are welcome to borrow a pair of ours. The trails are safely lit with candles to guide their way in the dark. Interpretive information on nocturnal animals and their methods for survival in chilly temperatures is given to participants. Two sessions are offered: 6-7:30 p.m. and 8-9:30 p.m. Both sessions were full shortly after registration opened for the event. Unfortunately, the hike had to be cancelled due to extremely icy, unsafe conditions on all the trails because of the recent fluctuations in temperature.

Hemlock Woolly Adelgid Awareness and Engagement Workshop – Dec 3rd, 2022, and Jan. 19th, 2023

With support from the Invasive Species Centre through their Invasive Species Microgrant, CLOCA was able to raise public awareness of an invasive insect threatening Ontario's forests; the Hemlock Woolly Adelgid. The workshop held at the Russ Powell Nature Centre included an informational presentation on the Hemlock Woolly Adelgid insect, as well as a live demonstration of a commonly used sampling technique. When it comes to invasive species, early detection and action is incredibly important. It is through workshops such as these that we can share information with the public and engage our communities in the detection and management of invasive species within our watershed.

Amphibian Night Hike at Crow's Pass CA – April 15th, 2023

CLOCA partnered with North Durham Nature on this spring amphibian hike in our most northern, less widely known conservation area, Crow's Pass. It entailed a hike on the trail from the parking area at twilight, returning in the dark, listening for and identifying calling frogs. The event was approximately 2.5 hours, with 17 participants in attendance. 25 registered for the event and we had a waiting list of 6. Registration was limited to 25 to reduce the impact on this highly biodiverse area, and to ensure a quality experience. CLOCA staff reinforced less impactful ways to enjoy our conservation areas.

Earth Day Celebration and Open House at Bowmanville Westside Marshes – April 22nd, 2023

Many families in the local community enjoyed celebrating Earth Day with our CLOCA team and event partners. There was an opportunity to plant trees and pick up litter to help keep the conservation area and Lake Ontario shoreline healthy and clean. A discovery passport was handed out to participants to complete by visiting the different stations to learn about these two important coastal wetlands through a variety of different activities along the 1.5 km accessible trail loop. Staff shared information on local plants, birds, fish, reptiles, and amphibians. This event was delivered in partnership with Clarington Public Library, the Municipality of Clarington, Durham Waste Management, and Ontario Power Generation. The event was attended by several families, but attendance was lower due to unfavourable weather conditions.

Summer Solstice Firefly Event – June 23rd, 2023

This popular annual event is held to celebrate the summer solstice. The evening begins with a presentation on nocturnal animals. As the sun is setting, participants will learn interesting firefly facts. After the sun has gone down, staff will lead a guided hike through the Purple Woods Conservation Area, including interpretive stops about these creatures and other nocturnal wonders, and finish the hike in the meadow where participants can enjoy the glow of the fireflies.

Community Connections

Staff participated in the following events by providing a table with materials relevant to the theme of the event, giving participants an opportunity to learn about CLOCA's watershed and answer any questions they may have:

- **Durham Agricultural Advisory Committee Farm Tour: Sargent Family Dairy and Creamery – Sept. 15th, 2022**
- **Oshawa Environmental Advisory Committee Film Night – October 18th, 2022**
- **Conservation Area Trail Stewards – Clean-up – Bowmanville**

Conservation Area Trail Stewards (CATS) Program

This program, that began in January 2020, involves members of the community who regularly visit our conservation areas volunteering to keep our conservation areas clean by picking up garbage, and safe by reporting any fallen trees/branches. The volunteers also provide a presence in our Areas and communicate our messages to our visitors. We had a spring intake of 16 new volunteers with a total of 68 volunteers. It has proven to be a very successful program. CATS also had 2 successful fall clean-up events along Bowmanville Creek.

Turtle Nesting Program

We are continuing our turtle nest cover program again this year. Covers have been placed in locations in our conservation areas where turtles have nested in the past. Information on turtles and how to properly place the covers has been posted beside the covers and the bricks to weigh the covers down. We plan on having an education staff member act as a Conservation Ambassador in the coming months, who will be able to answer any questions visitors may have about the program. It is anticipated that CATS volunteers will keep us informed on where the covers have been placed and on successful hatches. Staff cut exit holes in the covers, so that turtles will be able to escape and head to the wetland after hatching, so that we are not relying on those who placed the cover to monitor it regularly enough to be there to remove the cover when the turtles hatch. All Ontario turtle species populations are at risk. Covering nests to avoid predation is one way that we can help.

Local Libraries – Story Walks

In partnership with the Clarington Public Library, CLOCA continues to install story walks along trails in conservation areas located in Clarington. From September 2021 to June 2023, seven story walks in all were installed with social media promotions provided by CLOCA and library staff. The stories typically relate to the seasons and nature, giving young hikers a chance to read and get a physical and learning experience in the outdoors.

Library Presentation – Amazing Wetland Animals in your Watershed – February 11th, 2023

An education staff member delivered an interactive presentation on the importance of wetlands in your watershed and the many animals and plants that call wetlands home. 22 participants enjoyed an up close and/or hands on experience with our education animals (snake and turtle). 5 more presentations are scheduled with local libraries in July 2023.

Durham Welcome Centres: Immigrant Services

Staff are also engaged with Durham's Welcome Centres and are planning an event in partnership with Hike Ontario, in addition to a spring wildflower walk (May 2024). A block of registration spots will be held for Durham Welcome Centre participants to our upcoming Fall Forest Therapy hikes, Family Snowshoe and Maple Syrup Festival events.

Ability Centre Summer Camp

In collaboration with Ability Centre staff, 6 activities for each weeknight that this camp is offered were established. They were put in touch with our Hike Ontario and Forest Therapy contacts to run two of the sessions and CLOCA will be running a nature themed scavenger hunt at Lynde Shores CA for the summer camp participants on July 12th, 2023. Ability Centre staff also put us in contact with a staff member who is willing to partner with CLOCA, Thickson's Woods Land Trust and possibly OPG, to help run a *Birding by Ear* hike for the blind at Thickson's Woods in Whitby hopefully in May 2024.

