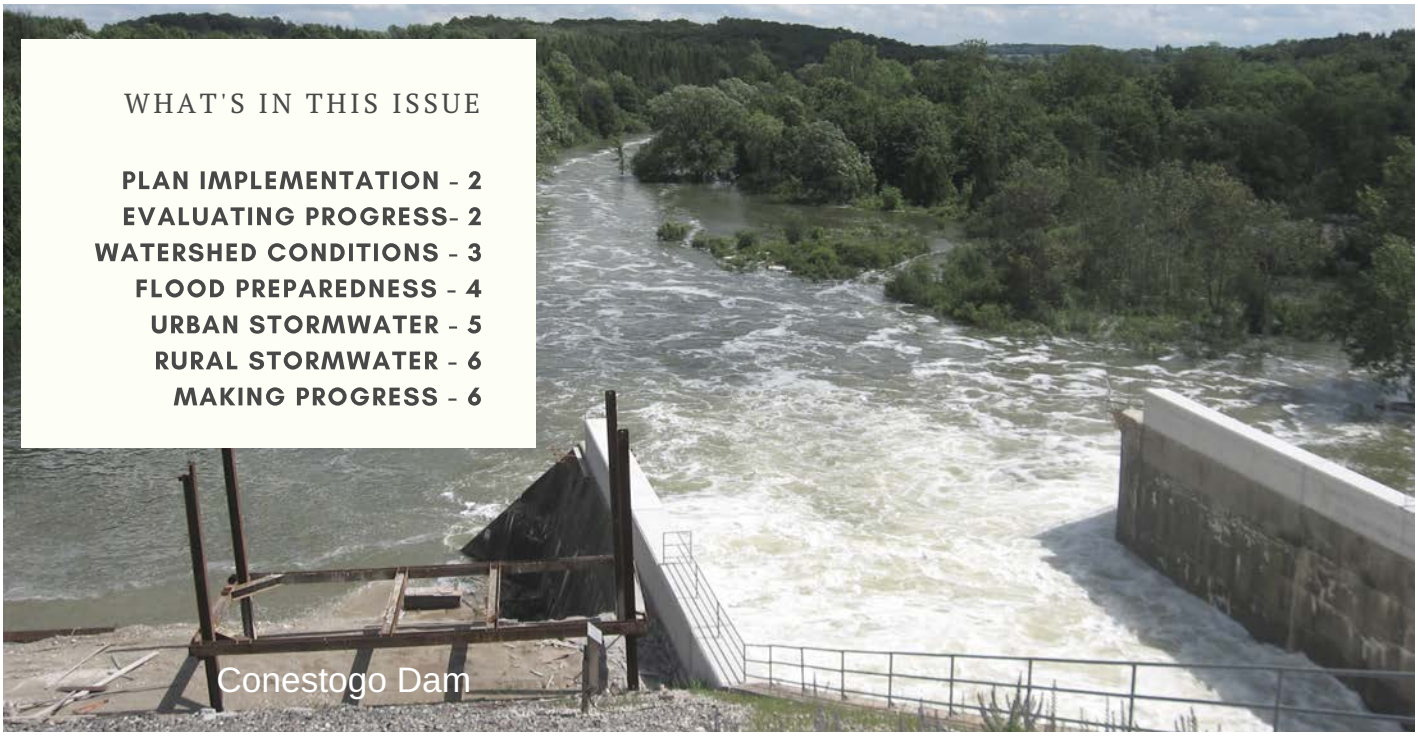
2017 REPORT ON ACTIONS

Reporting on the progress of implementing the actions in the Grand River Water Management Plan



