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Board of Directors Meeting

Thursday, July 23, 2020

6:30 pm

Meeting Will be Held Electronically due to COVID-19 State of Emergency

AGENDA

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1.0 Agenda Review	
2.0 Adoption of Agenda	
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**Proudly working in partnership
with our 18 watershed municipalities**

Athens, Augusta, Beckwith, Central Frontenac, Clarence-Rockland,
Drummond/North Elmsley, Elizabethtown-Kitley, Merrickville-Wolford, Montague,
North Dundas, North Grenville, Ottawa, Perth, Rideau Lakes, Smiths Falls, South Frontenac, Tay Valley, Westport

12.0 Meetings

Upcoming

- a) RVCA Board of Directors Meeting: August 27, 2020 (Tentative)
- b) RVCA Board of Directors Meeting: September 24, 2020

13.0 Member Inquiries

14.0 New Business

15.0 Adjournment



**6.0 RVCA Low Water Response Program
Report #: 1-200715**

To: RVCA Board of Directors
From: Brian Stratton
Manager, Engineering Services
Date: July 14, 2020

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<input type="checkbox"/>	For Direction
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Recommendation:

THAT the Board of Directors of the Rideau Valley Conservation Authority receives this report for information purposes.

Purpose

To provide the Board with information about RVCA's low water response program and an update on current low water conditions.

Background

The RVCA's low water response program involves monitoring dry weather conditions that may lead to diminished water supplies that put aquatic ecosystems under stress and constrain human activities that require water. The objectives of RVCA's low water response program, pursuant to Ontario's low water response plan (*Ontario Low Water Response, Ontario Ministry of Natural Resources and Forestry, March 2010*) are:

- To characterize the severity of drought conditions as they develop by monitoring selected indicators and by applying selected thresholds for three drought severity levels
- To have clear and effective communication amongst and between water takers and water managers as soon as there is a perception that a drought condition is developing
- To heighten public awareness of diminishing water supplies and stressed aquatic ecosystems, through Public Service Announcements (Watershed Conditions Statements)
- To promote wise use and conservation of water supplies in all sectors;
- To allocate resources amongst water takers by voluntary, cooperative action where possible and appropriate

Local Susceptibility

Low water conditions within the Rideau watershed will affect aquatic habitat to some degree depending on the severity and duration of the drought event. Other impacts may include:

- Golf courses which rely on irrigation from smaller waterbodies that may dry out
- Boating on the Rideau Canal system as well as other uncontrolled lakes
- Agricultural operations such as livestock farms, cash crops, fruit/vegetable
- Private wells which rely on shallow groundwater supplies.
- Municipal water systems, especially those systems that draw water from surface water supplies (Town of Perth, Town of Smiths Falls). Municipal groundwater wells typically draw from deeper groundwater supplies and are therefore less likely to be affected.

The Ottawa River is a major system responding mainly to climatic conditions in northeastern Ontario and western Quebec. To have a significant impact, dry conditions would have to extend over a very large area. Municipal water supplies taken from the Ottawa River are a small portion of the flow and have not been at risk during past drought events in the Rideau watershed.

Monitoring

RVCA staff apply the Daily Planning Cycle (DPC) to collect data and determine what water level and flow conditions are likely to occur each day throughout the year. The DPC consists of a check of weather forecasts, water levels and flows at key stream measurement stations and precipitation monitoring sites. When forecast precipitation amounts, streamflows and levels are observed to be trending toward selected drought indicator thresholds, an assessment of conditions is stepped up and the Rideau Valley Water Response Team (RVWRT) is asked to meet to discuss a response. A summary report is generated and distributed to the RVWRT prior to formal discussion.

Water Response Team

The Rideau Valley Water Response Team is coordinated by RVCA staff and is made up of representatives from the following organizations:

- Municipal Partners / Municipal Public Works (Water Supply) Departments
- Ontario Ministry of the Environment, Conservation and Parks
- Ontario Ministry of Natural Resources and Forestry
- Ontario Ministry of Agriculture and Food
- Ministry of the Solicitor General
- Parks Canada - Rideau Canal
- If needed, representatives from private sector water takers
 - Agriculture
 - Golf Course Operators
 - Aggregates/Industrial/Construction

The primary purposes of any RVWRT meeting is to: a) provide a forum for the sharing of information amongst water managers and water takers and b) cooperative decision

making on actions to be taken in the conservation of limited water supplies at the early stages of and throughout drought events, as they occur.

Levels and Messaging

The *Ontario Low Water Response* document (MNR, March 2010) describes the following three drought condition levels:

- Minor Low Water / Level I (Conservation)
- Moderate Low Water / Level II (Conservation, Restriction)
- Severe Low Water / Level III (Conservation, Restriction, Regulation).

In 2016, MNR staff clarified that the confirmation and declaration of a Severe Low Water / Level III condition does not imply any mandatory or legal requirement to restrict or regulate water use unless a municipality enacts a specific bylaw.

Precipitation and streamflow are the two key indicators to determine the above listed drought condition levels. The associated messaging and thresholds for each indicator are presented below:

LOW WATER CRITERIA		
MESSAGING	STATUS	DEFINITION & CRITERIA
	NO STATUS	No drought conditions exist
	LEVEL 1	A reduction in water use should be considered. Precipitation amounts for the previous 90 or 540 day period are less than 80% of Normal and/or streamflows are at the 7Q5 frequency. Headwater streams may have very low flows.
	LEVEL 2	A reduction in water use is advised. Flows have declined to 7Q10 frequency and/or the 30, 90 or 540 day accumulated precipitation is 60% of normal. Minor stream will be drying up and shallow wells may also be going dry.
	LEVEL 3	A reduction in water use may be imposed. Flows have declined to 7Q20 frequency and/or the 30, 90 or 540 day accumulated precipitation is 40% of normal. Water levels in wetlands will have declined significantly and larger tributaries (Tay and Jock River, Kemptville Creek) will be reduced to pools in some reaches. Moderately deep wells may be at risk of drying up.

Analysis

Current Low Water Conditions (as of July 13, 2020)

The winter of 2019-20 was warmer than average with near-average snowfall amounts. In early March, snow monitoring across the watershed confirmed above average water content within the snowpack with the potential for elevated flood conditions. Fortunately, above average rainfall and temperatures (+2 degrees) in March resulted in a gradual snow melt with slightly elevated water levels and flows across the watershed with limited flooding observed or reported. Since March, we have received below normal precipitation amounts.

The first RVWRT meeting was held on June 4, 2020 and a ‘minor’ low water message was issued on the same day as a result of low rainfall and streamflow values. The

second RVWRT was held on June 25, 2020 and a 'moderate' low water message was issued the same day as a result of continued low rain and streamflow values. The next RVWRT meeting is scheduled for July 15, 2020, and despite some rain on July 10 through 12, low water conditions are continuing to deteriorate.

At the current time, stream flows are near half of the seasonal historic normal for the Rideau River and Tay River which are regulated waterways managed by Parks Canada staff using the reservoir lakes as a source of water. Stream flow for the Jock River and Kemptville Creek are at or less than 3% of the seasonal historic normal.

Over the past 30 days, the average precipitation measured across the Rideau watershed is about 45% of the historic normal (39 cm instead of 90 cm). Over the past 3 months, the average precipitation measured across the Rideau watershed is about 55% of historical normal (137 cm instead of 242 cm).

Input From Other Sources

As outlined above, in low water conditions the RVCA assembles their Water Response Team which has multi-stakeholder representation.

Financial Considerations

RVCA's low water response program is accounted for in RVCA's annual operating budget.

Legal Considerations

N/A

Adherence to RVCA Policy

N/A

Link to Strategic Plan

N/A

Attachment

- RVCA Watershed Conditions Statement, July 15, 2020: *"Moderate" Low Water Conditions Persist in Rideau Valley Watershed*

"Moderate" Low Water Conditions Persist in Rideau Valley Watershed

RVCA <info@rvca.ca>

Wed 2020-07-15 1:36 PM

To: Sommer Casgrain-Robertson <sommer.casgrain-robertson@rvca.ca>



Watershed Conditions Statement

"Moderate" Low Water Conditions Persist in Rideau Valley Watershed

WCS-LW - 3/2020
July 15, 2020

The graphic features a blue wavy header with the Rideau Valley Conservation Authority logo. Below it, a horizontal bar contains four colored segments: green, yellow, orange, and red. The orange segment is highlighted with a white arrow pointing to it, and the word "Moderate" is written inside it.

This statement is to advise that the low water status in the Rideau River watershed continues to be at **MODERATE** severity under the Ontario Low Water Responses Program.

Although varying amounts of rain fell across the watershed last weekend, the watershed has still received very little rainfall over the past three months. The average 90-day rainfall measured at climate stations in and around the watershed is below 60 per cent of normal for this time of year. In the past 30 days, average rainfall is below 45 per cent of normal. The recent hot weather has also increased the evaporation rates throughout the watershed. Looking ahead, the seven-day weather forecast suggests we may receive over 20 mm of rain.

Stream flow values for all waterways are well below normal for this time of year. For example, the measured flows for the Rideau River at Carleton University and the Tay River in Perth are at about 50 percent normal for this time of year. Measured flows for the smaller tributaries such as the Jock River and Kemptville Creek are at or below 3 percent of normal for this time of year. Field observations around the watershed indicate that ecological conditions are poor and declining with many fragmented streams, warm temperatures and numerous reports of extensive algae and/or weed growth.

Members of the Rideau Valley Water Response Team have indicated that municipal water supplies are not experiencing any issues as a result of low water and no issues with private wells have been reported. However, the Ontario Ministry of Agriculture and Food (OMAFRA) indicate numerous concerns including loss of crop yields and increase in wells being drilled to supply water for livestock.

Following an early spring freshet this year, Parks Canada are closely monitoring the water levels throughout the Rideau Canal system inside the Rideau Valley watershed. Water levels in the reservoir lakes, located in the upper reaches of the Rideau Valley watershed, are below normal and are expected to decline further with limited precipitation in the forecast. Rideau River flows downstream of Big Rideau Lake have been reduced to minimum. Water levels in the Rideau River below Smiths Falls are within navigable ranges but some areas are below average for this time of year.

Watershed residents and businesses are encouraged to voluntarily reduce their water usage by 20 percent and strongly encouraged to limit non-essential water usage. This is especially important for those who have permits for taking water from surface or groundwater sources and all residents on private, communal or municipal wells. There is less of a concern for residents of urban Ottawa because the City of Ottawa central drinking water system draws

from the Ottawa River. Residents throughout the watershed should be aware of any bans or bylaws that may be in place in their municipalities regarding fires or watering bans.

In order that RVCA can track impacts of the low water conditions in the watershed, its is requested that any individuals or businesses in the Rideau Watershed who may be experiencing difficulties with their wells or other low water impacts please contact the Conservation Authority by email. Please send emails to info@rvca.ca.

Although there is some rain in the forecast, low water conditions are expected to intensify in the coming weeks. Conservation Authority staff continue to monitor conditions and communicate with water managers throughout the watershed. Updates to this message will be issued as conditions warrant.

More resources:

Ministry of Environment, Conservation and Parks: <https://www.ontario.ca/page/managing-your-water-well-times-water-shortage>

Ontario's Low Water Response program: <https://www.ontario.ca/page/low-water-response-program>

RVCA website: www.rvca.ca

Hourly and daily streamflows and water levels: <https://www.rvca.ca/watershed-monitoring-reporting/reporting/streamflow-water-levels>

-end-

More Information:

Contact: Brian Stratton, RVCA Manager Engineering Services
Rideau Valley Conservation Authority
613-692-6804, 1-800-267-3504 ext. 1141
brian.stratton@rvca.ca

"Rideau Valley Conservation Authority is a partnership of municipalities within the Rideau Valley watershed created under the Conservation Authorities Act to deliver a range of programs in watershed management and natural resource conservation."

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Rideau Valley Conservation Authority, 3889 Rideau Valley Drive, Manotick, Ontario, K4M 1A5, Canada, <https://www.rvca.ca>



7.0 Flood Risk and Regulation Limits Mapping for Mud Creek
From 3rd Line Road North to the Rideau River, City of Ottawa
Report #: 2-200715

To: RVCA Board of Directors
From: Ferdous Ahmed, P.Eng.
Senior Water Resources Engineer
Glen McDonald MCIP RPP
Director of Planning and Watershed Science
Date: July 14, 2020

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Recommendation:

That the Board of Directors of the Rideau Valley Conservation Authority receive the flood mapping report for Mud Creek from 3rd Line Road North to the Rideau River (dated July 9, 2019);

That the report and associated maps be adopted as the best available information related to establishing flood risk and regulation limits along Mud Creek;

That the Board receives the outcome of the public consultation, including a public open house, on the draft report and maps;

That the report and maps be used in RVCA's planning advisory and regulation programs, including the administration of Ontario Regulation 174/06 under Section 28 of the *Conservation Authorities Act*, and other watershed management activities; and

That the report and maps be published and put on the RVCA website for public use and information.

Purpose

To adopt flood hazard and regulation limit mapping for Mud Creek from 3rd Line Road North to the Rideau River in the City of Ottawa.

During its meeting of July 25, 2019, the RVCA Board of Directors received Report # 4-190725 and passed the following motion:

- *That the Board of Directors of the Rideau Valley Conservation Authority receive the flood mapping report for Mud Creek from 3rd Line Road North to the Rideau River (dated July 9, 2019);*
- *That the report and associated maps be adopted as the best available information related to establishing flood risk and regulation limits along Mud Creek;*
- *That public consultation be undertaken, including a public open house, to solicit input on the draft report and maps and to explain how regulation limits are derived and how they will be administered;*
- *That any feedback from the public consultation that warrants a change to the report or maps be done promptly; and*
- *That a report be brought to the Board to seek approval of the report and maps to be used in RVCA's planning advisory and regulation programs, including the administration of Ontario Regulation 174/06 under Section 28 of the Conservation Authorities Act, and other watershed management activities.*

As directed, staff have completed public consultation on the draft mapping and are now seeking final approval of the project.

Background

Since 1976, the RVCA has regulated hazard lands under the Conservation Authorities Act to ensure public safety and prevent property damage due to natural hazards such as flooding and erosion. The regulation of wetlands was added in 2006 and is applied primarily to Provincially Significant Wetlands in the Rideau watershed.