Bird Boxes – Durham Field Naturalists

The President of the Durham Field Naturalists met with a conservation education staff member at Lynde Shores to go over potential locations for the erection of bird boxes at Lynde Shores CA and to assess the number of boxes we have and potential repairs needing to be done. They have agreed to help to put in the posts, repair (if needed) and attach the bird boxes, monitor, and annually clean the boxes.

Bird Box Cleanout in Clarington with Scouts Group

The 10 bird boxes at Bowmanville Westside Marsh were cleaned out in the fall by a local Scout group with the assistance of a conservation education staff member. We found eight Tree Swallow nests (one wren nest made on top of a swallow nest). One box was empty. Typically, nests are cleaned in late winter to avoid poison ivy. The nest boxes were left open to stop mice from nesting over winter. The Scout group returned in late April and closed the boxes.

Bee City Membership Renewal

Our Bee City membership remains in good standing with plans for the installation of more “bug hotels” at Enniskillen. Plants were purchased and put into our pollinator gardens for another spring/summer season. Education programming often talks about pollinators and the efforts we have made to help them.

OPG Community Advisory Committee

A conservation education staff member has been asked by OPG to represent CLOCA on their community advisory committee. They have agreed to this, and have attended the past 3 committee meetings, and submitted one report on committee initiatives to CLOCA.

Doors Open Event – May 6th, 2023

CLOCA registered to be a part of the Oshawa Doors Open Event. It was held at Purple Woods CA. Tours were given of our Heritage Hall and Maple Syrup production process, and Maple Syrup was available for purchase. Approximately 100 people visited.

SMART Watersheds

The community science project, SMART Watersheds, is designed to create a technology ecosystem, enhancing our environmental monitoring activities with more frequent data collection, analysis, and advanced data management. In addition to the technology, the SMART Watersheds engages community volunteers, the public, elementary, high school, and post-secondary students in using this new technology in their local watershed. The *Weather Watch* component of this project is complete and live data from our weather stations, set-up in CLOCA’s watershed, is viewable on our website. The *Water Watch* component is currently in the process of being completed. The water analyzing equipment has been calibrated, and information sheets on the use and calibration of water and soil testing equipment have been printed, laminated and are in the backpacks. Agreements with the Municipality of Clarington and the City of Oshawa have been signed, allowing us to put up posts as station markers at the various monitoring stations. The posts and the signs have been put up at the hubs for these areas. We are just awaiting a signed contract from the Town of Whitby, and then we will begin the process of putting up station markers in that location as well. The project is to be completed this summer. At that time, all backpacks containing monitoring equipment will be available at local libraries for signing out and use at our clearly marked monitoring stations. Data collected will be displayed on CLOCA’s website.

Highlights: Maple Syrup Festival – March 10th to 19, 25, 26 and April 1st and 2nd – Purple Woods CA

- **Admissions:** welcomed 9,404 visitors to the festival and reduced daily numbers to 900
- **Pancake Program:** 6 groups - Rotary Club of Oshawa-Parkwood, Simcoe Hall Settlement House, Optimist Club of Oshawa, 30th Oshawa Scout group, Polish Scouting Association of Oshawa, Toronto Wildlife Centre
- **Daycare and special groups:** Oshawa and Durham Region Metis Council brought 98 community members on April 1st along with All Our Relations Metis Drum Circle
- **Kitchen Operations:** Durham Catering Services made for kitchen operations to be seamless and very efficient in providing 15,172 pancakes and 10,725 maple syrup sausages
- **Lantern Hike:** Cancelled
- **Media Coverage:** Global News Durham, Uxbridge Scugog Life Interview, Durham Tourism - Breakfast Television, What’s On Durham on Rogers TV Durham, social media, e-news subscribers, third-party/regional online event listings, updated our Purple Woods Google My Business account, digital screens at no cost in Oshawa (community/recreation centres and libraries), community newspapers, purchasing front-page earlugs (upper-right corners), A-frame signs in CA’s
- **Seasonal staff:** hired 12 seasonal staff and 1 teacher candidate placement student

- **School Programs:** 1733 students (less than previous festivals – see Bussing Issues)
- **Special Guests:** Oshawa Museum, Scugog Shores Museum, Soper Creek Wildlife, Clarington Library, TRACKS, All Our Relations Métis Drum Circle
- **Volunteers:** 46 volunteer high school students and a few members of the public who contributed 816 volunteer hours
- **Highlights of the Festival:** food waste was significantly reduced; 9404 visitors created 1.5 green bins of food waste. Partnership with Halenda's using our syrup for the sausages.

Highlights: 23rd Annual Durham Children's Watershed Festival (DCWF) 2023 – May 29 to June 1st Camp Samac

