



**Grand River Conservation Authority**

**Agenda - General Meeting**

**PUBLIC**

**Friday, May 26, 2017**

**9:30 a.m.**

**Auditorium**

**Grand River Conservation Authority**

**400 Clyde Road, Box 729**

**Cambridge, ON N1R 5W6**

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**Pages**

- 1. Call to Order**
- 2. Roll Call and Certification of Quorum – 13 Members constitute a quorum (1/2 of Members appointed by participating Municipalities)**
- 3. Chair’s Remarks**
- 4. Review of Agenda**
- 5. Declarations of Pecuniary Interest**
- 6. Minutes of the Previous Meetings**
- 7. Business Arising from Previous Minutes**
- 8. Hearing of Delegations**
- 9. Presentations**
  - a. Grand River Conservation Foundation  
Sara Wilbur will provide a presentation demonstrating the role of the GRCF.
- 10. Correspondence**
  - a. Mohawks of the Grand River - Repossession of Mohawk Lands
- 11. 1st and 2nd Reading of By-Laws**

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<b>12. Reports:</b>	
a. GM-05-17-50 - Cash and Investment Status	20
b. GM-05-17-55 - Financial Summary	23
c. GM-05-17-52 - Quarterly Permit Report - Revised Format	26
d. GM-05-17-56 - Environmental Assessments	28
e. GM-05-17-51 - Grand River Water Management Plan: 2016 Report on Actions	30
f. GM-05-17-59 - Beach Management in GRCA Conservation Areas	42
g. GM-05-17-53 - Grand Trails Project Update	44
h. GM-05-17-58 - Parkhill Dam Hydro Project Update	47
i. GM-05-17-57 - Current Watershed Conditions	49
<b>13. Committee of the Whole</b>	
<b>14. General Business</b>	
<b>15. 3rd Reading of By-Laws</b>	
<b>16. Other Business</b>	
<b>17. Closed Meeting</b>	
a. Minutes of the previous confidential meeting of April 28, 2017	
b. Hockeyfest Litigation Update	
<b>18. Next Meetings</b>	
<b>19. Adjourn</b>	

**20. Grand River Source Protection Authority Meeting**

Regrets only to:

Office of the Chief Administrative Officer, Phone: 519-621-2763 ext. 2200



## *Mohawks of the Grand River*

April 25, 2017

Grand River Conservation Authority  
400 Clyde Road  
PO Box 729  
Cambridge, Ontario

**Attn: Samantha Lawson, Property Manager**

**Re: Notification of Repossession of Mohawk Lands**

After failed attempts to speak with you, we are writing to inform you that, as of this date, the Mohawks of the Grand River will be repossessing their farmlands along the Grand River at Brantford for the use and benefit of our farmers.

We are the holders of the original Haldimand Pledge of 1779 and the Haldimand Deed of 1784 whereby the Mohawk Nation was granted some 900,000 acres of land known as the Haldimand Tract.

Enclosed please find further information including a copy of the formal **Notification of Declaration of Land Holdings** served in 2014 upon your government and city Mayors situated along the Grand River.

Should you need further clarification, please contact Trevor VanEvery at 519 209 5924.

Sincerely,

Yvonne Hill  
A/Clanmother, Shatekarihwate, Kanyen'kehaka  
Mohawks of the Grand River

Ilene Johnson  
A/Clanmother Orenrehkowa,  
Kanyen'kehaka

Encl.



## *Mohawks of the Grand River*

November 5, 2014

Secretary-General, Ban Ki-Moon  
United Nations Headquarters  
760 United Nations Plaza  
New York, New York 10017

### **RE: Notification of Declaration of Land Holdings**

Honourable Secretary-General,

This letter is a formal declaration to the United Nations and the International Community of the peaceful and legitimate repossession of land holdings by the Kanyen'kehaka (Mohawks) of the Grand River, lands guaranteed to the Mohawk Nation and others of the Six Nations in the 1779 Haldimand Pledge (attachment #1) and the resulting Haldimand Proclamation of 1784 (attachment #2). Kanyen'kehaka of the Grand River are dutifully and peacefully restoring specific parcels of land, that are being recorded and maintained in the Kanyen'kehaka Land Registry system, under the terms and conditions of the Haldimand Proclamation.