Since 2006, when Section 28 of the Conservation Authorities Act was amended and a Generic Regulation (Ontario Regulation 97/04) was approved by the provincial government, the RVCA has been gradually working to add to and update its collection of flood hazard and regulation limits mapping to achieve effective and consistent administration and enforcement of its local regulation (Ontario Regulation 174/06) and to inform land use planning decisions.

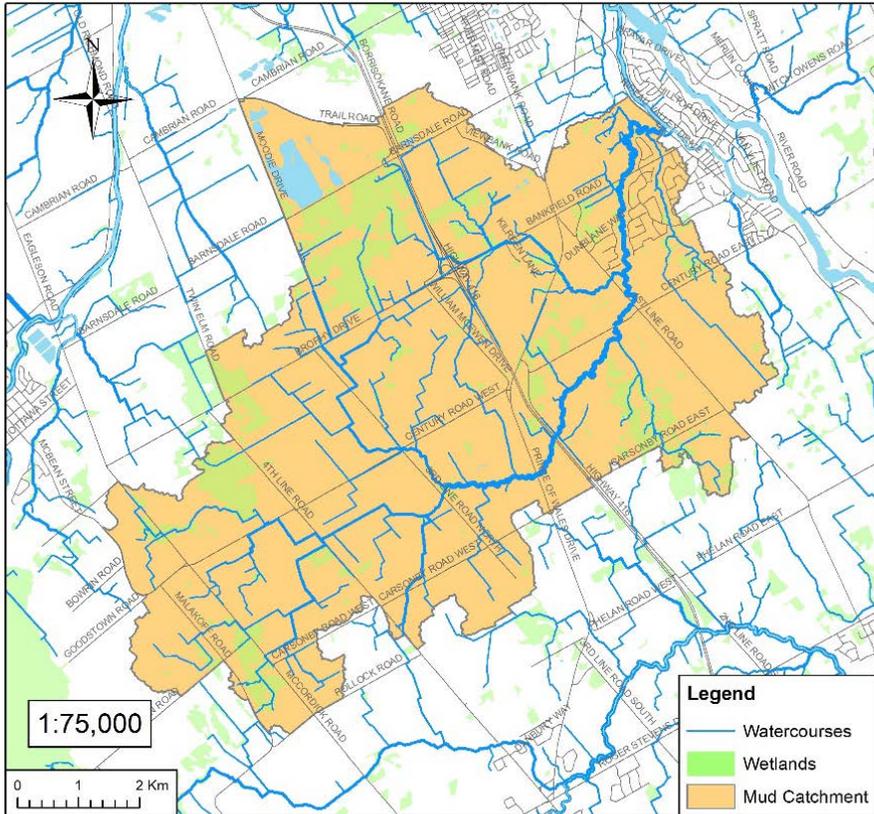
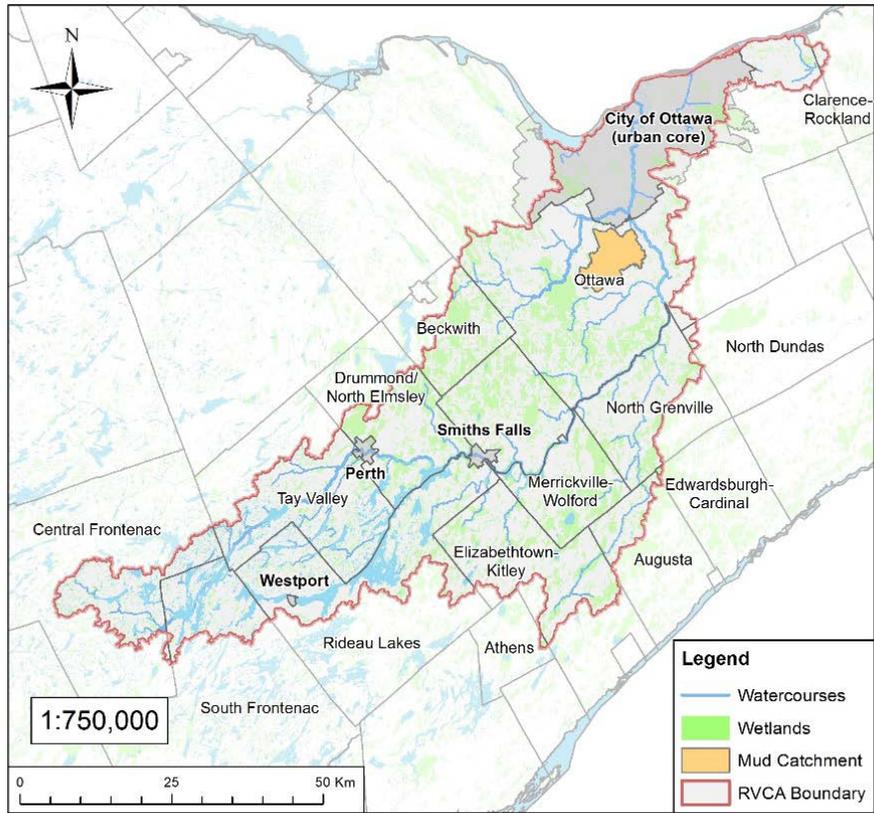
Ontario Regulation 174/06 enables the RVCA to regulate development within hazard lands like floodplains and unstable slopes as well as wetlands (including 120 metre adjacent lands). To administer its "Development, Interference with Wetlands and Alterations to Shorelines and Waterways" regulation, the RVCA uses regulatory mapping schedules to define areas that are subject to the regulation. These maps are subject to Board approval and are used extensively by RVCA and municipal staff, proponents and the public to understand and show where the regulation applies. Property owners must obtain permission from the RVCA before beginning any development, site alteration, construction, or placement of fill within a regulated area. Permits are also required for any wetland interference, or for straightening, changing, diverting or interfering in any way with the existing channel of a watercourse.

The Province also made conservation authorities responsible for commenting on planning files with respect to natural hazards. Under the Planning Act, municipalities must circulate official plans, comprehensive zoning bylaws and site-specific planning applications to conservation authorities who then provide comments on behalf of the province relating to Section 3.1 of the Provincial Policy Statement (natural hazards). As directed by the Ministry of Municipal Affairs and Housing and the Ministry of Natural Resources and Forestry, conservation authorities provide comments with respect to flooding, riverine erosion and unstable slopes, soils and bedrock. The RVCA relies on the regulatory mapping schedules to inform these comments.

In recent years, the RVCA has undertaken the task of identifying hazard land boundaries while the Ministry of Natural Resources and Forestry is responsible for designating Provincially Significant Wetlands. RVCA is currently working on a number of floodplain-based hazard land mapping projects within the City of Ottawa under a multiyear partnership with the City. The City of Ottawa and its three conservation authorities (Mississippi, Rideau and South Nation) signed a second Contribution Agreement in 2017 to continue flood risk mapping within the City's boundaries. Under this program, the City of Ottawa provides 50% funding with conservation authorities budgeting for the other 50%. A five-year plan was made to identify high priority rivers and streams where mapping would be updated or new mapping created. Four reaches were identified in the Rideau watershed including Mud Creek from 3rd Line Road North to the Rideau River.

Analysis

There is no existing flood hazard or regulation limits mapping on Mud Creek so the RVCA has mapped it for the first time. Mapping was undertaken from 3rd Line Road North to the Rideau River. Below are two maps that show where the Mud Creek catchment is located within the Rideau watershed.



Major Components of the Project:

The major components of completing flood and regulation limits mapping for Mud Creek were:

- Preparation of topographic mapping or DTM based on 2012 and 2015 LIDAR data provided by the City
- Field survey by RVCA staff in 2016 and 2018 of bridges/culverts
- Hydrologic analysis to estimate flood discharges for various return periods at key points along the creek (based on SWMHYMO modeling)
- Hydraulic calculations using numerical (HEC-RAS) modeling of the creek and its flood plain, to estimate flood levels associated with the flood discharges
- Plotting of flood lines on the high-quality topographic mapping to delineate areas that are susceptible to flooding during a 1:100 year flood event
- Determination of hazard areas subject to steep slope and wetlands according to Conservation Ontario Guidelines (2005) and RVCA's internal protocol (2005)
- Plotting of regulation limit lines incorporating all hazards and updating pertinent generic regulation map sheets

Project Outputs:

- A technical memo entitled "Mud Creek Flood Risk Mapping from Prince of Wales Drive to Rideau River," dated July 9, 2019
- Flood risk limit lines in GIS format
- Regulation limit lines in GIS format – this encompasses all hazards (flood, steep slopes and wetlands) and was plotted in accordance with Conservation Ontario Guidelines (2007) and RVCA's internal protocol (2005) under the direction of Terry Davidson, P.Eng., Director of Engineering and Regulations.
- Five Regulation maps (43, 44, 51, 52 and 61)
- Hydrologic models (SWMHYMO)
- Hydraulic models (HEC-RAS)

Open House:

An open house was held on September 24, 2019 at RVCA's Office in Manotick. All affected landowners were notified by mail in advance of the open house. No comments were received either verbally or in writing in response to the mailing.

Thirty-five members of the public attended the open house. RVCA staff were on hand to assist landowners with mapping and to answer questions. Two City of Ottawa staff were also present as the City was a funding partner for the Mud Creek study. There was extensive discussion on how the mapping is done and its implication on land use. Staff answered questions and provided explanations and landowners appeared satisfied with staff responses.

Some landowners on Lockmaster Crescent inquired about the location of the regulation limit relative to the rear lot lines and constraint lands that were identified when the subdivision was approved in 2003. Since the floodplain on Mud Creek is confined within the valley, the predominant hazard is slope stability. There was no requirement for a site-specific slope stability assessment when the subdivision was under review.

However, a development setback was estimated based on the MNRF technical guidance in place at that time. The subdivision was developed in accordance with this setback from top of valley slope. **The development setback line was not established as a regulation limit since regulations were not in effect on Mud Creek when the subdivision was approved.**

In 2017, RVCA completed a new floodplain mapping study on the Rideau River (Hogs Back to Kars). The lower reach of Mud Creek was also mapped at that time because it is subject to backwater flooding from the Rideau River. The regulation limit, which was established using Conservation Ontario Guidelines (2005) and RVCA internal protocol (2005), was defined in 2017 and was also subject to public consultation. The regulation limit is not changing as a result of the 2019 Mud Creek hazard land mapping study. The development setback line, which was identified for the plan of subdivision, is definitive; development is not permitted below this line, whereas development can be considered within the recently established regulation limit subject to site-specific slope stability investigation.

Some attendees expressed interest in seeing the final regulation maps after the review of the constraint lands that were identified for the plan of subdivision. This has now been done via direct mail. Otherwise, there were no issues arising from the open house. Most attendees expressed satisfaction in the way information was shared and explained.

All technical and communication requirements have now been satisfied for the Mud Creek study. Digital files for both the 1:100 year flood line and the regulation limit developed in support of the administration of Ontario Regulation 174/06 under the Conservation Authorities Act will be transferred to the concerned municipalities for use in their GIS and to make adjustments to their official plan and zoning schedules.

Next Steps:

With the study to determine the regulatory flood level and regulation limits along Mud Creek now complete, the technical report mentioned above (not attached but available upon request) was prepared to summarize the methods and procedures used in the analysis. This report and associated maps have been reviewed at a staff level at the RVCA. Moreover, a consultant (professional engineer) retained by the City of Ottawa provided a thorough peer review.

Following Board approval of the report and maps:

- The report and maps will be published and put on the RVCA website for public use and information
- The report and maps will be used in the provision of planning advice to our municipalities and they will form the basis for regulation administration of the watercourse.
- The following deliverables will be provided to the City of Ottawa:
 - The technical report listed above
 - The flood risk limit lines in GIS format

- The regulation limit lines in GIS format
- The RVCA Regulation Limit Map Sheets (consisting of amendments to map sheets numbered 43, 44, 51, 52 and 61 associated with the regulation)
- Hydrologic models (SWMHYMO)
- Hydraulic models (HEC-RAS)

Input From Other Sources

The City of Ottawa provided information and data that was used in the study including LIDAR data and bridge and culvert drawings. Peer review was also undertaken by a third party consultant (professional engineer).

Public consultation has been undertaken to solicit input from affected property owners, other stakeholders and the public. Provincial protocols for regulatory mapping require that certain minimum standards for consultation be followed based roughly on Planning Act consultation requirements. As such, school boards, public utilities, various government departments as well as First Nations must also be advised. This was done by letter along with an invitation to meet if required. There was also contact with the National Capital Commission. Staff from Ottawa Hydro attended a meeting at our office to learn more about the project and as a result hazard information is being shared digitally with Ottawa Hydro. The Ottawa Catholic School Board also contacted us and subsequently indicated they had no comments or objections. Notification was also provided to local real estate boards. There were no other comments received.

Financial Considerations

In 2017, the City of Ottawa and its three conservation authorities (Mississippi, Rideau and South Nation) signed a Memorandum of Understanding to advance flood risk mapping within the City's boundaries. Under this program, the City of Ottawa provides 50% funding with conservation authorities budgeting for the other 50%.

A five-year plan was made to map a number of high priority rivers and streams. The RVCA identified four stream reaches where existing mapping would be updated or new mapping created. These reaches included Mud Creek. The estimated cost of this study was \$112,000 and was funded by the City of Ottawa and RVCA's annual operating budget as per the agreement.

Legal Considerations

As outlined in the Background section, the RVCA requires natural hazard and regulation limit mapping to fulfill its provincially delegated responsibilities including:

- Administering and enforcing its *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation* (Ontario Regulation 174/06) under Section 28 of the *Conservation Authorities Act*
- Providing comments on planning files to municipalities on behalf of the province relating to Section 3.1 of the Provincial Policy Statement (natural hazards).

Adherence to RVCA Policy and Technical Standards

The engineering and cartographic procedures used in this study conform to current standards of hazard delineation for identifying areas that are subject to the requirements of regulations made under Section 28 of the *Conservation Authorities Act*, as per the MNR's Natural Hazards Technical Guide (MNR, 2002) and Conservation Ontario (2005) guidelines. The resulting 1:100 year flood risk lines and regulation limit lines are suitable for use in the RVCA's regulation administration and in municipal land use planning and development approval processes under the *Planning Act* as well as the *Conservation Authorities Act*. The HEC-RAS and SWMHYMO model files will be preserved by RVCA and will be given to any party upon the signing of a standard data sharing agreement.