- first in-person since 2019
- Postponed from fall uncertainties to spring
- Registration was down due to conflicts with Track & Field events, end of school class trips, EQAO testing. 1568 grade 4 students attended with 301 teacher and parent volunteers
- Each day required 95 volunteers which consisted of high school and college students and community members who assisted in delivering 24 activities to the grade 4 students
- Financial sponsorship was from 2022 and was provided from Region of Durham, Charities Aid Foundation of Canada, Central Lake Ontario Conservation Authority, Ontario Power Generation, TransCanada Pipelines Ltd., Cargill Ltd., Elexicon Energy
- In-Kind and partnership support - Durham Region Health & Works Departments, Durham Catholic District School Board, Durham District School Board, Durham Region Health Department, Durham Region Works Department, Durham College, Friends of Second Marsh, Kawartha Pine Ridge District School Board, Scouts Canada – Camp Samac, RBC Staff, Oshawa Museum, The LivingRoom Community Art Studio, Moccasin Identifier, Soper Creek Wildlife Rescue
- A highlight of the festival was facilitating the Moccasin Identifier activity with The LivingRoom Community Art Studio. The vision of the Moccasin Identifier is to advance Treaty and Indigenous awareness by covering Canada in moccasins. Through this activity the hope is to develop a greater understanding of Treaties and Indigenous relationship to the land for the benefit of reconciliation: to restore harmony between Indigenous and Non-Indigenous Peoples. Students gain understanding as to why the land remains important to the Michi Saagiig Nishnaabeg. The William's Treaty territory and Scugog Carrying Place were identified to students along with the important connections to the land and waters. Students then stenciled a moccasin and reflected on what being a treaty person means to them. Each participating school was provided with a Moccasin Identifier kit to take back to the school with access to grades 1-8 locally relevant lesson plans. Funding for the MI kits was provided in 2021 but due to production issues, CLOCA did not receive the kits until 2022.

Bussing Challenges

Although we returned to in-person programming, there was a challenge with obtaining bussing for school trips, and with Secondary School teachers acquiring supplies to cover their other classes when on a trip. This was due to a shortage of bus drivers and supply teachers. Teachers were only able to book buses outside of their morning and afternoon bus routes. This meant that buses could not leave schools until 9:30 a.m. and had to leave our conservation areas or festival at 1:30 p.m. This shortened the length of the field trip for visiting students and had an impact on the number of classes that could visit our conservation areas and festivals.

Conclusion

Our education and community outreach programs continue to evolve, grow, and be more effective. Through our leading-edge education programming and outdoor experiences, we continue to inspire action by fostering a growing appreciation for our environment.

RECOMMENDATION:

THAT Staff Report 5839-23 be received for information.

DATE: June 20, 2023
FILE: ABDC1
S.R.: 5836-23
TO: Chair and Members, CLOCA Board of Directors
FROM: Chris Darling, Chief Administrative Officer
SUBJECT: **Board of Directors Meetings – Start Time**

APPROVED BY C.A.O. 

At the May 16, 2023, Board of Directors meeting, Member B. Garrod inquired if there was opportunity to change the time of day the Board Meetings are held to an earlier start time. Staff committed to sending out a poll to the Membership.

The Poll asked Members to rank 3 options 3, 4 or 5pm start times. Results are as follows:

3:00pm	4:00pm	5:00pm
		1st Choice
1st Choice	2nd Choice	3rd Choice
1st Choice	2nd Choice	3rd Choice
2nd Choice	1st Choice	3rd Choice
1st Choice	2nd Choice	3rd Choice
1st Choice	2nd Choice	3rd Choice
		1st Choice
1st Choice	2nd Choice	3rd Choice
1st Choice	2nd Choice	3rd Choice
3rd Choice	2nd Choice	1st Choice
3rd Choice	1st Choice	2nd Choice
1st Choice	2nd Choice	3rd Choice
1st Choice	2nd Choice	3rd Choice

3pm - 1st Choice	53%		
4pm - 1st Choice		13%	
5pm - 1st Choice			20%
3pm - 2nd Choice	6%		
4pm - 2nd Choice		60%	
5pm - 2nd Choice			6%
3pm - 3rd Choice	13%		
4pm - 3rd Choice		0%	
5pm - 3rd Choice			60%

One Board Member indicated that they are not available at the 3 or 4 pm start times due to work commitment.

RECOMMENDATION:

THAT Staff Report #5836-23 be received for information and further direction be provided to staff.

REPORT

CENTRAL LAKE ONTARIO CONSERVATION AUTHORITY

DATE: June 20, 2023
FILE: ASLA3
S.R.: 5838-23
TO: Chair and Members, CLOCA Board of Directors
FROM: Chris Darling, Chief Administrative Officer
SUBJECT: **Memorandum of Understandings to Govern Municipal Funding for Programs and Services provide by CLOCA**

APPROVED BY C.A.O. 

Purpose:

To seek endorsement from the Board to circulate draft Memorandum of Understandings (MOUs) between CLOCA and our municipal partners as outlined in attachments 3 and 4 and to authorize the Chair and CAO to execute the MOUs between CLOCA and partner municipalities subject to any minor revisions as may be required.

Background

The Conservation Authorities Act (CA Act) has been amended several times since 2017 to provide further clarity and transparency surrounding the programs and services that conservation authorities provide including changes to conservation authority budgeting and levy processes. To implement these changes the CA Act requires conservation authorities to complete a Transition Plan by December 31, 2021, a Program Inventory by February 28, 2022, and complete Municipal Funding MOUs by January 1, 2024.

CLOCA completed the Transition Plan and the Program Inventory as seen in Attachments 1 and 2 to this report. The Program Inventory lists current programs and services and categorize them into three categories in accordance with the CA Act as follows:

- **Category 1** – those prescribed as mandatory by the province related to managing natural hazards, conservation, and management of owned land by the CA, duties and functions under the Clean Water Act and the implementation of the provincial groundwater monitoring and stream monitoring program. Mandatory programs and services are to be funded by the Participating Municipality (Durham Region is CLOCA's Participating Municipality).
- **Category 2** – Non-mandatory municipal programs and services CAs agree to provide at the request of a municipality provided an agreement for such service is in place by January 1, 2024. Examples include environmental monitoring and restoration and climate change assessment.
- **Category 3** – Conservation authorities can also deliver programs and services that further the conservation, restoration, development, and management of natural resources in their watershed, but a cost apportioning agreement must be in place by January 1, 2024, if the program is support by municipal funding. Examples include land acquisition, environmental outreach and education not related to a mandatory program.

Memorandum of Understandings

Agreements between the conservation authorities and their partner municipalities are required for Category 2 and any Category 3 programs and services that require municipal funding.