The right to this declaration is further vindicated by the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) to own, use, develop and control their lands, territories and resources - a universal human rights declaration of which Canada is a signatory.

This land is situated in the heartland of what is now Ontario, Canada. We call upon the International Community to acknowledge and record the restoration of these parcels of land to assist in our duty to inform the affected Counties/Townships/Cities that these repatriated lands are no longer subject to taxation by the Crown.

The 1779 Pledge and the 1784 Haldimand Proclamation between Great Britain and the Mohawk Nation was to set aside territories for a permanent home for the Mohawk Nation and others of the Six Nations, who had lost their homelands in New York state, as a result of their faithful services as allies of Great Britain in the American Revolutionary War. These war-time-reparation agreements acknowledge and recognize the alliance between the two named groups and guarantee the Mohawks and such others "take possession of and settle upon" this tract of land "six miles deep on each side of the Grand River from its mouth to its source would be protected for the Mohawks and such others ..... to enjoy forever".

This action arises from the violation of the government of Canada, as successor of Great Britain's interests and obligations, regarding the *1784 Proclamation and the 1867 British North America Act*. To date, the 950,000 acres of land guaranteed to us along the Grand River has been sold, leased, stolen, squatted upon, transferred and negotiated under fraudulent terms to ; reduced 46,000 acres of Crown land. Said in the language of the UNDRIP, the Kanyen'kehaka have never given free, prior or informed consent, nor fair compensation for the lands taken from them.

Further we wish to remind Canada and its governmental bodies of their binding agreements and responsibility to observe, honour and enforce these agreements. We are prepared to provide the International Community with a complete account and transparency of our claim.

**In conclusion, the Mohawks of the Grand River and Others still exist and possess the original Haldimand Proclamation of 1784 which outlines title to lands that were never surrendered.** We, the Indigenous People of this land, remain steadfast in our duty to protect the land and to fulfill our responsibility to Mother Earth and the coming faces of our People as original and rightful titleholders.

Acknowledgement of receipt of letter is appreciated.

In the Spirit of Peace and Friendship,



Bill Squire, Appointed Speaker  
Mohawk Supporters of the Haldimand Proclamation

CC: James Anaya  
Special Rapporteur on the Rights of Indigenous People  
Geneva, Switzerland

Her Majesty Queen Elizabeth II  
London, UK

His Excellency, The Right Honourable David Johnston  
Governor General of Canada

The Right Honourable Stephen Harper  
Prime Minister of Canada

The Honourable Kathleen Wynne  
Premier of Ontario

The Honourable Dave Levac, MPP Brant  
Speaker of the Legislative Assembly of Ontario

Attachments: 1 - Haldimand Pledge of 1779  
2 - Haldimand Proclamation of 1784

Attachment #1 – The Haldimand Pledge of 1779

Attachment #2 – The Haldimand Proclamation of 1784

Attachment #1

### **The Haldimand Pledge of 1779**

On the 7<sup>th</sup> day of April, 1779 GOVERNOR HALDIMAND had delivered to the MOHAWK NATION the following document:

*Some of the Mohawks of the Villages of Canojaharie, Tikondarago, and Aughugo, whose settlements than had been on account of their steady attachment to the King's service and the interests of Government ruined by the rebels; having informed me that my predecessor, Sir Guy Carleton, was pleased to promise, as soon as present troubles were at an end, the same should be restored at the expense of the Government, to the state they were in before these wars broke out, and said promise appearing to me just, I do hereby ratify the same and assure them the said promise, so far as in me lies, shall be faithfully executed, as soon as that happy time comes.*

*GIVEN UNDER MY HAND AND SEAL at Quebec the 7<sup>th</sup> day of April 1779.  
Signed: FREDERICK HALDIMAND*

A promise was first offered by Sir Guy Carleton who was the Governor of Quebec. Sir Guy Carleton was later replaced by Frederick Haldimand who signed the Pledge in 1779. Colonel Guy Johnson, who had succeeded his uncle Sir William Johnson as Superintendent General of Indian Affairs in 1774 reaffirmed the Pledge in the spring of 1780.

In 1784, the Pledge was fully honoured by King George III through Governor General Frederick Haldimand by the document recognized and acknowledged as the '**Haldimand Proclamation**'.