Link to Strategic Plan

This study supports Priority #6 under Strategic Direction #2 as well as Priority #2 under Strategic Direction #3:

- *Focus new or updated regulatory mapping in areas where there is development pressure.*
- *Help municipalities implement their environmental policies, strategies, projects and initiatives.*

Attachments

There are no attachments to this staff report, but copies of the flood mapping report for Mud Creek and the associated regulation limit mapping was available for viewing at the RVCA office from 5:00 pm to 6:30 pm on Thursday, November 28, 2019 just prior to the Board of Directors meeting.



**8.0 Britannia Village Flood Control Works: Wall Repair
Report #: 3-200715**

To: RVCA Board of Directors
From: Terry K. Davidson, P.Eng.
Director of Engineering and Regulations
Date: July 22, 2020

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Recommendation:

That the Board of Directors of the Rideau Valley Conservation Authority approve KWC2000 Ltd. to repair the wall at 2789 Jamieson Street associated with the Britannia Village Flood Control Works at a cost of \$177,839.00 plus HST to be funded by the City of Ottawa;

That the Board approve J.L. Richards for the engineering supervision phase of the project at a cost of up to \$55,710 plus HST;

And that RVCA staff be allowed to issue Change Work Orders (contingencies) up to a total maximum of \$25,000 plus HST to complete the project.

Purpose

To seek approval to award a contract to KWC2000 Ltd. to rehabilitate a wall at 2789 Jamieson Street associated with the Britannia Village Flood Control Works and to award a contract to J.L. Richards to provide engineering supervision on the project.

Background

In 2008, the RVCA and City of Ottawa entered into a Memorandum of Understanding (MOU) to undertake a flood control project to protect Britannia Village along the Ottawa River. The MOU outlined roles and responsibilities for both the City of Ottawa and RVCA. The MOU was subsequently revised in 2014 and amended in 2017.

Following years of design work in consultation with the local community, the RVCA and City of Ottawa began construction on the flood control project in 2015. The flood control works are made up of a series of modified retaining walls, modified earth berms, new earth berms and other features (see schematic below). The flood control measures were designed and built to protect Britannia Village against the 1:100 year flood event with a 30 cm freeboard incorporated into the design as an added margin of safety.



Analysis

The Britannia Village Flood Control Structure was effective in protecting the community during the 2017 and 2019 flooding events on the Ottawa River, demonstrating the value of the investment to the community. However, flooding in 2019 was a prolonged event and there was evidence of seepage at part of the structure. The RVCA retained J. L. Richards to undertake an assessment of the structure and determine the necessary repairs to maintain the structure's integrity.

J.L. Richards "*Britannia Flood Control Structure Assessment & Rehabilitation Options Letter*" dated February 6, 2020 is attached. The report presented options based on achieving the desired outcome of reduced infiltration directly through the wall during flood conditions. The options were evaluated against each other with consideration to expected effectiveness, constructability (including the impact on adjacent properties), cost, schedule, and approvals requirements. Consultation with the RVCA regarding the acceptability of the various options was conducted on an ongoing basis as options were developed.

There were a total of five options presented in the report as follows:

- Option 1 – Sheet Pile Wall between Redi-Rock Walls
- Option 2 – Concrete Secant Pile Wall between Redi-Rock Walls
- Option 3 – Replace Clear Stone Fill with Imported Silty Clay
- Option 4 – Replace Clear Stone Fill with Lean Concrete
- Option 5 – Earthen Embankment

After discussion between the consultant, City of Ottawa and RVCA based on the evaluation of the relative merits and costs of the five remaining options, it was agreed to proceeding with Option 4 – Replacing Clear Stone Fill with Lean Concrete.

Results of Request for Quotes

To complete the work a “Request for Quotes” was sent out to seven contractors for the entire project. The contractors invited to quote were chosen based on their knowledge and reputation related to this type of specialized work. The request was sent out on June 29, 2020 with a mandatory site meeting on June 7, 2020. The Bidders were required to have their quotes received by July 15, 2020 at 4:00 pm.

The bids were reviewed by RVCA Staff and J.L. Richards (our consultant) and the results of the “Request for Quotes” were as follows:

Company	Attended Site Visit	Quote
TLC Exteriors	Yes	\$218,174.55 + HST
KWC 2000 Ltd.	Yes	\$177,839.00 + HST

Input From Other Sources

The City of Ottawa is a partner on this project and is involved in decision-making and provides funding. J. L. Richards provided technical and engineering advice in assessing the structure, evaluating rehabilitation options and reviewing quotes.

Financial Considerations

The City of Ottawa increased the upset limit in the Britannia Flood Control Works MOU by \$500,000 to enable assessment and remedial work to be undertaken on the structure. The full cost of this work will be funded by the City of Ottawa with no implications on RVCA’s budget.

Funding for the assessment and additional remedial work was approved by the City of Ottawa’s Environmental Protection, Water and Waste Management Committee on September 17, 2019 and full City Council on September 25, 2019.

Legal Considerations

N/A

Adherence to RVCA Policy

This project adheres to the principles of RVCA's purchasing policy.

Link to Strategic Plan

N/A

Attachment

- *Britannia Flood Control Structure Assessment & Rehabilitation Options Letter*
Prepared by J.L. Richards, dated February 6, 2020

February 6, 2020 -- Updated
Our File No.: 29112

VIA: E-MAIL terry.davidson@rvca.ca

Mr. Terry Davidson
Director of Regulations
Rideau Valley Conservation Authority
PO Box 599
3889 Rideau Valley Drive
Manotick, ON K4M 1A5

Dear Mr. Davidson:

**Re: Rideau Valley Conservation Authority – Britannia Flood Control
Structure Assessment & Rehabilitation
Options Letter – REV. 01**

J.L. Richards & Associates Limited (JLR) has been retained by the Rideau Valley Conservation Authority (RVCA) to develop options to minimize leakage through the existing Redi-Rock retaining wall in Britannia Village near Jamieson Street. This letter presents five (5) options for RVCA's consideration.

1.0 BACKGROUND

The existing Redi-Rock retaining wall in Britannia Village near Jamieson Street, as part of the larger Britannia flood control berm/structure, was initially designed with a geosynthetic clay liner (GCL) as the flood control barrier. Leakage was observed behind the retaining wall during flood conditions in 2017 and 2019. The extent of leakage was greater during the 2019 event, with observed areas of visible subsidence at the north end of the wall, as well as minor shifting (differential settlement) of the inside wall at the south end.

The efforts required to manage the leakage during the 2017 and 2019 flood events was considered by authorities to be unnerving for the neighbourhood and disruptive to the adjacent private multi-unit residence. A need to again undertake temporary mitigation measures, potentially in excess of the 2019 flood relief efforts, can reasonably be anticipated during future flood events. As such, we understand there is a strong desire to effect changes or improvements to the existing retaining wall to attempt to avoid similar problems during future high water events. While we understand that there was a desire to undertake remedial work prior to the 2020 spring runoff period, it was agreed that schedule challenges will result in the work being completed following spring runoff.

The exact mechanism for the observed leakage in the spring of 2019 is unknown. However, JLR has been retained by the RVCA to investigate options to mitigate the leakage and address the

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water flow from the Ottawa River through the wall above the existing ground elevation during periods of high water conditions in the river.

1.1 LIMITATIONS

JLR's work on this assignment does not represent a comprehensive review of the previous design and construction work (by others) on this retaining wall or the Britannia flood protection works as a whole. Despite the implementation of any proposed remedial design and construction work, there will remain the risk of continued seepage through the retaining wall during high water conditions. In addition, there remains potential for water flow through fractures in the underlying bedrock and/or around the limits of the wall that cannot or will not be addressed by any of the proposed remedial measures being considered.

Existing ground conditions in the vicinity are such that sustained high water within the Ottawa River will raise the overall groundwater elevation within the neighbourhood. The retaining wall cannot mitigate potential flood conditions due to elevated groundwater levels, and other means are in place to deal with these lower volume flows (e.g. sump pumps installed in private residences). Identifying the risks associated with elevated groundwater levels or devising measures to address these risks is not part of the JLR scope for this assignment.

Where Opinions of Probable Costs (OPCs) are provided, they are presented in 2020 Canadian Dollars. In providing OPCs, RVCA should understand that JLR has no control over the cost or availability of labour, equipment or materials, or over market conditions or the Contractor's method of pricing, and that our OPCs are made on the basis of our professional judgement and experience. We make no warranty, express or implied, that the bids or the negotiated cost of the Work will not vary from our OPC.

Where anticipated construction phase durations have been provided, they are dependent on the Contractor's means and methods, availability of labour, equipment and materials. JLR has no control over these items and, as such, we make no warranty, express or implied, that the construction schedule will not vary from what is presented herein.

2.0 REHABILITATION OPTIONS

Currently, the retaining wall system is primarily composed of a pre-existing (i.e., in place prior to construction of the Redi-Rock wall) subgrade concrete gravity retaining wall behind a Redi-Rock segmental retaining wall, both bearing on bedrock. A secondary (inner) Redi-Rock wall is located behind the primary (river-side) Redi-Rock wall, bearing on soils on the top of or above the elevation of the concrete gravity wall and extending up to be level with the top of the primary Redi-Rock wall. Per the design details and observations from construction, the void between the primary and secondary wall is filled with clear stone backfill and topped with sod. Riprap is located along the bottom of the primary wall. The GCL used to provide the impermeable barrier is installed within the wall extending vertically from the base of the clear stone to the top of the inner wall. The south end of the Redi-Rock wall is abutted by a pre-existing concrete wall known as the "no-trespassing" wall due to the spray-painted message on it during the original construction. The performance of this concrete wall has not been called into question and all options include a concrete extension poured on top to bring it up to the flood height elevation. The Redi-Rock

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retaining wall extends towards a clay berm at the north end, which also appears to have performed adequately during the recent flood events.

The RVCA retained the services of Gemtec to complete a geotechnical investigation and provide consulting services in support of this project. The options presented below are based on the information presented in the project-specific draft Geotechnical report dated January 23, 2020 and developed during an options brainstorming and evaluation session with the RVCA, Gemtec and the original constructor on October 11, 2019.

The presented options have been developed primarily based on achieving the desired outcome of reduced infiltration directly through the wall during flood conditions. The options were evaluated against each other with consideration to expected effectiveness, constructability (including the impact on adjacent properties), cost, schedule, and approvals requirements. Consultation with the RVCA regarding the acceptability of the various options was conducted on an ongoing basis as options were developed.

Option 1 – Sheet Pile Wall between Redi-Rock Walls

Steel sheet pile walls are a common method used for water retention and erosion control in the construction industry. For this option, steel sheet piles would be driven through the clear stone between the primary and secondary Redi-Rock retaining walls, creating a solid barrier between the walls. Although the sheet piles interlock, pressure grouting the clear stone fill is recommended to further assist in sealing the wall. Refer to SK-1, attached, for concept sketch. JLR anticipates that the sheet piles could be installed from the north end of the site or from the boat ramp area at the south during lower river water levels, avoiding the need for significant in-water work.

This option is deemed to be less preferable due to concerns regarding the effectiveness of cutting off the flow of water at the base of the sheet piles, and the possibility of damaging the existing wall structure when installing the sheet piles. The Geotechnical Report prepared by Gemtec in support of this project indicates that the bedrock in the area around the wall is highly fractured so it is anticipated that the base of the wall would not provide a uniform barrier to prevent the flow of water. It is also possible that cobbles, boulders or construction debris from previous structures in the area are present in the soil above the bedrock and would prevent the sheet piles from being properly driven to the depth of the bedrock. It is not possible to confirm whether the pressure grouting will provide a consistent seal to prevent flow, impacting the effectiveness of this option. Termination details for the steel sheet pile system at the junction with the existing concrete “No Trespassing” wall would pose an additional challenge, and some seepage between these two systems would be expected. A secondary ‘sump pump-type’ dewatering pit could be included within the clear stone on the land-side of the sheet piling.

JLR anticipates that this work could be completed for a cost of approximately \$355,000. This cost includes site set-up, site access road construction, silt fence and erosion protection during construction, installation of sheet piles, extending vertically the no-trespassing wall, pressure grouting, and tear down. We anticipate that the total construction duration would be approximately 5-7 weeks.

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Option 2 – Concrete Secant Pile Wall between Redi-Rock Walls

A secant pile wall is a system similar in concept to sheet pile walls, but are constructed using overlapping concrete piles. First, a series of evenly spaced unreinforced concrete piles are installed along the line of the wall. Then, reinforced concrete piles are installed between the unreinforced piles, overlapping with the unreinforced piles on either side to create a solid, continuous sub-grade barrier.

Unlike the sheet pile option, the nature of using poured concrete piles means that the concrete will contour with any surface roughness of the underlying bedrock. Additionally, given that installation of the piles will require drilling through the soil materials rather than driving, any cobbles, boulders, subgrade concrete including the existing gravity retaining wall, or upper fractured bedrock would be removed and would therefore not interfere with the wall system. As per the recommendations in the geotechnical report prepared by Gemtec the secant pile wall should extend at least 2 metres into the bedrock to seal off the upper fractured zone and cut off the path of travel for seepage under the barrier. Refer to SK-2, attached, illustrating the concept.

This option would extend to the north to tie into the existing clay berm and would tie into the no-trespassing wall at the south. A concrete extension will be poured on top of the no-trespassing wall to bring it up to a height matching the top of the existing Redi-Rock retaining wall.

Due to the complexity of the field installation in a confined width, the site preparation, use of specialized equipment, and amount of materials to use all contribute to making the secant pile option the most expensive of the proposed options in this memorandum. Despite the cost, this option would likely be the most effective in minimizing seepage through the wall.