Currently CLOCA receives the majority of municipal funding for Category 2 and 3 programs and services from the Region of Durham. The City of Oshawa provides funding for monitoring of the Oshawa Second Marsh and the Oshawa Water Monitoring Consortium. There are also a number of examples of past municipal funding for special projects.

Two MOUs are proposed, one for the Region of Durham as CLOCA's Participating Municipality and a second for CLOCA's non-participating municipalities. The MOUs are nonbinding and do not have any direct financial implications to partner municipalities. The MOUs identify proposed principles, terms and conditions that would govern CLOCA's delivery of Category 2 and 3 programs and services. The municipal cost for any CLOCA program and services would be identified and considered as part of the 2024 (and future) budget processes and any such budget approval would form a schedule to the parent MOU.

The attached draft MOUs have been coordinated and are consistent with our adjacent conservation authorities that share partner municipalities.

RECOMMENDATION:

THAT the Board of Directors of the Central Lake Ontario Conservation Authority endorse the circulation of the attached draft Memorandum of Understandings (MOUs) between CLOCA and our municipal partners and authorize the Chair and CAO to execute the MOUs subject to any minor revisions as may be required.

ATTACH.

Central Lake Ontario Conservation Authority
Transition Plan in accordance with Section 21.1.4 of the Conservation Authorities Act
 November 2021

Purpose

The *Conservation Authorities Act* requires conservation authorities to prepare Transition Plans outlining steps and timelines for the preparation of an Inventory of Program and Services and for the development and execution of funding agreements with participating municipalities. The Central Lake Ontario Conservation Authority (CLOCA) Transition Plan sets out the process and timelines for the development and execution of memorandum of understandings (MOUs)/agreements between CLOCA and the Region of Durham and any other interested partner municipality to fund program and services that are not deemed to be provincially mandatory core services outlined in the *Conservation Authorities Act* and associated regulations

Workplan

The following workplan lays out steps to be taken by CLOCA and associated timelines to develop and enter into funding agreements with the Region of Durham and other partner municipality for non-mandatory programs and services at the request of a municipality with municipal funding through a MOU and programs and services an authority determines are advisable where municipal funding is needed.

Transition Plan

Timeline	Action	Status
October 14, 2021	Meeting with Durham Region staff to establish municipal staff leads for any preliminary discussion on the details of the inventory (e.g. agreements required) to set the stage for future budget submissions, timing of subsequent meetings, preliminary concerns with deadlines)	Complete
October 25- November 4, 2021	Development of Transition Plan including coordination with Region of Durham, interested municipal partners and Durham CAs	Complete
November 16, 2021	Presentation of Transition Plan to CLOCA Board	Complete
November 19, 2021	Submission of Transition Plan to Ministry of Environment and Conservation and Parks (MECP) and Durham Region	To be completed
November 19, 2021	Post Transition Plan on CLOCAs website	To be completed

Phase 1 of Transition Period

Timeline	Action	Status
October 25- November 12, 2021	Development of Inventory of Program and Services - identification of category classification, funding sources, average annual cost.	Ongoing
October 25- December 17 2021	Ongoing work to complete Inventory including co-ordination/consultation with adjacent CAs and Durham Region and interested municipal partners	Ongoing
January 18, 2022 or February 15, 2022	Presentation of Inventory of Program and Services to CLOCA Board	To be completed
February 25, 2022	Submit Inventory of Programs and Services and record of consultation to MECP and the Region of Durham including interested municipal partners	To be completed

Cont'd

Phase 2 of Transition Period

Timeline	Action	Status
March 2022-June 2023	Ongoing discussions with Durham Staff, interested municipal partners and Durham CAs regarding timing, form, and content of MOUs/agreements	Ongoing
July 1, 2022	Submit Progress Report to MECP	To be completed
October 1, 2022	Submit Progress Report to MECP	To be completed
January 1, 2023	Submit Progress Report to MECP	To be completed
April 1, 2023	Submit Progress Report to MECP	To be completed
July 1, 2023	Submit Progress Report to MECP	To be completed
October 1, 2023	Submit Progress Report to MECP	To be completed
June 2023	CLOCA Board approval of 2024 preliminary levy submission and possible	To be completed
September/November 2023	CLOCA Board endorsement of Funding MOU/agreement and 2024 levy submission	To be completed
November/December 2023	Durham Region, and interested municipal partners Approval of MOU/agreement	To be completed