WHAT'S IN THIS ISSUE

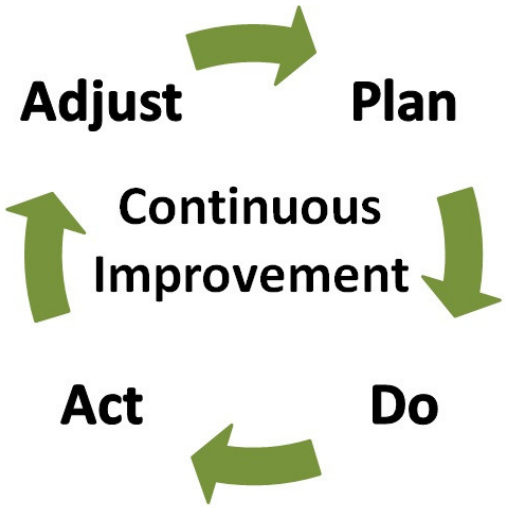
Conestogo Dam

Highlighting Actions to Reduce Flood Damage Potential

Grand River Water Managers

In 2014, 16 partner organizations endorsed the Grand River Water Management Plan. Since that time, annual reports are issued to summarize the overall progress of implementing the Plan.

Each year, different water management challenges emerge for Water Managers and they must adapt and realign priorities. In June, an event north west of Grand Valley dumped over 100 mm in less than 3 hours; in August, a localized event in north-east Brantford saw 35mm fall in 20 minutes putting significant stress on their stormwater system. Extreme events like these are predicted to become more frequent in the future. Thus, flood prepardness becomes even more important now than ever before.



STATS: GRCA PERMITS

GRCA has regulations for protecting land near rivers, streams, ponds, wetlands, steep slopes, floodplains and Lake Erie shoreline to reduce damages from flooding or erosion.

In 2017, GRCA reviewed **443** permits for construction in and around wetlands while they reviewed **256** floodplain permits.

PLAN IMPLEMENTATION

Many of the Water Management Plan partners continue to meet quarterly. Competing priorities, staff retirements and promotions always challenge our ability to fully participate in activities that may go beyond our borders. Staff from our northern municipalities, including Southgate, Wellington North, Mapleton and the Town of Grand Valley have also joined the watershed conversation and see value in attending the quarterly meetings.

The Grand River Conservation Authority (GRCA) hosted four meetings in 2017 including a joint meeting with watershed policy planners in September. GRCA will continue to provide the opportunity for Water Managers to meet and discuss issues that go beyond municipal boundaries.

EVALUATING PROGRESS

All water managers have competing priorities yet over the past four years, partners have implemented actions to work toward the four goals of the Grand River Water Management Plan:

- Reduce flood damage potential
- Ensure water supplies for communities, economies and ecosystems;
- Improve water quality and reduce the Grand's impact on Lake Erie; and
- Build resilience to deal with climate change.

Water managers will continue to meet quarterly in 2018. A review of all of the actions in the Plan will take place in early 2019 concurrently with a review of the state of the water resources in the Grand River watershed.
These reports will inform Water Managers whether its time to review and update the 2014 Plan or adjust actions and continue implementation.

WATERSHED CONDITIONS

All of GRCA's climate stations recorded above the normal total annual precipitation in 2017. Except Woolwich and Brantford, all climate stations recorded over 1000 mm of precipitation. Normal annual precipitation varies across the watershed from 850 mm in the south to 950 mm in the north.

Average air temperature for the year was above the long term average. The year started out fairly warm with winter and early spring temperatures about 3 degrees above normal. The late spring and summer period were very close to the long term average while the fall was about 3.5 degrees above normal.


Flood damage to upper Belwood gauge in June

FLOOD MESSAGING IN 2017

- 5 Watershed Conditions Statements
- 6 Flood Watches
- 13 Flood Warnings
- 1 High Lake Erie Warning

JUNE 23, 2017

An extreme rainfall event

One-day rainfall total at Luther Dam is the highest daily total rainfall recorded since 1950. Two characteristics made this storm very uncommon:

(1) **High Intensity Rainfall** - 126 mm of rain fell over a 3-4 hour period - this is a very large volume of rainfall in a short period of time.

(2) **Large Area** - This storm covered a very large area (approximately one-third of the watershed).


Conestogo River, Drayton, June 23, 2017

FLOOD PREPAREDNESS

GRCA is improving forecasting and decision support tools and piloting a new flood forecasting approach for West Montrose using improved models to predict river flows five hours in advance. This will provide additional flood warning to residents of the area.