To facilitate construction, a temporary work platform will be required on the river side of the Redi-Rock wall system to facilitate access for the required pile driving equipment. There is insufficient space between the wall and the adjacent building to perform the installation from the dry side. It is anticipated that this work platform would consist of a combination of granular and potentially lean concrete fill and would be approximately 8m wide running the length of the wall. Based on discussions to date with the RVCA, it is anticipated that permits would not be required to construct this temporary in-water work.

JLR anticipates that this Option could be implemented for a cost of approximately \$915,000, which includes site set-up, construction of an access road, silt fence, and tear down as well as supply and installation of turbidity curtains as required. We anticipate that the total construction duration would be 6-8 weeks and thus could not be completed prior to spring 2020. Should construction commence in the summer of 2020, following high water reductions, we anticipate savings of approximately \$10,000 for winter heating for curing of the concrete piles.

Option 3 – Replace Clear Stone Fill with Imported Silty Clay

The gap between the inner and outer Redi-Rock retaining walls is filled with clear stone backfill, which has a high permeability and allows water to travel between the two walls freely. Thus, the liquid retaining performance of the existing Redi-Rock retaining wall relies on the performance of the GCL flood control barrier provided against the inner wall.

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Construction of a clay core in the Redi-Rock wall involves removing the existing clear stone backfill to expose the bedrock surface, and subsequently replacing the area between the primary and secondary Redi-Rock walls with low permeability imported silty clay. The clay core would extend the length of the wall, tying into the existing clay berm at the north end, and up to the existing no-trespassing wall at the south end. A concrete extension would be poured on top of the no-trespassing wall to bring it up to a height matching the top of the existing Redi-Rock retaining wall. Although this option would require partial removal and reinstatement of the existing Redi-Rock walls it has the benefit of avoiding significant in-water work, and a finished appearance effectively identical to the existing wall.

To mitigate the challenges of placing and preparing silty clay material during freezing temperatures this option should only be considered if construction occurs during the summer or early fall. Depending on the water level in the Ottawa River at the time of construction, the lower portion of the excavation may be subject to significant water infiltration, limiting the ability to achieve proper compaction of the silty clay in the first (lower) lifts. If the excavation cannot be kept dry using conventional dewatering techniques, lean concrete fill could be provided below the water elevation and the use of compacted clay resumed above the water level.

As the clay material will be susceptible to temperature fluctuations, the design would need to consider frost protection to prevent horizontal shifting of the Redi-Rock walls under frost-induced heave. This would involve placing 75 mm of expanded polystyrene insulation (Plasti-fab Plastispan or approved equivalent) vertically against the inside face of each wall to absorb some of the induced pressure. Insulation placed in this manner would have the added benefit of covering voids between the individual Redi-Rock wall units to keep the clay in place during placement and service conditions.

With this option, it is likely that cracking and fractures of the clay soil would likely occur in the upper 600mm of the wall due to freeze-thaw exposure, reducing the clay's ability to restrict water flow, and being potentially problematic when the Ottawa River elevation is near the top of the wall. Further, like all options except for secant piles, this option does not reduce the potential for water flow through fractures in the bedrock below the wall.

JLR anticipates that this Option could be constructed in the Summer of 2020, and, based on discussions with a contractor familiar with the project, be implemented in 5-7 weeks for a construction cost of approximately \$265,000. This cost includes selective removal and reinstatement of portions of the existing Redi-Rock retaining walls, removal of the existing clear stone backfill, compacting and placing new imported clay, extending the no-trespassing wall and reinstatement of the site.

Option 4 – Replace Clear Stone Fill with Lean Concrete

With this option, the existing clear stone backfill would be removed from within the inner and outer walls to expose the bedrock surface and be replaced with lean (low strength, unreinforced) concrete fill. Lean concrete fill would extend to the north to tie into the existing clay berm, and would be tied into the existing no-trespassing wall at the south. A concrete extension would be poured on top of the no-trespassing wall to bring it up to a height matching the top of the existing Redi-Rock retaining wall. Although this option would require removal and reinstatement of the

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inner wall and upper levels of the outer existing Redi-Rock walls (similar to the clay option), it has the benefit of avoiding significant in-water work.

A geotextile or other fabric would be placed on the inside face of each Redi-Rock wall to keep the concrete from flowing between the voids during placement. It is expected that the concrete fill would be placed in a number of lifts to limit the resulting pressure on the existing Redi-Rock walls while it cures. A hydrophilic waterstop would be placed between each lift of concrete to prevent infiltration through any construction joints.

Shrinkage cracking is expected following placement of the concrete, which will create small pathways for water infiltration through the wall. As additional protection, a crystalline concrete admixture would be included to increase the impermeability of the wall.

As with all options except for the secant piles, this option does not reduce the potential for water flow through fractures in the bedrock below the wall.

With the pumping and placement of concrete required, this Option is better suited to commence in the summer months. The process is similar to the option of importing the clay material in that the upper portions of the wall would be removed and stockpiled on site, and the clear stone would be removed. The placement of the lean concrete would be considerably faster than the clay despite the higher material costs. It is anticipated that implementation could be completed in 4-6 weeks for a construction cost of approximately \$290,000. This cost includes selective removal and reinstatement of portions of the existing Redi-Rock retaining walls, removal of the existing clear stone backfill, placement of new lean fill, extending vertically the no-trespassing wall, and reinstatement of the site.

Option 5 – Earthen Embankment

Due to its very fine grain size, clay is an excellent water-retaining material used throughout the construction industry. Another option to address the retaining wall leakage would be to remove the existing Redi-Rock retaining wall in its entirety and construct an earthen embankment (i.e., clay berm) with sloped riprap extending into the river for erosion protection. The excavation and embankment would extend from the alignment of the primary wall approximately 8-9 metres into the river. Construction details would involve the removal of the retaining wall and associated clear stone granular backfill, and the placement and compaction of a clay core from the bedrock to top of wall. The clay would be overlain by a separation layer of geotextile and riprap armoring for the bank erosion protection. Cofferdams would likely be required to dewater the toe of slope area to place and compact the clay and place the riprap. This option would extend to the north to tie into the existing clay berm and would tie into the no-trespassing wall at the south. A vertical concrete extension will be poured on top of the no-trespassing wall to bring it up to a height matching the top of the existing Redi-Rock retaining wall.

This option results in a wider disturbed area and construction footprint, including in-water work within the Ottawa River. Due to these spatial requirements and difficulty in constructing an earthen embankment within the river water, the RVCA has indicated that they do not support this option.

Despite the advantages of constructing this clay berm, and the predictable performance of clay berms, this option involves more significant alteration of the shoreline and would likely result in a

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lengthy permitting process due to the need for extensive in-water work. It is possible that the permitting process could prevent construction of this option in 2020.

3.0 RECOMMENDATIONS

Based on recent discussions with the RVCA we understand that the secant pile wall option exceeds the construction budget for this project. Therefore, based on the evaluation of the relative merits and costs of the remaining options, we recommend proceeding with Option 4 - Replacing Clear Stone Fill with Lean Concrete.

As noted above, in all options, the existing east-west concrete wall at the south end known as the 'No-trespassing wall', will have a concrete extension poured on top to bring it up to the flood height elevation. In order to be effective in holding back the flood waters, all portions of the Redi-rock wall must be completed, however the work to complete the concrete wall extension is not necessarily dependent on the remaining construction. As the work to complete is well above normal river levels, there is more flexibility to complete the work any time outside the peak flow months of April, May, & June.

The remaining, and majority of the rehabilitation for the lower portion of the wall, is highly dependent on the water elevations of the Ottawa River. There will not be sufficient time to engage the services of a Contractor in a competitive process and complete the work of the north-south section of wall in advance of the rising river elevations associated with the spring freshet. As such, we recommend the work be carried out during the seasonally low water levels typical of August and September.

4.0 CONCLUSION

This letter has presented five (5) options for RVCA's consideration to control leakage through the existing Redi-Rock retaining wall in Britannia Village near Jamieson Street. Despite the implementation of the proposed remedial design and construction work, there will remain the risk of continued seepage under, around, or through the retaining wall during high water conditions. In addition to seepage through the wall, there remains the potential for water flow through fractures in the underlying bedrock and/or around the limits of the wall that cannot or will not be addressed by any of the proposed remedial measures being considered.

We look forward to receiving RVCA's feedback, and direction on how the RVCA would like to proceed. Following confirmation, JLR will discuss with RVCA the steps required to commence development of the contract documents for project tender. Should you have any questions, or require additional information, please do not hesitate to contact the undersigned.

Mr. Terry Davidson, Rideau Valley Conservation Authority

Yours very truly,

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:



Brad Gillies, M.Eng. P.Eng
Structural Engineer



Sheldon Dattenberger, P.Eng., PMP
Senior Civil Engineer

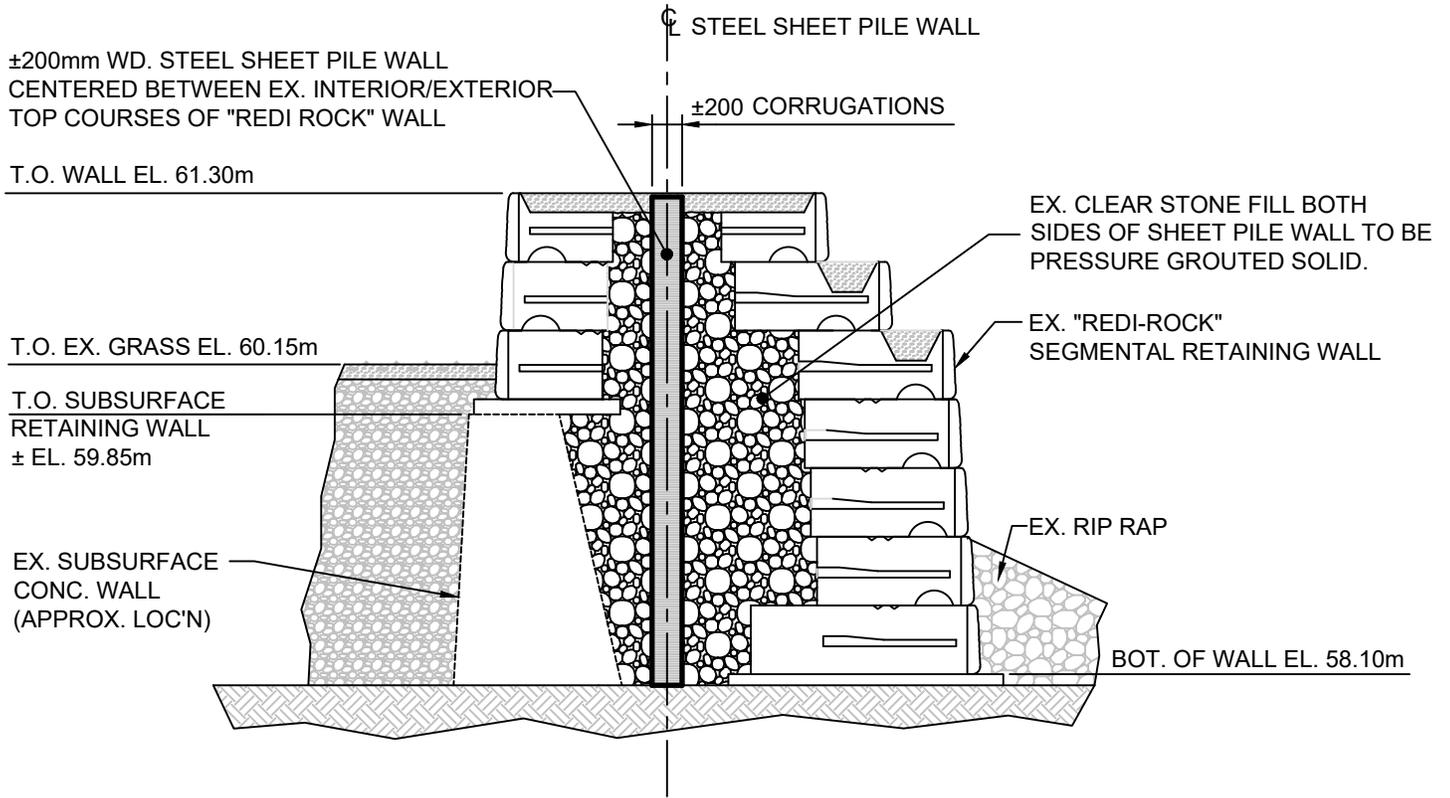
Reviewed by:



Ryan Matthews, M.Sc., P.Eng.
Associate, Municipal Market Chief

BG/SD:jd

File Location: P:\29000\29112-000 - Britannia - Retaining Wall Rehab\5-Production\3-Struct\Mary H.plans and sections.dwg



**SECTION AT EXISTING RETAINING WALL
SHOWING PROPOSED STEEL SHEET PILE WALL LOCATION**

SCALE: 1:50

**PRELIMINARY
NOT TO BE USED
FOR CONSTRUCTION**

PROJECT:

**RVCA - BRITANNIA FLOOD CONTROL STRUCTURE REHABILITATION
JAMIESON STREET BOAT LAUNCH, OTTAWA, ONTARIO**

DRAWING:

STEEL SHEET PILE WALL CONCEPT



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DESIGN: BG

DRAWN: MSH

CHECKED: SD

JLR #: 29112

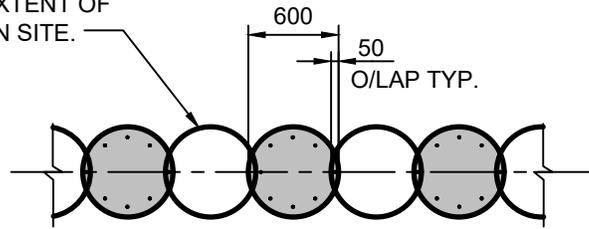
ISSUED FOR REVIEW

DRAWING #:

SK-1

PLOT DATE: Thursday, January 16, 2020 8:39:51 AM

600mmØ CONCRETE SECANT PILES
OVERLAPPED AS SHOWN. EXTENT OF
WALL TO BE DETERMINED ON SITE.