Program/Service	Item	Subservice	Explanation of Subservice	Category: 1-Mandatory, 2- Municipal P&S, 3-other	Funding Mechanism	5-year Average Annual Cost	Program/Service Provided Date	Program/Service provided date (prior or post Feb 28/22)	MOU status	Explanation of Other Funding
Natural Hazard Management (Section 21.1 (1) i) (Subsection 1-8)	1	Section 28.1 Permit administration and compliance activities	Reviewing and processing permit applications, associated technical reports, site inspections, communication with applicants, agents, and consultants. Legal expenses for regulations and compliance. Property enquire	1	91% Self-Generated 5% General Levy 4% Provincial Grant	\$ 443,000	5	Currently provided	N/A	
	2	Plan Review under Other Legislation	Input to the review and approval processes under other applicable law, (e.g. Environmental Assessment Act, Drainage Act, Aggregate Resources Act proposals) with comments principally related to natural hazards, wetlands, watercourses and Sec 28 permit requirements.	1	91% Self-Generated 5% General Levy 4% Provincial Grant	\$ 81,000	5	Currently provided	N/A	
	3	Municipal Plan Input and Review	Technical information and advice to municipalities on circulated municipal land use planning applications (Official Plan and Zoning By-law Amendments, Subdivisions, Consents, Minor Variances). Input to municipal land-use planning documents (OP, Comprehensive ZB, Secondary plans) related to natural hazards, on behalf of MNRF (delegated to CAs in 1983)	1	91% Self-Generated 5% General Levy 4% Provincial Grant	\$ 410,340	5	Currently provided	N/A	
	4	Flood Forecasting and Warning	Daily data collection and monitoring of weather forecasts, provincial & local water level forecasts and watershed conditions. Flood event forecasting. Flood warning and communications. Maintenance of equipment.	1	39% Provincial Grants 34% General Levy 14% Federal Grants 7% Special Levy 4% Donations	\$ 115,100	5	Currently provided	N/A	
	5	Flood Plain Mapping	Data collection, analysis and identification of areas susceptible to riverine or coastal flooding to create mapping products to delineate flood-prone areas.	1	69% General Levy 15% Federal Grants 11% Local Municipal Funding 5% Special Levy	\$ 109,870	5	Currently provided	N/A	
	6	Low Water Response	Conditions monitoring/analysis. Technical & administrative support to the Water Response Team representing major water users and decision makers, who recommend drought response actions.	1	100% General Levy	\$ 16,860	Present	Currently provided	N/A	
	7	Natural Hazards Technical Studies and Information Management	Data collection and study of designs to mitigate natural hazards. Development and use of systems to collect and store data and to provide spatial geographical representations of data. Includes Shoreline hazard studies	1	77% General Levy 10% Federal Grants 7.5% Special Levy 5% Local Municipal Funding 0.5% Provincial Grants	\$ 123,250	Present	Currently provided	N/A	
	8	Natural Hazards Communications, Outreach and Education	Promoting public awareness of natural hazards including flooding, drought, and erosion. Public events, materials. Social media services. Media relations.	1	100% General Levy	\$ 29,100	Present	Currently provided	N/A	
	9	Watershed Stewardship and Restoration related to natural hazards	Apply for and manage external funding, promote private land stewardship, outreach, provide advice and design assistance to property owners as it relates to mitigation of flooding through wetland restoration and environmental restoration mitigating climate change impacts.	1	53% General Levy 28% Federal Grants 19% Special Levy	\$ 31,810	Present	Currently provided	N/A	
	10	Climate change impact assessment /Planning and adaptation polices and plans implementing the Region Climate Change Plan.	Identification of vulnerability or risk, and the development of mitigation and adaptation polices and plans implementing the Region Climate Change Plan.	2	100% General Levy	\$ 16,730	Present	Currently provided	MOU required	
Conservation Authority Land and Conservation Areas (Section 21.1 (1) i) (Subsection 9-11)	11	Section 29 Minister's regulation <i>Rules for Conduct in Conservation Areas</i> (O. Reg. 688/21)	Conservation areas enforcement/ compliance & Legal expenses for regulation and compliance	1	100% General Levy	\$ 83,230	Present	Currently provided	N/A	
	12	Conservation Area Strategy - NOTE: Strategy to be completed on or before December 31, 2024 per requirements in Section 10 of the Mandatory Programs and Services Regulation	Guiding principles, objectives, including for an authority's land acquisition and disposition strategy, land use categories on conservation authority owned land, recommended management principles for different land categories, etc.	1	100% General Levy	\$ 19,440	3	Currently in progress	N/A	
	13	Land Inventory - NOTE: Inventory to be completed on or before December 31, 2024 per requirements in Section 11 of the Mandatory Programs and Services Regulation	Development of an inventory containing information for every parcel of land owned or controlled by the Authority.	1	100% General Levy	\$ 10,500.00	Future	Currently in progress	N/A	
	14	Management, operation and Maintenance of CA owned lands	Management and Maintenance of CA owned lands including: Stewardship and restoration, and, Ecological monitoring programs and services to maintain any facilities, trails or other amenities that support public access and recreational activities in conservation areas	1	62% General Levy 19.5% Self-Generated 6% Donations 5% Special Levy 4% Federal Grants 1.5% Provincial Grants 2% Other (Other Grants/Partnership Funding/Local Municipal Funding)	\$ 1,173,240	Present	Currently provided	N/A	Grant (ECCC), Grant (TD Friends of the Environment), Grant (Ducks Unlimited)
	15	Land Acquisition	Acquisition of lands containing important natural heritage features that aligns with CLOCA Land Securement Strategy	3	85% Donation 8% Federal Grants 7% Special Levy	\$ 39,000	Present	Currently provided as opportunities arise	MOU Required	
	16	Rental property expenses	Management of current property rentals. Revenue from these rentals offset the costs associated with management and are reflected in line item 14.	3	100% Self Generated	\$ 36,920	Present	Currently provided	MOU Required	
Drinking Water Source Protection (Section 21.1 (1) iii) (Subsection 13)	17	Source protection authority role as set out in the Clean Water Act.	Source Protection Area/Region, tech support, SPC support, SPA reports and meetings, activities required by the Clean Water Act and regulations that applies to the authority's source protection area.	1	100% Provincial	\$ 100,720	Present	Currently provided	N/A	