Attachment #2

The '**Haldimand Proclamation**' is recognized and acknowledged as follows:

*"Frederick Haldimand, Captain General and Governor General in Chief of the Province of Québec and Territories depending thereon, General and Commander in Chief of His Majesty's Forces in said Province and the Frontiers thereof—*

*Whereas His Majesty having been pleased to direct that in consideration of the early attachment to his cause manifested by the **Mohawk Indians**, and of the loss of their settlement which they thereby sustained—that a convenient tract of land under his protection should be chosen as a safe and comfortable retreat for them and others of the Six Nations, who have either lost their settlements within the Territory of the American States, or wish to retire from them to the British—I have at the earnest desire of many of these His Majesty's faithful Allies purchased a tract of land from the Indians situated between the Lakes Ontario, Erie and Huron and I do hereby in His Majesty's name authorize and permit the said **Mohawk Nation and such others of the Six Nation Indians as wish to settle in that quarter** to take possession of and settle upon the Banks of the River commonly called **Ours [Ouse] or Grand River**, running into Lake Erie, allotting to them for that purpose **six miles deep from each side** of the river beginning at Lake Erie and extending in that proportion to the head of the said river, **which them and their posterity are to enjoy for ever.**"*

*Given under my hand and seal at arms, at the Castle of St. Lewis at Quebec, this twenty-fifth day of October on thousand seven hundred and eighty-four and in the twenty-fifth year of the reign of Our Sovereign Lord George The Third by the Grace of God of Great Britain, France, and Ireland, King Defender of the Faith and so forth.*

*Frederick Haldimand  
By His Excellency's Command  
R. Mathews*

WELCOME  
to  
KANATA VILLAGE  
Original Mohawk  
Village  
on  
Grand River  
Mohawk  
Territory  
Est. 1784

This Mohawk village was established in 1784 under the leadership of **Joseph Brant**.

The **Mohawks of the Grand River** were given nearly one million acres as war time reparations for their three villages (Canojaharie, Tikondarago and Aughugo) lost during the American Revolution.

As His Majesty's faithful allies, verified in both the **Haldimand Pledge of 1779** and the **Haldimand Proclamation of 1784**, six miles deep from each side of the Grand River, extending from it's mouth to it's source, was given to the Mohawks, and such others, "which them and their posterity are to enjoy forever."

Her Majesty's Royal Chapel of the Mohawks being built in 1785 is further confirmation of the significance of their roles as allies, which still stands as the oldest building in Upper Canada.

The **Haldimand Proclamation of 1784** existed seven years before the creation of upper Canada in 1791, therefore, the Mohawks of the Grand River believe the Haldimand cannot be adjudicated under Canadian Law.

As well, the Haldimand Proclamation existed nine years before the creation of the Simcoe Patent of 1793. Joseph Brant and the Grand River Mohawks firmly rejected the Simcoe Patent as it was created for the province of Upper Canada putting Haldimand lands under Canada's jurisdiction and named Six Nations as signatories.

In 1831, the Mohawk Institute opened the first and longest running Indian Residential School in Canada, with direction given to those in charge to specifically target Mohawk children.

Drastic measures continue with attempts to extinguish any and all evidence of the **Mohawks of**

**the Grand River**, who are actually still existing today as independent, distinct, sovereign entity.

**The Mohawks of the Grand River** have always had different abilities to be a completely self-sufficient, sustainable, functioning community, however continue to be met with resistance, interference and made to criminalize any attempt towards independence.

We (as) **the Mohawks of the Grand River** believe crimes have been committed, fraudulent deals with false titles and full misrepresentation has taken place.

Presently, 80% of Brantford is under land claims through Six Nations Band Council, however according to **the Mohawks of the Grand River**, 100% of Brantford is under land claim.

As confirmed in 1994 with a steering committee put together by Mayor Taylor and reported in an Expositor article, the City of Brantford's outstanding debts for **Joseph Brant** leases was \$250 billion.

In June 2008, **the Mohawks of the Grand River** sent an invoice to the City of Brantford totalling \$663 billion.

In June 2009, further attempts were made to fraudulently lease these **Original Mohawk Village lands**, again, without consent of **the Mohawks of the Grand River**.