NOTE:
EX. "REDI ROCK" WALL
& TOPSOIL NOT SHOWN
FOR CLARITY

PART PLAN @ T.O. SECANT PILE WALL

SCALE: 1:50

600mmØ CONCRETE SECANT PILE WALL
CENTERED BETWEEN EX. INTERIOR/EXTERIOR
TOP COURSES OF "REDI ROCK" WALL

T.O. WALL EL. 61.30m

T.O. EX. GRASS EL. 60.15m

T.O. SUBSURFACE
RETAINING WALL
± EL. 59.85m

EX. SUBSURFACE
CONC. WALL
(APPROX. LOC'N)

SECANT PILES TO BE DRILLED MIN.
1500mm INTO SOUND BEDROCK TYP.

SECANT PILE WALL

MOVE EX. TOP TWO COURSES OF
"REDI ROCK" WALL, THIS SIDE ONLY,
TO ACCOMMODATE INSTALLATION
OF SECANT PILES. EXTEND EX.
TOP SOIL & GRASS TO SUIT
MODIFIED CONDITIONS (AS SHOWN)

CLEAR STONE FILL BOTH SIDES OF
SECANT WALL

EX. "REDI-ROCK"
SEGMENTAL RETAINING WALL

EX. RIP RAP

BOT. OF WALL EL. 58.10m

**PRELIMINARY
NOT TO BE USED
FOR CONSTRUCTION**

**SECTION AT EXISTING RETAINING WALL
SHOWING PROPOSED SECANT PILE WALL LOCATION**

SCALE: 1:50

PROJECT:

RVCA - BRITANNIA FLOOD CONTROL STRUCTURE REHABILITATION
JAMIESON STREET BOAT LAUNCH, OTTAWA, ONTARIO

DRAWING:

SECANT PILE WALL CONCEPT



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DESIGN: BG
DRAWN: MSH
CHECKED: SD
JLR #: 29112

ISSUED FOR REVIEW

DRAWING #:

SK-2

File Location: P:\29000\29112-000 - Britannia - Retaining Wall Rehab\5-Production\3-Struct\Mary H.plans and sections.dwg

PLOT DATE: Thursday, January 16, 2020 8:41:13 AM

NOTE:
 TEMPORARILY REMOVE UPPER LAYERS OF
 INNER & OUTER "REDI-ROCK" WALL AS
 REQUIRED TO ALLOW REMOVAL OF EX.
 CLEAR STONE. REINSTATE PRIOR TO
 PLACING CONCRETE FILL.

INSTALL LINER ON INTERIOR FACES
 OF EX. "REDI-ROCK" WALL TO
 PREVENT LEAN CONCRETE SEEPAGE
 BETWEEN RETAINING WALL STONES

T.O. WALL EL. 61.30m

T.O. EX. GRASS EL. 60.15m

T.O. SUBSURFACE
 RETAINING WALL
 ± EL. 59.85m

EX. SUBSURFACE
 CONC. WALL
 (APPROX. LOC'N)

EXCAVATE AND REMOVE CLEAR
 STONE FROM INSIDE OF "REDI-ROCK"
 WALLS DOWN TO T.O. BEDROCK
 (EL. ± 57.9m)

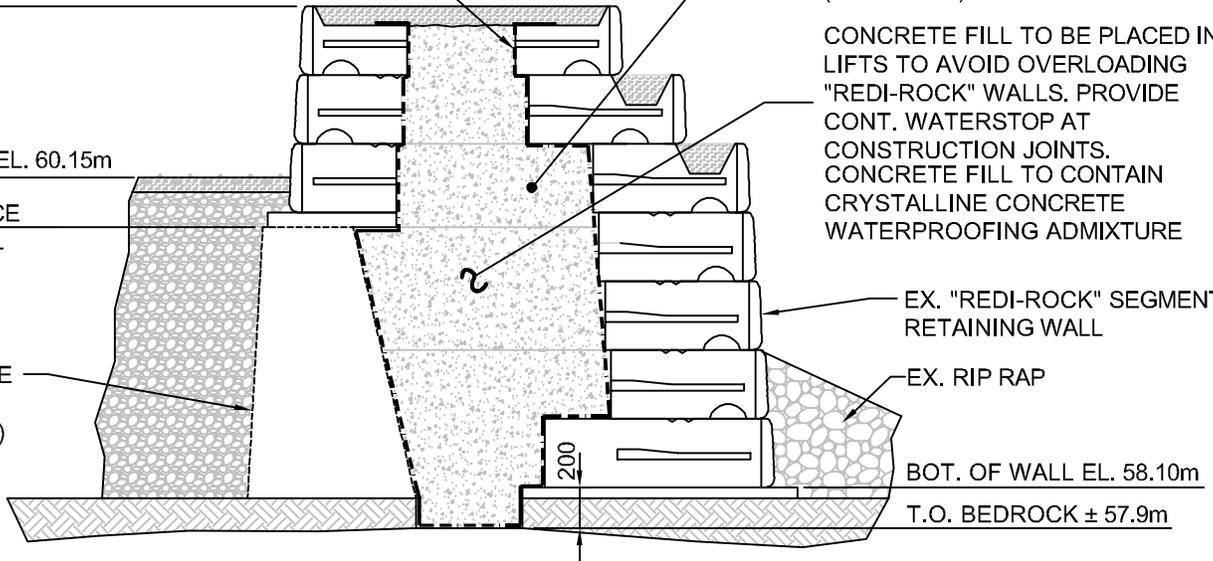
CONCRETE FILL TO BE PLACED IN
 LIFTS TO AVOID OVERLOADING
 "REDI-ROCK" WALLS. PROVIDE
 CONT. WATERSTOP AT
 CONSTRUCTION JOINTS.
 CONCRETE FILL TO CONTAIN
 CRYSTALLINE CONCRETE
 WATERPROOFING ADMIXTURE

EX. "REDI-ROCK" SEGMENTAL
 RETAINING WALL

EX. RIP RAP

BOT. OF WALL EL. 58.10m

T.O. BEDROCK ± 57.9m



**SECTION AT EXISTING RETAINING WALL
 SHOWING PROPOSED LEAN CONCRETE FILL**

SCALE: 1:50

**PRELIMINARY
 NOT TO BE USED
 FOR CONSTRUCTION**

PROJECT:

RVCA - BRITANNIA FLOOD CONTROL STRUCTURE REHABILITATION
 JAMIESON STREET BOAT LAUNCH, OTTAWA, ONTARIO

DRAWING:

REPLACEMENT OF EX. CLEAR STONE WITH LEAN CONCRETE



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DESIGN: BG
 DRAWN: MSH
 CHECKED: SD
 JLR #: 29112

ISSUED FOR REVIEW
 DRAWING #:

SK-3

J.L. Richards & Associates Limited
Britannia Flood Control Structure Assessment Rehabilitation
Class 'D' Cost Estimate Breakdown

Option 1 - Sheet Pile Wall between Redi-Rock Walls				
Item	Quantity	Unit	Unit Price	Total
Site Set-up, Access Road, Silt Fence	1	LS	\$ 75,000.00	\$ 75,000.00
Turbidity Curtains (If required)	1	LS	\$ 35,000.00	\$ 35,000.00
Mobilization/Demobilization	1	LS	\$ 25,000.00	\$ 25,000.00
Sheet Pile Wall Installation and Grouting	1	LS	\$ 110,000.00	\$ 135,000.00
Increase height of No-Trespassing Wall	1	LS	\$ 25,000.00	\$ 25,000.00
Sub-Total				\$ 295,000.00
Contingency (20%)				\$ 59,000.00
Total (Excl. VAT)				\$ 354,000.00
Option 2 - Secant Pile Wall between Redi-Rock Walls				
Item	Quantity	Unit	Unit Price	Total
Site Set-up, Access Road, Silt Fence	1	LS	\$ 275,000.00	\$ 275,000.00
Turbidity Curtains (If required)	1	LS	\$ 35,000.00	\$ 35,000.00
Mobilization/Demobilization	1	LS	\$ 25,000.00	\$ 25,000.00
Secant Pile Wall Installation	1	LS	\$ 400,000.00	\$ 400,000.00
Increase height of No-Trespassing Wall	1	LS	\$ 25,000.00	\$ 25,000.00
Sub-Total				\$ 760,000.00
Contingency (20%)				\$ 152,000.00
Total (Excl. VAT)				\$ 912,000.00
Option 3 - Replace Clear Stone Fill with Imported Silty Clay				
Item	Quantity	Unit	Unit Price	Total
Mobilization/Demobilization	1	LS	\$ 10,000.00	\$ 10,000.00
Turbidity Curtains (If required)	1	LS	\$ 35,000.00	\$ 35,000.00
Replace Clear Stone with Clay	1	LS	\$ 150,000.00	\$ 150,000.00
Increase height of No-Trespassing Wall	1	LS	\$ 25,000.00	\$ 25,000.00
Sub-Total				\$ 220,000.00
Contingency (20%)				\$ 44,000.00
Total (Excl. VAT)				\$ 264,000.00
Option 4 - Replace Clear Stone Fill with Lean Concrete				
Item	Quantity	Unit	Unit Price	Total
Mobilization/Demobilization	1	LS	\$ 10,000.00	\$ 10,000.00
Turbidity Curtains (If required)	1	LS	\$ 35,000.00	\$ 35,000.00
Replace Clear Stone with Concrete	1	LS	\$ 170,000.00	\$ 170,000.00
Increase height of No-Trespassing Wall	1	LS	\$ 25,000.00	\$ 25,000.00
Sub-Total				\$ 240,000.00
Contingency (20%)				\$ 48,000.00
Total (Excl. VAT)				\$ 288,000.00



**9.0 RVCA Office Roof Repair
Report #: 4-200715**

To: RVCA Board of Directors
From: Shane Olive
RVCC Technician
Terry K. Davidson, P.Eng.
Director of Engineering and Regulations
Date: October 2, 2019

<input type="checkbox"/>	For Information
<input type="checkbox"/>	For Direction
<input checked="" type="checkbox"/>	For Adoption
<input type="checkbox"/>	Attachment

Recommendation:

That the Rideau Valley Conservation Authority Board of Directors approve Commercial Roofing Inc. to restore the roof at RVCA's main office building at 3889 Rideau Valley Drive using a liquid applied restoration product at a cost of \$144,608 plus HST.

Purpose

To seek approval to award a contract to Commercial Roofing Inc. to restore the roof of RVCA's main office building at 3889 Rideau Valley Drive, Manotick.

Background

RVCA's main office building was built in 2007 and is a LEED gold certified building (LEED stands for Leadership in Energy and Environmental Design and is a green building certification system). The roof of the building is a torched on modified bitumen application which has been showing signs of premature aging.

In 2019, the RVCA retained Roof-Tek Consulting & Design to provide a visual assessment and report regarding the roofing membrane. Roof-Tek reviewed available building documentation, executed a roof assessment and prepared a report with pictures, recommendations and Class D cost estimates. Their report is attached.

Analysis

The original application of the roofing material, as well as the pitch of the roof in some sections, has caused the roof to age prematurely. Due to increased travel speed of rainwater on roof pitches of higher than 4:12, degranulation is occurring on several sections of the roof. Degranulation highly decreases the ability of the roof to reflect heat from the sun, which in turn decreases the efficiency of the building by increasing HVAC costs for electricity and maintenance. There are also many areas of blistering and

slippage on the roof. The blistering and slippage have been caused by the expansion of gas pockets between the base and cap layer of the roof. These gas pockets are usually formed when the roofing materials are applied at incorrect temperatures.

To address these roofing issues, a liquid applied restoration product is being proposed that will enable the RVCA to bring the roof back to its original condition. This will bring the building back to full energy efficiency and enable the RVCA to pursue solar energy options. Restoring the roof also avoids the cost and landfill waste of a roof replacement which has an estimated cost of \$350,000 to \$400,000.

To complete the work a “Request for Quotes” was sent out to three contractors for the entire project. The contractors bidding on the work were given the opportunity to visit the site with RVCA staff. The following quotes were received:

Contractor	Quote
Commercial Roofing	\$144,608
Garland	\$307,000
Godfrey Roofing	\$370,180

Input From Other Sources

Roof-Tek provided an assessment and report regarding the roofing membrane on RVCA’s main office building. Their report with pictures, recommendations and cost estimates, is attached.

Financial Considerations

The full cost of this roof restoration will be covered by the lifecycle reserve that RVCA has for maintenance of the office building. This reserve was required by the City of Ottawa as a condition of RVCA’s building debenture. The reserve has a current balance of \$798,895 and RVCA is required by the City to contribute \$70,000 annually (this contribution is accounted for in RVCA’s annual budget).

Legal Considerations

N/A

Adherence to RVCA Policy

This project adheres to the principles of RVCA’s financial and purchasing policies.

Link to Strategic Plan

N/A

Attachment

- Roof Assessment, prepared by Roof-Tek, dated July 12, 2019

July 12, 2019
File: PJ19144

Shane Olive - RVCA Maintenance and Operations Technician

Rideau Valley Conservation Authority (RVCA)
3889 Rideau Valley Drive, Manotick, ON, K4M 1A5
Telephone: (613) 692-3571
E: shane.olive@rvca.ca

Dear Mr. Olive,

Re: Roof Assessment at 3889 Rideau Valley Drive, Manotick, ON

Roof-Tek Consulting & Design Inc. (Roof-Tek) was retained to provide a visual assessment and report regarding the presence of blisters in the roofing membrane at 3889 Rideau Valley Drive, Manotick, Ontario.

1. Scope of Work

The following was our scope of work:

- Review available building documentation
- Execute a roof assessment to determine if the blisters could impact the useful life of the roof system, and
- Prepare a report with pictures, including recommendations and Class D Cost estimates.

2. Roof Information

The roof is original to the building construction date (2007), and presents different sections. Each section has a different slope. The slopes vary from 3:12 to 8:12 through-out.

Based on provided documentation, the roof has a conventional roofing system where the insulation is installed below the roofing membrane. Architectural Drawing A5-3 and Specification Section 07550 shows the roofing system is composed of gypsum panels (6 mm), vapour retarder (Number 15 asphalt organic felt), insulation boards (2 x 63 mm of Polyisocyanurate), SBS modified bitumen basesheet (hot mopped), and SBS modified bitumen capsheet (torched on) over a metal deck.

For the purpose of this report, the roof was divided in roof Sections R1 to R9 – See Satellite Picture in Appendix A.

3. Assessment

Our visual assessment was executed on July 4, 2019; our escort was Shane Olive, the RVCA Maintenance and Operations Technician.