Program/Service	Item	Subservice	Explanation of Subservice	Category: 1-Mandatory, 2- Municipal P&S, 3-other	Funding Mechanism	5-year Average Annual Cost	Program/Service Provided Date	Program/Service provided date (prior or post Feb 28/22)	MOU status	Explanation of Other Funding
Water Quality & Quantity Monitoring (Section 21.1 (1) 2 (Subsection 12(2) and 12(3))	18	Provincial Water Quality Monitoring Network (PWQMN)	A long-standing (50+ year) CA/MECP partnership for stream water quality monitoring. CA takes water samples; MECP does lab analysis and data management	1	100% General Levy	\$ 22,120	Present	Currently provided	N/A	
	19	Surface water Monitoring	Integrated Watershed Monitoring Program	3	88% General Levy 8% Other Grants 2% Provincial Grants 2% Partnership Funding	\$ 106,770	Present	Currently provided	MOU required	Grant (RBC)
	20	Provincial Groundwater Monitoring Network (PGMN)	A long-standing (20+ year) CA/MECP partnership for groundwater level and quality monitoring.	1	100% Provincial	\$ 15,250	Present	Currently provided	N/A	
	21	ORM Groundwater Program	Groundwater Partnership Program funded through Toronto Region CA Levy from participating municipalities. Program includes intermittent work related to Source Water Protection such as delineation of updated wellhead protection areas and use of data and modelling.	1	10%	\$ 85,518			N/A	
	22	ORM Groundwater Program	Groundwater Partnership Program funded through Toronto Region CA Levy from participating municipalities. Program includes work related to general groundwater resource management	2	85% Partnership Levy Funding (need to separate out Durha funding from york, peel and halton) 4% Self-Generated 1% Provincial Grants	\$ 769,662	Present	Currently provided	MOU required	
Core Watershed-based Resource Management Strategy (Section 21.1 (1) 2 (Subsection 12(4)-(9))	23	Strategy Development - NOTE: Strategy to be completed on or before December 31, 2024	Develop of watershed plans that provide guiding principles and objectives that inform the design and delivery of programs and services the CA is required to provide. Includes the develop a process for periodic review including procedures to engage/ consult with stakeholders and the public. Strategy development must include a stakeholder and public consultation component	1	80% General Levy 20% Special Levy	\$ 102,440	Present	Currently provided	N/A	
	24	Sub-watershed planning not related to natural hazards	Partner developed plan which identifies streams, wetlands, forests, groundwater recharge areas, and other natural areas. It includes an inventory of plants, animals, birds, and other species. Information on stream flows, water quality, groundwater movement and other natural features is also included. The plan contains policies and implementation actions to protect, enhance and improve the health of the area.	2	85% General Levy 15% Special Levy	\$ 137,230	Present	Currently provided	MOU required if additional work is required.	
	25	Natural Heritage Planning	Natural heritage monitoring, plans/strategies system design and mapping outside of conservation areas	3	87% General Levy 6% Local Municipal Funding 3.5% Federal Grants 3.5% Other (Donations, Other Grants, Provincial Grants, Self-Generated)	\$ 205,970	Present	Currently provided	MOU required	Grant (TD Friends of the Environment)
	26	Oshawa Consortium Water Monitoring Program	Agreement with City of Oshawa and Ontario Tech University related to Oshawa Creek water quality monitoring	2	57% Local Municipal Funding 43% General Levy 47% General Levy 31% Partnership Funding	\$ 39,000	Present	Currently provided	MOU required	
	27	Watershed Natural Heritage Stewardship and Restoration not related to natural hazards	Apply for and manage external funding, promote private land stewardship, outreach, provide advice and design assistance to property owners. Implementation of watershed plan stewardship recommendations	3	10% Federal Grants 6.5% Special Levy 3.5% Self-Generated 1.5% Other Grants 0.5% Donations	\$ 90,630	Present	Currently provided	MOU Required	Grant (GM/ROM/Toronto Zoo) for Bioblitz event, Sponsorship (Friends of Second Marsh)
	28	Climate change impact assessment /Planning and Policies	Identification of natural hazard and natural heritage vulnerability or risk, and the development of mitigation and adaptation plans and actions implementing the Regions Climate Change Plan.	2					MOU required	
	29	Climate change impact assessment /Planning and Policies	Identification of natural heritage vulnerability or risk, and the development of mitigation and adaptation policies and plans as part of watershed health report	3	66% Special Levy 34% General Levy	\$ 36,710	Present	Currently provided	MOU required	
	30	Conservation/ Outdoor Education - Curriculum delivery not related to natural hazards	Program development & delivery	3	35% General Levy 28% Self-Generated 15% Donations 14% Special Levy 5% General Levy 3% Partnership Funding 65% Self-Generated	\$ 216,510	Present	Currently provided	MOU required	
	31	Nature interpretative services not related to natural hazards	Event/Festival development and execution	3	29% General Levy 4% Donations 2% Partnership Funding	\$ 175,530	Present	Currently provided	MOU required	
	32	SNAP - Sustainable Neighborhood Action Program.	Identifies creative retrofit solutions based on the unique environmental and socio-economic context and local community interests.	3	funding and costs TBD				New program	MOU required
Enabling Program Services: Program costs that are required to run the organization	33	Corporate Services	Administrative, human resources, operating and capital costs including overhead and support costs	1	68% General Levy 23% Self-Generated 6% Interest Earned 2% Provincial Grants 1% Federal Grants	\$ 675,050	Present	Currently provided	N/A	Some of the self-generated is rental recovery
	34	Financial Services	Accounting and payroll	1	100% General Levy 74% General Levy 16% Interest Earned	\$ 292,780	Present	Currently provided	N/A	
	35	Corporate Legal Expenses	Costs related to agreements/contracts, administrative by-law updates	1	6% Provincial Grants 2% Federal Grants 2% Self-Generated	\$ 23,500	Present	Currently provided	N/A	
	36	Communications and Marketing	Supporting delivery of products and programs through communication platforms and promotion of revenue generating activities; websites creation and maintenance	1	94% General Levy 5% Self-Generated 1% Other (Donations, Other Grants)	\$ 180,010	Present	Currently provided	N/A	Grant (OMAF)
	37	Governance	Supporting CA Board and Office of CAO	1	100% General Levy	\$ 195,980	Present	Currently provided	N/A	

Program/Service	Item	Subservice	Explanation of Subservice	Category: 1-Mandatory, 2- Municipal P&S, 3-other	Funding Mechanism	5-year Average Annual Cost	Program/Service Provided Date	Program/Service provided date (prior or post Feb 28/22)	MOU status	Explanation of Other Funding
	38	Asset Management	Asset management planning, facilities & property management	1	100% General Levy	\$ 43,160	Present	Currently provided	N/A	
	39	Information Technology Management/GIS	Data management, records retention. Development and use of systems to collect and store data and to provide spatial geographical representations of data.	1	77% General Levy 22% Self-Generated 1% Federal Grants	\$ 620,840	Present	Currently provided	N/A	
						\$ 6,874,770				

THIS MEMORANDUM OF UNDERSTANDING (“MOU”) is made as of the day of
, 2023 (the “**Effective Date**”).