**Today, just as in 1784, the Mohawks have underlying title to Kanata Village, as Grand River Mohawk Territory.**

**It was never sold and never will be sold.**

Further disrespect and efforts to extinguish the Mohawks of the Grand River and "get rid of the Indian problem" were made recently when Brantford Mayor Chris Friel decided to shut off all the water to Kanata Village, denying the original people of this village (and direct descendants of Joseph Brant) one of their most basic human rights - water.

And so, as the Peace Maker had requested and bestowed as their role and responsibility, it is the duty of the Mohawks of the Grand River to once again extend the white roots of peace in all four directions and welcome you to come together with them under the Great Tree of Peace. In the spirit of unity and strength, with determination in honoring Mother Earth and what is inherently "ours", and to join with them in their efforts of truth and what is right.....

true and total reconciliation of the original jurisdiction.

To..... "a convenient tract of land under His protection as a safe and comfortable retreat for them and their posterity to enjoy forever."

For more information or to find out how you can help please contact the Mohawk Workers at Kanata Village, Brant's Ford.



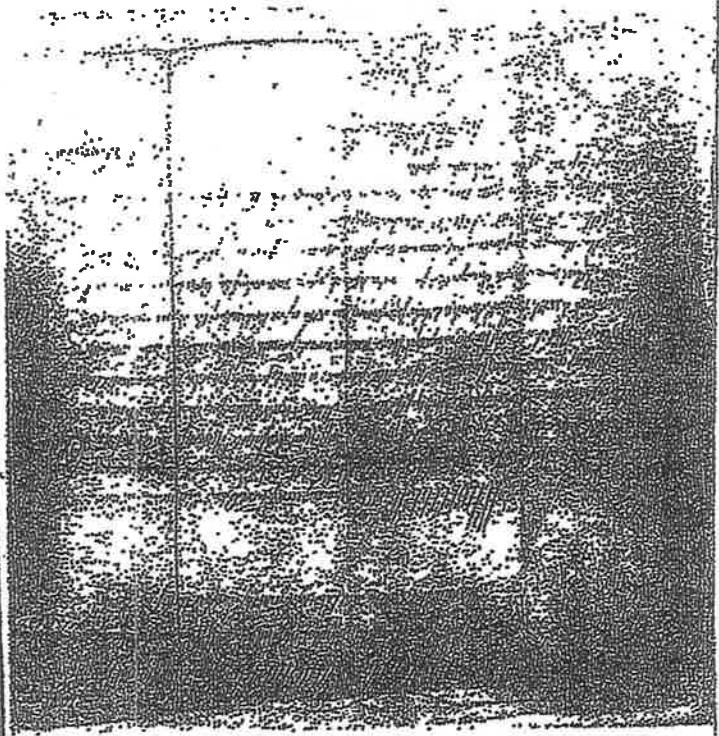
# MOHAWK NATION OF GRAND RIVER

In the 7<sup>th</sup> day of April, 1779 GOVERNOR HALDIMAND had delivered to the MOHAWK NATION the following document:

By His Excellency General Haldimand, Brigadier General and Commander-in-Chief of the Province of Quebec, and upon the Frontiers of Quebec, etc.

Some of the Mohawks of the Villages of Canajoharie, Madsdange, and Adangungo, whose settlements have had been on account of their steady attachment to the King's service and the interests of Government, having undertaken me and my predecessor, Sir Guy Carleton, was pleased to provide, as soon as the present troubles were at an end, the same number in restored at the expense of the Government, to the same place where they were before, and said persons appearing to me first, I do hereby certify the same and assure them the said persons, so far as in me lies, shall be faithfully executed, as soon as that happy time comes.

Signed, FRED HALDIMAND  
GIVEN UNDER MY HAND AND SEAL, at Quebec the 7<sup>th</sup> day of April, 1779.



PUBLIC ARCHIVES OF CANADA  
Extrait from INDIAN TREATIES AND SURRENDERS  
Vol. 1, p. 261.

FREDERICK HALDIMAND, Captain General and Governor-in-Chief of the Province of Quebec and Territories depending thereon, etc., etc., General and Commander in Chief of the Majesty's Forces in said Province and the Frontiers thereof, etc., etc., etc.