4. Observations

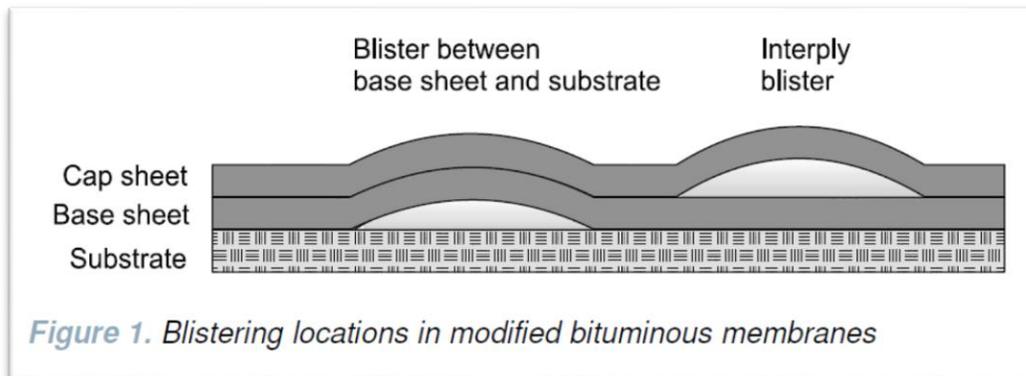
A roof repair located on the intersection of roof was visible on roof Section R2.

4.1. Roof Membrane Blister

Several roofing membrane blisters varying in sizes were visible on roof Sections R1, R2, R3, R4, R5, R8, and R9. Blisters are pockets of entrapped air and/or moisture in roof membranes. They can occur between the cap and the base sheets and/or between the base sheet and the substrate (Figure 1). Not only are blisters unsightly, but they can also shorten the service life of a roof, by increasing the membrane's vulnerability to physical and chemical degradation.

See pictures in Appendix B.

Image: Buildings.com



4.2. Roofing Degranulation

Roof degranulation was visible in the roof Sections R1, R2, R3, R4, R5, and R9 where the slope is higher than 6:12. Granules are important to protect the roofing membrane against UV Solar Radiation. The radiation causes oxidation of the membrane, therefore reducing its useful life. Also, degranulation causes the roof surface becomes darker reducing its emissivity (reflection of solar radiation).

See pictures in Appendix B.

4.3. Vegetation

During our assessment, the presence of moss was visible on roof Sections R2, R3 and R5 especially behind the HVAC Units, and on roof Section R7 Canopy. Moss is caused by poor drainage on the roof. The presence of moss could cause deterioration of the roofing membrane reducing its expected useful life.

See pictures in Appendix B.

Summary Table:

Roof Section	Blisters	Degranelation	Moss
R1	X	X	
R2	X	X	X
R3	X	X	X
R4	X	X	
R5	X	X	X
R6			
R7			X
R8	X		
R9	X	X	

5. Causes of Blistering

Blisters form in a hot-applied SBS modified bituminous membrane for the same reason as in a Built-Up Roof (BUR) when voids are created during installation of the roof. Voids can result from skips in bitumen mopping, entrapped debris, uneven substrates, unrelaxed membranes, or entrapped gases resulting from moisture in the materials.

During the heat of the day, air and moisture trapped in the void expand. The pressure developed in the void stretches the warm flexible membranes and displaces them to form a blister. During the night, the membranes cool, become stiff, and resist returning to their original shape. This process creates a partial vacuum within the blister, and more air is drawn into the blister through micro-cracks in the membranes.

The blister is now slightly bigger and ready to start another cycle the next day. As in any BUR or SBS modified bitumen, the blisters grow when the volume of air drawn into them during the night is higher than that forced out of them during the day, and when the increased pressure overcomes the strength of the peripheral bond of the blister. The presence of water vapour accelerates blister growth according to this same cyclic pumping action.

6. Content of Blisters

Usually the gas within the blisters in the SBS modified bituminous membranes is composed of air, water vapour, and a negligible amount of volatile organic compounds (VOCs). Because the volume expansion of water from liquid to vapour state is very large (~1250 times), a minuscule amount of water in a small void can produce sufficient vapour pressure to force the void to grow into a blister. The presence of water is especially serious at high temperatures when the bitumen becomes soft and the pressure in the blister is high.

7. Blisters and Membrane Strength

The existence of an intact blister may not reduce the membrane strength, but a ruptured blister can reduce the strength of the roof membrane by more than 50%. Membrane strength is not a major factor in blister formation.

8. Effect of Mopping Asphalts on Blisters

A blister grows by overcoming its peripheral bond. Therefore, good bonding between the sheets is necessary to resist blister growth. Mopping asphalt type does not affect blistering if

the asphalt is applied at the correct temperature. If the application temperature is not high enough, mopping skips and void formation may occur.

9. Conclusion/Recommendations

It is our opinion that the presence of blisters on the roofs sections mentioned above is not a concern at this time. However, the blisters should be inspected (monitored) at least twice a year in the spring and in the autumn, especially those located on the roof sections with HVAC Units (Section R2, R3, and R4) due to maintenance traffic. The findings of inspections, should be recorded and used as references to help on future decisions related to roofing repairs. The cost to inspect the roof and implement an annually roof inspection program to monitor the blisters is \$1,500.00.

The degranulation of the roofing membrane noted on different roof sections is mainly caused by the speed of water due to the slope of the roofs. This type of deficiency is very common on roofs with a slope higher than 1:12. Application of an elastomeric roof coating is recommended. The application will restore the original emissivity of the roofs reducing the energy consumption necessary to cool the building. It is our opinion that the cost estimate (Class D) to apply elastomeric coating on all roof sections is \$50,000.00.

The growth of moss is caused by drainage issues. Installation of sloped insulation behind the HVAC Units, and on the canopy roofs as well as specific areas with drainage deficiency will resolve this deficiency. The cost estimate (Class D) to install sloped insulation on the cited above locations is \$10,000.00.

The repair between roof Sections R2 and R3 needs to be removed, and a strip of modified bitumen flashing membrane, approximately two feet wide, installed (torched on) on this location. The estimate cost (Class D) to execute the described above is \$1,500.00.

10. Closure

Our recommendations are based on the visual assessment at the time of our site visit, and review of provided documentation as well as experience acquired with similar projects. Should any other information become available we would like to be notified immediately to have the opportunity to review our recommendations.

We trust that this Letter Report meets your requirements. If you have questions, please do not hesitate to contact me directly at (613) 407-0810 or edsel.mynssen@roof-tek.com.

Respectfully submitted,



Edsel Mynssen, B.Sc., RRO

Senior Building Envelope Consultant

104-300 Earl Grey Drive, Ottawa, ON K2T 1C1

414-829 Norwest Road, Kingston, ON K7P 2N3

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Appendix A

Satellite Picture – Roof Sections



Satellite Picture – Roof Sections

Appendix B

Pictures



Photo #1 – No blisters and few surface degranulation at north elevation (Roof R1) – July 4, 2019



Photo #2 – Blisters and surface degranulation at southwest elevation (Roof R1) – July 4, 2019



Photo #3 – Blisters and surface degranulation at north elevation and centre of the roof (Roof R1) – July 4, 2019



Photo #4 – Roof R1 - Blisters and surface degranulation at north and centre of the roof (Roof R1) – July 4, 2019



Photo #5 – Roof R1 - No blisters and few surface degranulation at north elevation (Roof R1) – July 4, 2019



Photo #6 – Extensive blisters and surface degranulation at south elevation (Roof R1) – July 4, 2019



Photo #7 – Blisters and surface degranulation at centre of the roof (Roof R1) – July 4, 2019



Photo #8 – Blisters and surface degranulation at centre of the roof (Roof R1) – July 4, 2019



Photo #9 - Blisters and surface degranulation at south elevation (Roof R1) – July 4, 2019



Photo #10 – Blisters and surface degranulation at south elevation (Roof R1) – July 4, 2019



Photo #11 - Blisters and surface degranulation at centre of the roof (Roof R1) – July 4, 2019



Photo #12 - Blisters and surface degranulation at centre of the roof (Roof R1) – July 4, 2019



Photo #13 – Blisters and surface degranulation at south elevation (Roof R1) – July 4, 2019



Photo #14 - Blisters and surface degranulation at south elevation (Roof R1) – July 4, 2019



Photo #15 – Blisters and surface degranulation at centre of the roof (Roof R1) – July 4, 2019



Photo #16 – Blisters and surface degranulation at centre of the roof (Roof R1) – July 4, 2019



Photo #17 - Blisters and surface degranulation at east elevation (Roof R1) – July 4, 2019



Photo #18 - Blisters and surface degranulation at southeast elevation (Roof R1) – July 4, 2019



Photo #19 - Blisters and surface degranulation (Roof R2) – July 4, 2019



Photo #20 – Blisters and surface degranulation (Roof R2) – July 4, 2019



Photo #21 - Blisters and surface degranulation (Roof R2) – July 4, 2019



Photo #22 - Blisters and surface degranulation (Roof R2) – July 4, 2019



Photo #23 - Moss behind HVAC (Roof R2) – July 4, 2019



Photo #24 - Moss behind HVAC (Roof R2) – July 4, 2019



Photo #25 – Repair to be removed between roof Section R2 and R3 – July 4, 2019



Photo #26 – Blisters and surface degranulation (Roof R3) – July 4, 2019



Photo #27 - Blisters and surface degranulation(Roof R3) – July 4, 2019



Photo #28 - Blisters and surface degranulation (Roof R4) – July 4, 2019

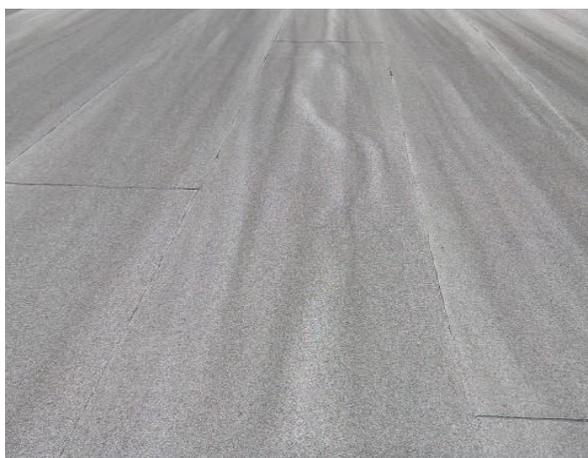


Photo #29 - Blisters and surface degranulation (Roof R4) – July 4, 2019



Photo #30 – Granules accumulation by scupper (Roof R4) – July 4, 2019



Photo #31 – Moss behind HVAC (Roof R5) – July 4, 2019



Photo #32 – Moss between HVACs (Roof R5) – July 4, 2019



Photo #33 - Moss by windows (Roof R5) – July 4, 2019



Photo #34 – Drainage deficiency (Roof R5) – July 4, 2019



Photo #35 - Drainage deficiency (Roof R5) – July 4, 2019



Photo #36 - Blister and surface degradation (Roof R5) – July 4, 2019



Photo #37 - Moss on Roof R7 – July 4, 2019



Photo #38 – Closer look of previous picture – July 4, 2019



Photo #39 - Blisters and surface degranulation (Roof R8) – July 4, 2019



Photo #40 - Blisters and surface degranulation (Roof R8) – July 4, 2019



Photo #41 - Blisters and surface degranulation (Roof R9) – July 4, 2019



Photo #42 - Blisters and surface degranulation (Roof R9) – July 4, 2019



Photo #43 – Surface degranulation (Roof R9) – July 4, 2019



Photo #44 – Blisters and surface degranulation (Roof R9) – July 4, 2019



Photo #45 - Blisters and surface degranulation (Roof R9) – July 4, 2019



Photo #46 - Blisters and surface degranulation (Roof R9) – July 4, 2019



Photo #47 – Surface degranulation (Roof R9) – July 4, 2019



Photo #48 – Blisters and surface degranulation (Roof R9) – July 4, 2019



**10.0 Financial Reports for the Period Ending June 30, 2020
Report #: 5-200723**

To: RVCA Board of Directors
From: Kathy Dallaire
Manager of Finance
Date: July 22, 2020

<input type="checkbox"/>	For Information
<input type="checkbox"/>	For Direction
<input checked="" type="checkbox"/>	For Adoption
<input checked="" type="checkbox"/>	Attachment – 5 pages

Recommendation:

That the Board of Directors of the Rideau Valley Conservation Authority approve the Revenue and Expenditure Reports and Balance Sheet for the period ending June 30, 2020.

Purpose

To present financial reports for the period ending June 30, 2020 to the Board of Directors for review and approval.

Background

The first attachment shows revenues and expenditures against the 2020 budget and the 2019 audited results for the year. When expenditures and revenues are reported to the Board for the period ending September 30, 2020 staff will show a forecast to year-end.

The second attachment shows revenues and expenditures by program, side-by-side which indicates the net income of each program (surplus / deficit).

The third attachment is the Balance Sheet.

Analysis

At this time, operations are generally proceeding as planned with the exception of:

- Conservation Land Management Services – This department is experiencing a decrease in revenue as a result of the COVID-19 pandemic with no fees collected for conservation area use, facility rental or education programs since mid-March to the end of the reporting period. This is a revenue loss of approximately \$15,000 per month, however, this loss is being partially offset by decreases in expenditures including temporary staff layoffs.
- Planning Advisory and Regulatory Services – This department is experiencing very high numbers of planning and permit files. This will increase revenue but also increase expenses as more staff time will be allocated to these programs from Watershed Science and Engineering.

In all other program areas, staff do not forecast significant variances from the 2020 budget at this time with one notable exception:

- Surface Water Quality Monitoring – The City of Ottawa’s special levy for enhanced water quality monitoring was budgeted to be \$158,696 for 2020 but was reduced to \$110,974 as the start of the field season was delayed to July 1, 2020 as a result of COVID-19.

At a high level, we are showing an operating surplus of \$3.5M. This surplus is due to the front-loading of levy revenue; we have recognized most of our annual levy revenue by June 30 but have incurred only 6 months of operating expenses. For the same reason, on the Balance Sheet, our financial asset balance is up significantly over the December 31, 2019 balance.