GRCA applied to the *National Damage and Mitigation Program Funding* to acquire bathymetric LiDAR for reaches of the Grand River. This will complement the topographic LiDAR acquired by **OMAFRA**.

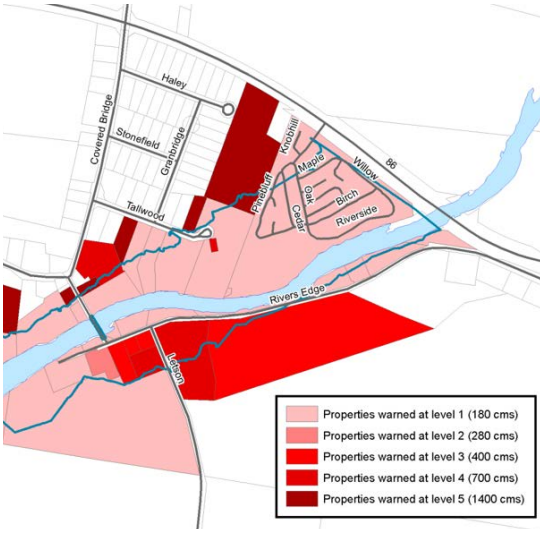
OMAFRA reached out to their clients in 2017 to encourage them to be prepared for extreme events

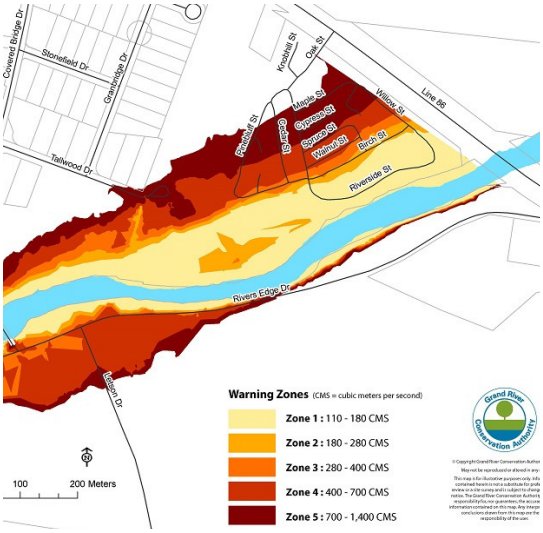
GRCA is updating hydrologic and hydraulic models to new or updated platforms (e.g. HEC-HMS and HEC-RAS, respectively) for the headwater areas of the watershed upstream of Shand Dam. This work will support updated floodline mapping.

Brantford created a flood prevention grant program for homeowners as a result of a significant rainfall event on August 11, 2017.

GRCA worked on 16 projects related to ensuring the maintenance of GRCA-owned dams