BETWEEN:
THE CORPORATION OF THE TOWNSHIP/TOWN/CITY OF
(hereinafter, “Township/Town/City”)

AND:
CENTRAL LAKE ONTARIO CONSERVATION AUTHORITY
(hereinafter, “CLOCA”)

WHEREAS CLOCA is a conservation authority established under the *Conservation Authorities Act* (“Act”) providing programs and services that further the conservation, restoration, development, and management of natural resources in its watersheds;

AND WHEREAS the City is a lower-tier municipality in the Reginal Municipality of Durham, located wholly or partly within the area under the jurisdiction of CLOCA;

AND WHEREAS in carrying out its mandate under the Act, CLOCA provides Category 2 and 3 programs and services to municipal partners within its jurisdiction including but not limited to erosion control and restoration planning and works, forest management, invasive species and wildlife management, watershed and subwatershed planning, biodiversity and ecosystem monitoring, community education and outreach, research and interpretation, events, and nature-based programs;

AND WHEREAS under the Act programs and services provided by conservation authorities at the request of a municipality are to be provided under a memorandum of understanding (“MOU”) or such other agreements as may be entered into with the municipality in respect of the programs and services, and such MOUs or other agreements are intended to be higher level parent agreements that govern the delivery of the programs and services;

AND WHEREAS the Act requires such MOU or other agreements to be reviewed at regular intervals and to be made available to the public, subject to certain exemptions;

AND WHEREAS this MOU sets out the principles, terms and conditions governing the delivery of programs and services by CLOCA requested by the City;

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein and for other good and valuable consideration the sufficiency of which is hereby acknowledged by the parties, the parties hereto agree as follows:

1. This MOU shall commence on the Effective Date and shall continue for four years (the “**Initial Term**”). Thereafter this MOU shall continue for one (1) additional four (4) year period (“**Renewal Term**”) unless either party provides written notice of termination to the other party at least thirty (30) days prior to the expiry of the Initial Term.
2. This MOU shall be reviewed by the parties on an annual basis as part of the budget and apportionment process.
3. The following principles, terms and conditions shall govern the delivery of programs services requested by the City:
 - a. Subject to complying with procurement and purchasing policies, the Township/Town/City will give due consideration to CLOCA when procuring services related to CLOCA’s mandate and areas of expertise.
 - b. CLOCA’s or the City’s standard form of purchase order and procurement agreements will be used for the delivery of municipally requested programs and services.
 - c. CLOCA will maintain such insurance policies as required by the Township/Town/City in respect of the delivery of programs and services provided pursuant to this MOU.
 - d. CLOCA will retain all financial and project records in connection with the programs and services for audit purposes by the City for no less than seven years.

- e. Programs and services provided pursuant to this MOU shall be in accordance with any standards and requirements that may be prescribed under subsection 21.1.1(4) of the Act.
 - f. Where programs and services delivered by CLOCA pursuant to this MOU involve user fees, such user fees shall only be imposed in accordance with CLOCA’s fee policy and fee schedules adopted in accordance with the provisions of the Act or in accordance with provisions set out in an agreement between CLOCA and the Township/Town/City.
4. Nothing in this MOU obliges the Township/Town/City to request the delivery of programs and services by CLOCA.
 5. The Township/Town/City and CLOCA will continue to work together to identify opportunities for further collaboration to the benefit of both parties and ensure efficiency, transparency, and accountability in the use of public sector resources.
 6. This MOU shall be reviewed by the Parties prior to the expiry of the Initial Term or Renewal Term. It is CLOCA’s responsibility to initiate the review with the Township/Town/City at least ninety (90) days prior to the expiry of the Initial Term or Renewal Term, as the case may be.
 7. This MOU shall be made available to the public in accordance with the Act and any applicable regulation.
 8. This MOU may be executed in counterparts and when each party has executed a counterpart, each of such counterparts shall be deemed to be an original and all of such counterparts, when taken together, shall constitute one and the same agreement. The parties may sign this MOU by means of electronic signature and deliver this MOU by electronic transmission.

IN WITNESS WHEREOF, the parties have entered into this MOU as of the Effective Date.

CENTRAL LAKE ONTARIO CONSERVATION AUTHORITY

Per: Name: Chris Darling _____
Title: Chief Administrative Officer **signature**

Per: Name: Elizabeth Roy _____
Title: CLOCA Chair **signature**

THE CORPORATION OF THE TOWNSHIP/TOWN/CITY OF: _____

Per: Name: _____
Title: **signature**

Per: Name: _____
Title: **signature**

**THIS MEMORANDUM OF UNDERSTANDING (“MOU”) is made as of the day of
, 2023 (the “Effective Date”).**

BETWEEN:

**THE REGIONAL MUNICIPALITY OF DURHAM
(hereinafter, “Participating Municipality”)**

AND:

**CENTRAL LAKE ONTARIO CONSERVATION AUTHORITY
(hereinafter, “CLOCA”)**

WHEREAS CLOCA is a conservation authority established under the Conservation Authorities Act (“Act”) providing programs and services that further the conservation, restoration, development, and management of natural resources in its watershed;

AND WHEREAS the Participating Municipality is a municipality, located wholly or partly within the area under the jurisdiction of CLOCA, and is designated as a participating municipality under the Act;

AND WHEREAS in carrying out its mandate under the Act, CLOCA is required to provide mandatory programs and services (Category 1) set out under Ontario Regulation 686/21;

AND WHEREAS in carrying out its mandate under the Act, CLOCA provides non-mandatory programs and services (Category 2) at the request of or on behalf of its municipal partners within its jurisdiction;