When expenditures and revenues are reported to the Board for the period ending September 30, 2020 staff will also report on the capital budget. Capital projects were broken out in 2020 into a separate budget and RVCA is in the process of revising its financial reporting templates to reflect that change.

Input From Other Sources

n/a

Financial Considerations

n/a

Legal Considerations

n/a

Adherence to RVCA Policy

n/a

Link to Strategic Plan

The attached financial reporting supports Priority #3 under Strategic Direction #4

- *Modernize financial processes, including budgeting and reporting, to increase automation, strengthen internal controls and provide timely and reliable data.*

Attachments:

- Expenditure and Revenue Report (January to June 2020) – actuals vs budget and prior year
- Expenditure and Revenue Report (January to June 2020) – side-by-side format
- Balance Sheet as at June 30, 2020

**Rideau Valley Conservation Authority
Expenditure and Revenue Report**

For the period ending June 30, 2020	Fiscal 2019 Audited	2020 Approved Budget	2020 Year to Date Actuals
Revenue	11,858,108	10,196,477	7,836,976
Watershed Sciences and Engineering Services	4,111,368	3,114,286	2,642,771
Program Management	51,478	91,483	82,983
Watershed Report Cards	165,396	159,395	159,395
Drinking Water Source Protection	201,340	233,407	102,246
Surface Water Quality Monitoring	456,808	435,042	387,320
Hydrometric Monitoring and Forecasting	250,340	225,129	215,129
Flood Erosion and Drought Studies	815,477	377,792	204,261
Groundwater Monitoring	222,154	110,655	110,655
Aquatic and Terrestrial Habitat Monitoring	444,635	403,301	366,701
Water Control Infrastructure Operations	1,454,140	1,078,081	1,014,081
Amortization	49,600	-	-
Planning Advisory and Regulatory Services	2,396,579	2,180,818	1,587,260
Program Management	126,361	129,581	129,581
Site Specific Plan Review	698,603	642,911	448,167
Non-Site Specific Plan Input	168,630	170,551	159,551
S. 28 Conservation Authorities Act	655,320	665,600	518,590
S. 28 Conservation Authorities Act - Program Development	20,135	20,439	20,439
Part IV Clean Water Act	3,830	7,800	-
Part VIII Building Code Act	652,967	505,828	296,155
Septic Re-Inspection Program	68,033	38,108	14,777
Amortization	2,700	-	-
Stewardship Services	1,468,519	1,628,031	915,801
Program Management	147,733	152,519	152,519
LRC - Storefront\General Stewardship	-	-	(0)
Private Land Forestry Assistance	637,045	720,422	305,817
Clean Water Program	322,803	451,885	245,885
Shoreline Stewardship Program	277,271	228,907	156,886
Beaver Management	6,000	6,000	6,000
Ontario Rural Wastewater Centre	75,066	68,298	48,693
Amortization	2,600	-	-
Conservation Land Management Services	1,294,443	1,300,004	1,048,300
Program Management	87,986	85,693	85,693
Land Donations / Acquisitions	1,766	20,000	-
Baxter Conservation Area	331,164	337,310	212,273
Foley Mountain Conservation Area	324,448	305,675	249,511
Other Developed Conservation Areas	270,816	297,179	284,153
Other Conservation Lands	197,425	222,148	216,670
Lease and Management Agreements	31,437	32,000	-
Amortization	49,400	-	-
Corporate Services	1,633,441	1,552,304	1,556,866
Management and Members	293,251	316,099	316,099
Finance and Administration	498,180	464,338	468,910
Communications	276,104	280,418	280,408
Foundation	87,386	92,736	92,736
Watershed Information Management System	229,278	231,690	231,690
Headquarter Lease and Management	249,242	167,023	167,023
Internal Recoveries	274,218	-	33,444
Amortization	254,300	-	-
Internal Recoveries	19,918	-	33,444

Engineering Projects	679,542	400,000	31,500
Water Control Structures/Engineering	679,542	400,000	31,500
Non Pension Benefit Obligation	-	21,034	21,034
Non-Pension Benefit Obligation	-	21,034	21,034
Expenses	11,103,757	10,196,477	4,340,108
Watershed Sciences and Engineering Services	3,976,038	3,114,286	900,814
Program Management	94,085	91,483	92,163
Watershed Report Cards	141,836	159,395	21,988
Drinking Water Source Protections	201,340	233,407	101,442
Surface Water Quality Monitoring	435,097	435,043	165,762
Hydrometric Monitoring and Forecasting	294,082	225,129	151,933
Flood Erosion and Drought Studies	745,346	377,792	157,693
Ground Water Monitoring	162,202	110,655	22,890
Aquatic and Terrestrial Habitat Monitoring	346,280	403,301	117,146
Water Control Infrastructure Operations	1,448,546	1,078,081	12,066
Amortization	107,225	-	57,730
Planning Advisory and Regulatory Services	2,177,742	2,180,818	1,193,239
Program Management	153,333	129,580	83,550
Site Specific Plan Review	504,326	642,911	261,516
Non-Site Specific Plan Input	171,534	170,551	129,453
S.28 Conservation Authorities Act	673,176	665,600	414,979
S.28 Conservation Authorities Act - Program Development	29,060	20,439	28,688
Part IV Clean Water Act -E	3,830	7,800	760
Part VIII Building Code Act	569,935	505,828	258,148
Septic Re-Inspection Program	69,812	38,108	14,777
Amortization	2,736	-	1,368
Stewardship Services	1,420,415	1,628,031	615,727
Program Management	137,435	152,519	84,763
Private Land Forestry Assistance	623,299	720,421	252,818
Clean Water Program	322,803	451,885	111,870
Shoreline Stewardship Program	274,524	228,908	138,112
Beaver Management	2,559	6,000	-
Ontario Rural Wastewater Centre	57,127	68,298	26,829
Amortization	2,667	-	1,334
Conservation Land Management Services	1,275,748	1,300,006	564,925
Program Management	101,876	85,693	7,070
Land Donations/Acquisitions	7,121	20,000	11,580
Baxter Conservation Area	345,926	337,310	96,920
Foley Mountain Conservation Area	280,990	305,675	108,835
Other Developed Conservation Areas	252,838	297,179	240,929
Other Conservation Lands	204,383	222,148	75,462
Lease and Management Agreements	33,184	32,000	132
Amortization	49,429	-	23,997
Corporate Services	1,382,040	1,552,302	767,181
Management and Members	284,262	316,099	141,169
Finance and Administration	410,146	464,336	241,356
Communications	210,320	280,418	125,459
Foundation	83,825	92,736	41,659
Watershed Information Management System	214,245	231,690	115,713
Headquarter Lease and Management	179,242	167,023	101,825
Internal Recoveries	160,882	-	149,492
Common Cost	16,247	-	29,313
Vehicles and Equipment	(121,456)	-	(10,828)
Amortization	278,148	-	136,651
Gain on Disposal	(12,057)	-	(5,644)
Engineering Projects	696,331	400,000	141,969

Water Control Structures/Engineering	696,331	400,000	141,969
Non Pension Benefit Obligation	14,562	21,034	6,762
Non-Pension Benefit Obligation	14,562	21,034	6,762
Annual Surplus (Deficit)	754,351	-	3,496,868

Rideau Valley Conservation Authority
For the period ending June 30, 2020

Program (All)

Dept	Budget Line	Revenue	Expense	Net Income
10-WSES	WSES Program Management	82,983	92,163	(9,180)
	Watershed Report Cards	159,395	21,988	137,407
	Drinking Water Source Protection	102,246	101,442	804
	Surface Water Quality Monitoring	387,320	165,762	221,558
	Hydrometric Monitoring and Forecasting	215,129	151,933	63,196
	Flood Erosion and Drought Studies	204,261	157,693	46,567
	Groundwater Monitoring	110,655	22,890	87,765
	Aquatic and Terrestrial Habitat Monitoring	366,701	117,146	249,555
	Water Control Infrastructure Operations	67,866	11,557	56,309
	Watershed Information Mgmt System	-	-	-
	Ice Management - Rideau River	946,215	509	945,706
	WSES Amortization	-	57,730	(57,730)
10-WSES Total		2,642,771	900,814	1,741,958
20-PARS	PARS Program Management	129,581	83,550	46,031
	Site Specific Plan Review	448,167	261,516	186,651
	Non-Site Specific Plan Input	159,551	129,453	30,098
	S. 28 Conservation Authorities Act	518,590	414,979	103,611
	S.28 Conservation Authorities Act - Progr	20,439	28,688	(8,249)
	Part IV-Clean Water Act	-	760	(760)
	Part VIII - Building Code Act	296,155	258,148	38,007
	Septic Re-Inspection Program	14,777	14,777	-
	PARS Amortization	-	1,368	(1,368)
20-PARS Total		1,587,260	1,193,239	394,021
30-WSS	WSS Program Management	152,519	84,763	67,756
	LRC Storefront\General Stewardship	-	-	-
	Private Land Forestry Assistance	305,817	252,818	52,999
	Clean Water Program	245,885	111,870	134,015
	Shoreline Stewardship Program	156,886	138,112	18,774
	Beaver Management	6,000	-	6,000
	Ontario Rural Wastewater Centre	48,693	26,829	21,864
	WSS Amortization	-	1,334	(1,334)
30-WSS Total		915,801	615,727	300,074
40-CLMS	CLMS Program Management	85,693	7,070	78,623
	Land Donations / Acquisitions	-	11,580	(11,580)
	Baxter Conservation Area	212,273	96,920	115,353
	Foley Mountain Conservation Area	249,511	108,835	140,676
	Other Developed Conservation Areas	284,153	240,929	43,224
	Other Conservation Lands	216,670	75,462	141,208
	Lease and Management Agreements	-	132	(132)
	CLMS Amortization	-	23,997	(23,997)

40-CLMS Total		1,048,300	564,925	483,376
50-CS	Management and Members	316,099	141,169	174,930
	Finance and Administration	468,910	241,356	227,553
	Communications	280,408	125,459	154,949
	Foundation	92,736	41,659	51,077
	GIS	231,690	115,713	115,977
	Headquarters & Lease	167,023	101,825	65,199
50-CS Total		1,556,866	767,181	789,685
60-IR	Common Cost	33,444	29,313	4,131
	Vehicles and Equipment	-	(10,828)	10,828
	Amortization	-	136,651	(136,651)
	Gain on Disposal	-	(5,644)	5,644
60-IR Total		33,444	149,492	(116,048)
90-Engine	Water Control Structures	31,500	141,969	(110,469)
90-Engineering Projects Total		31,500	141,969	(110,469)
80-Other	Non-Pension Post Retirement Benefit Obl	21,034	6,762	14,272
80-Other Total		21,034	6,762	14,272
Net Income		7,836,976	4,340,108	3,496,868

Rideau Valley Conservation Authority Balance Sheet	June 30, 2020	December 31, 2019 (Audited)
Financial Assets		
Cash and Short Term Investments	6,034,782	5,832,291
Accounts Receivable	5,165,490	1,588,744
	11,200,272	7,421,035
Liabilities		
Accounts payable and accrued liabilities	849,325	1,227,558
Vacation pay and sick leave entitlements	427,662	229,582
Deferred revenues	1,569,482	1,601,550
Non pension post retirement benefits	442,168	435,406
Obligation under capital lease	2,424,999	2,565,999
	5,713,636	6,060,095
Net Financial Assets (Debt)	5,486,636	1,360,940
Non-Financial Assets		
Tangible capital assets	10,712,085	10,930,490
Prepaid expenses	125,123	57,186
	10,837,209	10,987,675
	-	-
Accumulated Surplus	16,323,845	12,348,615



**11.0 COVID-19 Pandemic Response Update
Report #: 6-200723**

To: RVCA Board of Directors
From: Sommer Casgrain-Robertson
General Manager
Date: July 16, 2020

<input type="checkbox"/>	For Information
<input type="checkbox"/>	For Direction
<input checked="" type="checkbox"/>	For Adoption
<input checked="" type="checkbox"/>	Attachment – 4 pages

Recommendation:

THAT the Board of Directors of the Rideau Valley Conservation Authority receive this report for information and approve RVCA’s ongoing response to the COVID-19 pandemic.

Purpose

To seek approval of RVCA’s ongoing response to the COVID-19 pandemic.

Background

The RVCA continues to monitor the COVID-19 pandemic and implement measures to address the outbreak as it evolves locally and provincially. This staff report provides an update since Report #3-200625, presented to the Board on June 25, 2020.

The following update summarizes actions taken by the RVCA to protect the health and safety of staff and the public, as well as a summary of how the ongoing pandemic could impact RVCA’s operations, programs and budget. The RVCA has kept clients, partners and the public informed of our COVID-19 response through emails, phone calls, social media posts, signage as well as a special section on our website: www.rvca.ca/covid-19

The RVCA continues to make decisions regarding COVID-19 based on the advice and recommendations of government and public health officials. As Ontario begins to reopen, the goal remains to:

- Protect employee health and safety first and foremost;
- Protect the health and safety of clients and the public;
- Maintain delivery of programs and services where possible; and
- Protect the legal and financial interests of the RVCA.

Analysis

Province Enters Stage 3

On July 17, 2020 most of Ontario (including eastern Ontario) will move into stage three of recovery. This stage will allow gatherings of up to 50 people indoors and 100 people outdoors. Nearly all businesses and public spaces will be permitted to reopen with the

exception of a few places and activities considered high-risk including amusement parks, water parks, buffets, dancing at restaurants and bars, overnight camps for children, karaoke rooms, prolonged or deliberate contact while playing sports, saunas, steam rooms, bath houses, oxygen bars, table games at casinos and gaming establishments. All other business can reopen as long as they follow public health advice and workplace safety guidance, including physical distancing and disinfection and sanitation protocols. Health units in eastern Ontario also made it mandatory for people to wear masks in enclosed public spaces effective July 7, 2020. “Enclosed public space” is defined as indoor public spaces of businesses and organizations, accessed by the public.