Flood risk map – West Montrose

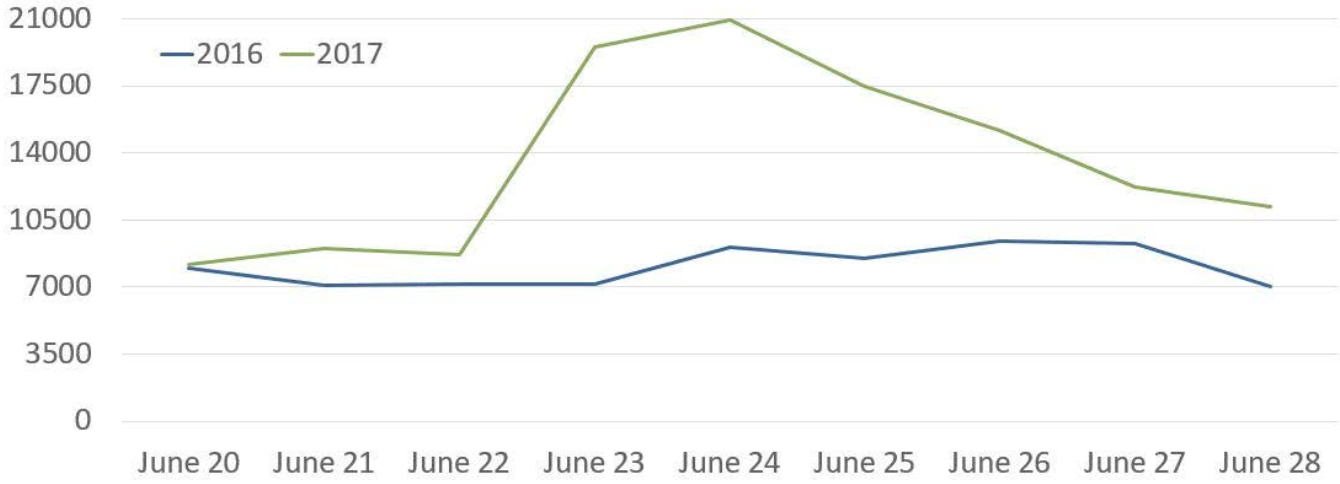




Flood Inundation Map – West Montrose

GRCA'S WEB-USER SESSIONS PER DAY TRIPLED DURING EVENT

Communications in a flood event is critical; more people are using GRCA's web-based information. 50% of web traffic is on mobile devices



URBAN FLOODING

Urban flooding is caused when heavy, intense rain saturates an urban drainage system. The urban storm system becomes overwhelmed and water flows out into streets. This differs from Riverine Flooding where excessive rainfall over an extended period of time causes a river to exceed the capacity of its banks. It can also be caused by heavy snow melt and ice jams.

STORMWATER MANAGEMENT

Stormwater system assessments are important for mitigating urban flooding. Many actions by partners are underway or completed- **Cambridge** completed condition assessments of 20 facilities and cleaned out 3. **Kitchener** has implemented a 12.5 mm rainwater volume control target to incorporate low impact development techniques in projects. **Waterloo's** Master Plan is underway.

A case study on urban monitoring was completed in partnership with **MOECC**, **Kitchener,** and **GRCA**. It highlights several key lessons learned for developing a monitoring network that is able to detect changes.

Inflow and Infiltration (I&I) is a common municipal challenge. **Cambridge** is currently developing an I&I reduction program. Others, **Wellington North,** and **Grand Valley** recently assessed the scope of I&I challenges in their municipality.

Special Policy Areas allow for limited development in the flood fringe. **Waterloo** is currently reviewing their SPA.

Haldimand piloted a basement flooding mitigation program and focused on I&I through illegal connections to the sewer system.

Blair Creek, Kitchener

Grand River, Dunnville

LAKE FLOODING

GRCA is working with **Haldimand County** and others on a project to update the Coastal Hazard Mapping along the Lake Erie shoreline in the county.

RURAL STORMWATER

OMAFRA completed the second edition of the Drainage Engineers Design and Construction Guidelines.

The Rural Water Quality Program, sponsored by the **Region of Waterloo**, **Wellington County**, **Dufferin**, **Oxford, Brant, Brantford** and **Haldimand** provided $1.1M in grant to support the completion of **377 projects** to benefit water quality in 2017. Erosion control, tree planting, wetland and naturalization projects along with practices like establishing winter cover crops all help to manage water on the landscape, improve water quality and flood resilience.

Rural water and sediment control basin

MAKING PROGRESS ...

Region of Waterloo continues on-track with the upgrades at the Kitchener wastewater plant. It will be completed by 2019; the upgrades at the Waterloo wastewater plant will be completed by 2018.

The Wastewater Optimization Program continues - **Guelph**, **Brantford** and **Region of Waterloo** and **Haldimand County** are pursuing voluntary total phosphorus targets through best practices in process control. Another annual performance report was issued.

Best practices in wastewater process control

Region of Waterloo achieved their demand management objective of 165 litres per person per day!

Centre Wellington continues with their Tier III water budget study through Source Protection Planning. This study will inform their long-term water supply strategy.

Environment and Climate Change Canada continue to support the Implementation of the Water Management Plan through their Grant and Contributions program.

Step-feed gates help manage high flows in Guelph

This progress report was prepared by the **Water Managers Working Group** - a committee of senior staff from partner organizations to report on the progress of implementing the actions in the Grand River Water Management Plan.

For more information contact:
Sandra Cooke, Chair Water Managers,
Grand River Conservation Authority