AND WHEREAS in carrying out its mandate under the Act, CLOCA provides non-mandatory programs and services (Category 3) that CLOCA implements to manage and conserve the watershed;

AND WHEREAS under the Act, Category 1 programs and services are to be funded through the annual budget and apportionment process in accordance with the Act;

AND WHEREAS under the applicable regulations, Category 1 operating expenses and capital costs may be included in the apportionment and provided without an agreement;

AND WHEREAS under the Act, Category 2 programs and services provided at the request of or on behalf of its municipal partners municipalities are delivered under a memorandum of understanding (“MOU”) or such other agreement;

AND WHEREAS under the applicable regulations, Category 2 operating expenses and capital costs may be included in the apportionment under an MOU or other agreement, and the operating expenses and capital costs shall be apportioned, in their entirety, to the participating municipality that requested the programs and services;

AND WHEREAS under the Act, Category 2 programs and services may be provided at the request of participating municipalities, outside of the budget and apportionment process, through individual procurement agreements;

AND WHEREAS the Act requires such MOUs or other agreements to be reviewed at regular intervals and to be made available to the public, subject to certain exemptions;

AND WHEREAS this MOU sets out the principles, terms and conditions governing the delivery of Category 2 and 3 programs and services funded by the Participating Municipality through the budget and apportionment, or otherwise requested outside of the budget and apportionment process;

AND WHEREAS under the Act, Category 3 programs and services implemented by the CLOCA may be provided in accordance with the Act, within the budget and apportionment process, or otherwise requested outside of the budget and apportionment process;

AND WHEREAS under the Act and the Minister’s Fee Classes Policy, the Authority may establish fees to be charged for the program or service where appropriate;

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein and for other good and valuable consideration the sufficiency of which is hereby acknowledged by the parties, the parties hereto agree as follows:

1. This MOU shall commence on the Effective Date and shall continue for four (4) years (the “**Initial Term**”). Thereafter this MOU shall continue for additional four (4) year periods (each a “**Renewal Term**”) unless either party provides written notice of termination to the other party at least sixty (60) days prior to the expiry of the Initial Term or Renewal Term, as the case may be.
2. This MOU shall be reviewed by the parties on an annual basis as part of the budget and apportionment process.
3. When preparing its annual budget, CLOCA shall follow the prescribed budgetary process in accordance with the requirements of the applicable regulations, including preparation of a draft budget, consultation with the Participating Municipality, rules for voting to approve the apportionment, and preparation of the final budget.
4. CLOCA and the Participating Municipality shall identify and agree upon Category 1, applicable Category 2, and Category 3 services in the annual budget.
5. Where requested Category 2 services are included in the budget process and apportionment, CLOCA shall apportion the operating expenses and capital costs, in their entirety, to the Participating Municipality that requested the programs and services.
6. A list of existing service agreements as of the date of this MOU are referenced in Schedule 2 to this MOU. Amendments to Schedules may be made by staff periodically to ensure alignment with existing agreements and the annual budget process.
7. CLOCA shall submit a variance report by June 1st annually for the previous fiscal year that includes a forecast of deferred revenue for all services included under Schedule 2 of the MOU. On an annual basis through the variance reporting process, the Conservation Authority and the Participating Municipality will review unspent funding to determine opportunities to reallocate the funding to other municipal priorities.
8. Where Category 2 services are requested and procured outside of the budget process, and not included in the apportionment, the following principles, terms, and conditions shall govern the delivery of Category 2 programs and services requested by the Participating Municipality:
 - a. Subject to complying with procurement and purchasing policies, the Participating Municipality will give due consideration to CLOCA when procuring services related to CLOCA’s mandate and areas of expertise.
 - b. CLOCA’s or the Participating Municipality’s standard form of purchase order and procurement and other agreements will be used for the delivery of municipally requested programs and services.
 - c. CLOCA will maintain such insurance policies as required by the Participating Municipality in respect of the delivery of programs and services provided outside of the budget process pursuant to this MOU.
 - d. CLOCA will retain all financial and project records in connection with the programs and services for audit purposes by the Participating Municipality for no less than seven years.
9. Category 1 programs and services shall be provided be in accordance with any standards and requirements that may be prescribed under subsection 21.1(3) of the Act. Category 2 programs and services provided shall be in accordance with any standards and requirements, and any terms and conditions, that may be prescribed under subsection 21.1.1(4) of the Act.
10. Where Category 2 programs and services funded by the Participating Municipality involve user fees, such user fees shall only be imposed in accordance with CLOCA’s fee policy and fee schedules adopted in accordance with the provisions of the Act, or otherwise in accordance with provisions set out in an agreement between CLOCA and the Participating Municipality.
11. The Participating Municipality and CLOCA will continue to work together to identify opportunities for further collaboration to the benefit of both parties and ensure efficiency, transparency and accountability in the use of public sector resources.

- 12. This MOU shall be made available to the public in accordance with the Act and any applicable regulations.
- 13. This MOU may be executed in counterparts and when each party has executed a counterpart, each of such counterparts shall be deemed to be an original and all of such counterparts, when taken together, shall constitute one and the same agreement.
- 14. Payment for all Category 1, Category 2 and Category 3 expenses agreed to as part of the budget process shall be received under the following timelines: 50% due within 30 days of invoice date and the remainder of the invoice will be due by October 1st of each calendar year.

IN WITNESS WHEREOF, the parties have entered into this MOU as of the Effective Date.

CENTRAL LAKE ONTARIO CONSERVATION AUTHORITY

Per: Name: Chris Darling

Title: Chief Administrative Officer

signature

Per: Name: Elizabeth Roy

Title: CLOCA Chair

signature

THE REGIONAL MUNICIPALITY OF DURHAM

Per: Name:

Title: Chief Administrative Officer

signature