The Ontario Government also announced that the Declared State of Emergency will end on July 24, 2020. However, new legislation has been introduced that will allow the government to extend or amend existing emergency orders for up to one year to enable them to continue managing Ontario’s recovery. The Province also emphasized that businesses are strongly encouraged to continue to allow people to work remotely along with other continued measures to reduce the spread of the virus including:

Everyone can make Stage 3 a success by:

	Maintaining physical distancing of at least two metres from people outside of your household or social circle		Wearing a face covering in indoor and outdoor public spaces where physical distancing is a challenge
	Washing your hands frequently with soap and water		Using an alcohol-based hand sanitizer if soap and water are not available
	Practising good hygiene (covering a cough and sneeze and avoiding touching your face)		Cleaning frequently touched surfaces more often
	Limiting indoor gatherings to a maximum of 50 people, or less, to maintain physical distancing		Limiting outdoor gatherings to a maximum of 100 people, or less, to maintain physical distancing
	Staying at home and away from others if you are feeling ill or have symptoms of COVID-19		Downloading the COVID Alert app, when launched, to be notified if you have been in contact with anyone with COVID-19
	Working from home or remotely as much as possible		Minimizing travel and self-isolating for 14 days after all international travel
	Protecting the most vulnerable by following public health advice		Getting tested if you are worried you have or have been in contact with someone who has COVID-19

On June 12, 2020, most of Ontario (including eastern Ontario) moved into stage two of recovery. This allowed social gatherings of up to 10 people as well as permitting provincial beaches and campgrounds, public swimming pools, outdoor water facilities, shopping malls, outdoor restaurant patios, places of worship and certain personal services to reopen, some with limited capacity. Childcare centres and day camps were also permitted to gradually reopen following strict provincial guidance.

Under stage one which began on May 19, 2020, retail stores with a street entrance, seasonal businesses as well as health and community service providers were permitted to open or expand their services. The government also permitted the reopening of some outdoor recreational amenities, including outdoor sports facilities and multi-use fields, off-leash dog areas, and outdoor picnic sites, benches and shelters in parks and recreational areas. Ontario also announced that certain seasonal services and activities could reopen such as golf courses, marinas, boat clubs and public boat launches, as well as private parks and campgrounds to begin preparations for the season.

RVCA's Health and Safety Measures

In stage three, the RVCA will continue to implement numerous measures to protect the health, safety and wellbeing of staff, clients and the public. RVCA is currently in the process of updating their Standard Operating Procedures for stage 3, however these updated procedures will continue to include:

- Allowances for staff to work remotely
- Limiting the maximum number of staff permitted at indoor workplaces and in vehicles
- Enhanced protocols for staff working at indoor workplaces (hygiene and sign-in protocols)
- Enhanced disinfection protocols for common touch surfaces
- Assigning equipment and vehicles to specific staff where possible
- Disinfection protocols where equipment or vehicles must be shared
- Limiting in-person interaction with contractors and the public, and in some cases, requiring contractors to have their own COVID-19 procedures
- Requiring the use of personal protective equipment
- Developing and revising Standard Operating Procedures for particular programs and workplaces as the pandemic evolves

Staff are currently reviewing updated provincial guidance to determine:

- When buildings should reopen to the public and if they should reopen by appointment only as promoted by the Province
- When rentals of indoor and outdoor facilities at conservation areas should resume and when washrooms and change rooms could reopen for public use
- How to redesign day camps so they can resume this summer and how forest school could be expanded this fall
- When courses and volunteer events may resume

The Province has issued the following updated guidance and advice when reopening:

Workplaces and businesses can help make Stage 3 a success by developing a COVID-19 safety plan that includes:

	Enabling physical distancing by redesigning spaces/interactions and implementing flow management		Cleaning and disinfecting equipment and high-touch surfaces as frequently as is necessary to maintain a sanitary environment
	Consider recording each patron's name and contact information to support effective contact tracing that helps keep everyone safe		Consider requiring all customers to book an appointment in advance, wherever possible, for the purposes of physical distancing, flow management and contract tracing
	Assigning seating or spaces where possible to ensure physical distancing		Following sector-specific workplace safety guidance and tips available at Ontario.ca/COVIDsafety

Additionally, staff will continue to be required to follow all updated public health recommendations including:

- Staying home if feeling sick
- Maintaining a distance of 2 metres or 6 feet from one another
- Wearing a mask where physical distancing is not possible or when in an enclosed public space
- Washing hands frequently and for 20 seconds
- Not touching their face and sneezing into their sleeve
- Self isolating if exhibiting symptoms of COVID-19, having been exposed to COVID-19 or after returning from being out of the country

Conservation Areas

All outdoor recreational amenities are now open with the exception of buildings. All picnic areas, shelters, picnic tables, benches, lookouts, boat launches, docks and beaches have now reopened at all conservation areas. One directional walking on trails continues to be encouraged to facilitate physical distancing (directional signage and physical distancing signage has been posted in some areas). Washrooms and change rooms have been unlocked to address vandalism, but signage indicates that they remain closed as they are not being maintained, sanitized or disinfected.

Conservation Education

While day camps initially had to be cancelled at Baxter and Foley Mountain due to COVID-19 protocols and staff capacity, staff are now in the process of reviewing updated provincial guidance to develop modified day camps that could run later this summer. Staff are also working on an expanded forest school program to begin in the fall to support students who may not be in school or in school full-time.

Business Continuity

The RVCA has been able to deliver nearly all programs and services during the pandemic by implementing alternative operating procedures or delaying the start of field season:

- Planning and Regulation Services
 - Septic and Section 28 approvals have continued
 - Plan review also continued although the circulation of planning files to conservation authorities was temporarily suspended by municipalities
- Stewardship Services
 - Tree planting and shoreline naturalization programs rolled out this spring
 - Septic re-inspection site visits began in June
 - Rural clean water program is being promoted and applications accepted
- Watershed Science and Engineering Services
 - Most programs and services have continued remotely
 - Scaled back monitoring programs began in June (some monitoring will not be undertaken because of physical distancing requirements or the inability to use volunteers)
- Conservation Land Management Services
 - Conservation areas remained open with key maintenance being undertaken
 - Outdoor amenities reopened once directed by the province.
 - Education programs, day camps and rentals will resume once adequate safety protocols can be put in place.
- Corporate Services
 - All services have continued, mostly remotely

Input From Other Sources

As the province reopens, the RVCA continues to have discussions with other conservation authorities, watershed municipalities, health units and other partners to discuss public health recommendations, emergency orders and local responses. RVCA also continues to seek legal counsel regarding the pandemic and employment implications.

Financial Considerations

Conservation Ontario recently undertook a survey of all 36 conservation authorities to understand the impact of COVID-19 on Ontario's Conservation Authorities (financial, program and staffing impacts). The results of the survey have been summarized in the attached document by Conservation Ontario and they will continue to collect data from conservation authorities on a monthly basis to maintain updated data on the pandemic's impact.

The RVCA reviewed its 2020 budget to identify revenue streams that may be impacted by COVID-19. Currently, self-generated revenue at our conservation areas (user fees for parking, education programs and rentals) is the only area where we have identified a decline in revenue. Conservation Land Management Services budgeted \$337,000 in self-generated revenue for 2020 (which is 3% of RVCA's budget) and we are currently

projecting a loss of \$15,000 per month while programs, camps and rentals remain closed. This loss is being partially offset by a reduction in payroll expenses as temporary lay-off notices were issued to our casual outdoor education interpreters earlier this year due to insufficient work. There are also other staff vacancies within conservation lands which are not currently being filled to help offset the loss in revenue.

Depending on the nature and duration of COVID-19 restrictions, the financial impact on the RVCA could change. Staff will continue to monitor the situation and report changes to the Board of Directors. In the meantime, RVCA is undertaking additional steps to help mitigate financial losses due to COVID-19 including:

- Applying the 10% Temporary Wage Subsidy for Employers – \$25,000 savings
- Receiving a reduction in benefits premiums – \$4000 / month (April, May)
- Receiving funding through Canada Summer Jobs - \$31,000
- Reducing staffing levels – 8 summer students instead of 16, other vacancies
- Pursuing a reduction in insurance costs through Conservation Ontario
- Realizing costs savings within the organization due to COVID-19
- Finding other cost savings to offset revenue loss

Legal Considerations

Under the *Occupational Health and Safety Act*, employers have a range of legal duties to protect the health and safety of employees. Employees also have the right to refuse unsafe work and the right to be informed about actual and potential dangers in the workplace.

Under the *Emergency Management and Civil Protection Act*, the Province of Ontario declared a State of Emergency due to COVID-19 and has issued orders including:

- Ontario Regulation 51/20 – Closure of Establishments;
- Ontario Regulation 52/20 – Organized Public Events, Certain Gatherings;
- Ontario Regulation 82/20 – Closure of Places of Non-Essential Businesses; and
- Ontario Regulation 104/20 – Closure of Outdoor Recreational Amenities.

The *Employment Standards Act* also provides minimum standards for most employees working in Ontario, setting out the rights and responsibilities of employees and employers including new COVID-19 job-protected unpaid leaves.

In light of these legal considerations, the RVCA has been working, and will continue to work, with legal counsel and other conservation authorities to develop Standard Operating Procedures, protocols and practices to protect the health and safety of staff, follow Ontario's emergency orders and comply with the *Employment Standards Act*.

Adherence to RVCA Policy

In 2009, the RVCA prepared a Pandemic Policy which included a Pandemic Plan and Payroll Continuity Plan. This policy and associated plans were a good starting point but did not anticipate current government measures such as workplace closures and physical distancing orders. This policy will be updated to reflect the measures that have been implemented by the RVCA in response to COVID-19.

Link to Strategic Plan

N/A

Attachments

- *Reported Impacts of COVID-19 on Conservation Authorities, June 2020*



Reported Impacts of COVID-19 on Conservation Authorities

June 2020

In early June 2020, Conservation Ontario surveyed the 36 conservation authorities (CAs) to identify how the COVID-19 pandemic has impacted their ability to deliver programs and services, generate revenue and employ people.

Overall, 35 / 36 conservation authorities identified impacts to 140 individually-offered programs or services across ten different business areas.

Conservation Authority Business Areas

Watershed Management/Planning | Water Monitoring | Planning & Regulations | Corporate Services | Lands and Conservation Areas | Flood & Erosion Management | Community Outreach | Environmental Education | Watershed Stewardship & Restoration | Conservation Authority Foundation Fundraising |

Reported Impacts of Pandemic Conditions to Conservation Authority Business



Self-Generated Revenue Sources Reduced Significantly – Priority Impact

Requirements for social distancing and provincial emergency orders restricting gatherings prevented some field staff from working and have severely reduced the conservation authorities' ability to raise self-generated revenues.

Conservation authorities raise revenues through activities such as tree planting, stewardship restoration, education and conservation area-based programs, activities and events. This includes: environmental education programs, summer camps, outdoor recreation, festivals, venue permits for weddings, film and/or photography and visitor fees. It also includes stewardship / tree planting contracts and rural water quality programs with all levels of government, landowners and other agencies.

Reduction in self-generated funding significantly impacts a wide range of programs. These revenues support essential lands and conservation areas operations, watershed stewardship programs and services, as well as contribute to other essential (and often under-funded) programs such as flood management.

Other Impacts

- Much higher usage of conservation areas created higher staffing and other costs
- Field work reduced or discontinued; staff layoffs, reduced or no hiring of seasonal and summer staff; staff redeployed to other programs
- Long term strategic objectives have been delayed or discounted
- Capital and infrastructure projects delayed or cancelled due to lack of staff, funding and/or difficulty with supply chains
- New protocols required for field work
- More communication with general public required for all business areas

Barriers to Re-Opening

- Staffing availability / funding
- Availability of PPE equipment; health and safety requirements and protocols
- Additional costs and reduced revenue projections as result of social distancing requirements (e.g. enforcement, fewer visitors / campers)

Three Business Areas Being Impacted by Most Conservation Authorities



Lands and Conservation Areas

Revenue Loss: \$15.7 M | Employee Layoffs: 131 | Not Hired: 733



Education

Revenue Loss: \$6.5 | Employee Layoffs: 82 | Not Hired: 110



Watershed Stewardship and Restoration

Revenue Loss: \$6.1M | Employee Layoffs: 63 | Not Hired: 88



Conservation Lands

Value of Business Area

- ✓ Physical and mental health benefits of being in greenspaces important to residents
- ✓ Ecological benefits (drinking water sources, climate change adaptation) and contributes to livability of communities
- ✓ Source of self-generating revenues for CAs which support conservation areas' programs and activities, as well as other essential underfunded programs such as flood management

Specific Business Area Impacts of COVID-19

- Most conservation areas and amenities closed (including camping for some) / Amenities continue to be closed
- Self-generating revenue-based events, programs and activities cancelled
- Seasonal / maintenance work delayed (hazardous trees, trails, etc)
- Trails need to be redesigned / changed to accommodate social distancing
- Significantly higher number of visitors as well as increased garbage and vandalism create additional staff costs including for enforcement



Education

Value of Business Area

- ✓ Deliver programming to over 372,000 Ontario students annually
- ✓ Over 3,600 school boards participate in this programming
- ✓ Conservation authorities also host annual summer camps for children and offer year-round education programs and events for all ages at conservation areas
- ✓ Operate 38 interpretive centers (20 year-round; 18 seasonal)
- ✓ Support provincial environmental priorities around Great Lakes, climate change, green infrastructure, etc.

Specific Business Area Impacts of COVID-19

- Revenue sources for conservation authority environmental education programs significantly reduced or eliminated (self-generated revenues from program fees, events and grants)
- Some education programming moved to virtual however, on-site programs and summer camps cancelled
- 82 staff laid off; 110 summer staff not hired



Watershed Stewardship / Restoration

Value of Business Area

- ✓ CA Staff deliver programs on behalf of wide variety of external partners including all levels of government, landowners, community groups and other agencies (e.g. Ducks Unlimited, Ontario Soil and Crop Association)
- ✓ Contributes to provincial environmental priorities re: source protection, Great Lakes, agriculture and climate change adaptation
- ✓ Contributes to improving the health of our watersheds and livability of our communities

Specific Business Area Impacts of COVID-19

- Program revenues reduced from lack of landowners and agency project contributions
- Fewer grant opportunities
- Delays strategic objectives and completion of work planned for 2020
- Missing significant spring seasonal window for planting and restoration work
- Reduced availability of nursery stock