Witness the Majesty having been pleased to direct that in ourishment of the only settlement in the country named by the Mohawk Indians and of the loss of which they have by several years of the war under the protection of the Six Nations who have either lost their settlements or the territory of the same and comfortable retreat for them and others of the Six Nations who have either lost their settlements or the territory of the same and comfortable retreat for them and others of the Six Nations and I do hereby in the Majesty's name authorize and permit the said Mohawk Nation and such others of the Six Nations and others of the said Nation to take possession of and settle upon the lands in that quarter called Quas of Grand River, running the Lake Erie making for that purpose six miles deep from each side of the river beginning at Lake Erie and extending in that proportion to the head of the said river, which stream and that portion as to enjoy for ever.

them under my hand and seal at some at the Castle of St. Louis, at Quebec, the twenty-fifth day of October, and the second seven hundred and eighty-four, and in the twenty-fifth year of the reign of Our Sovereign Lord George the Third by His Grace of Great Britain, France and Ireland, King, Defender of the Faith and so forth.

FREDERICK HALDIMAND  
By His Excellency's command  
R. WATKINS  
Esquire and Counsellor at Law, 1779

# Grand River Conservation Authority

**Report number:** GM-05-17-50  
**Date:** May 26, 2017  
**To:** Members of the Grand River Conservation Authority  
**Subject:** Cash and Investments Status Report as at April 30, 2017

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## **Recommendation:**

THAT Report Number GM-05-17-50 – Cash and Investments Status Report as of April 30, 2017 be received as information.

## **Summary:**

The cash position including Notes Receivable of the Grand River Conservation Authority as at April 30, 2017 was \$26,680,299 with outstanding cheques written in the amount of \$406,494.

These funds were invested in accordance with the guidelines adopted by the General Membership.

## **Report:**

Attached.

## **Financial implications:**

Interest rates, etc. are shown on the report.

## **Other department considerations:**

Not applicable.

## **Prepared by:**

Carol Anne Johnston  
Senior Accountant

## **Approved by:**

Keith Murch  
Assistant CAO/Secretary-Treasurer

Sonja Radoja  
Manager of Corporate Services



**Grand River Conservation Authority  
Cash and Investments Status Report  
April 30, 2017**

<b>Date Invested</b>	<b>Location</b>	<b>Type</b>	<b>Amount</b>	<b>Rate</b>	<b>Maturity</b>	<b>2017</b>
	C.I.B.C.	Current Account	2,643,222	2%	Below Average Prime or .70%	
	Wood Gundy	Current Account	-	0.20%		
	C.I.B.C.	Property Account	12,324			
	C.I.B.C.	SPP Account	427,755	2%	Below Average Prime or .70%	
	C.I.B.C.	U.S.	10,268			
	C.I.B.C.	PayPal Account	15,870			
	C.I.B.C.	Call Centre	30,984			
	Royal Bank	Conestogo	5,080			
	Royal Bank	Brant	6,165			
	Royal Bank	Luther	5,977			
			<b>3,157,645</b>			
September 9, 2009	CIBC Renaissance	Account	2,260,064	0.75%		12,771
October 1, 2014	CIBC Trust Savings	Account	2,778,910	0.75%		15,703
July 15, 2016	One Investment Savings	Account	4,026,634	1.15%		34,888
November 8, 2012	National Bank	Bond	1,940,000	2.69%	August 21, 2017	20,684
June 6, 2013	Royal Bank	Bond	1,000,000	2.26%	March 12, 2018	17,318
November 7, 2013	Bank of Montreal	Bond	1,746,000	2.24%	December 11, 2017	37,462
May 5, 2014	Royal Bank	Bond	987,000	2.26%	March 12, 2018	15,900
December 8, 2014	Laurentian Bank	Bond	1,578,000	2.81%	June 13, 2019	37,241
January 28, 2015	CIBC	Bond	726,046	1.80%	May 15, 2019	13,069
September 3, 2015	CIBC	Bond	2,000,000	2.15%	September 3, 2025	36,526
October 14, 2015	Laurentian Bank	Bond	1,996,000	2.50%	January 23, 2020	49,000
March 1, 2016	CIBC	Bond	1,300,000	1.70%	March 1, 2023	19,010
September 16, 2016	CIBC	Bond	1,184,000	1.30%	March 13, 2020	12,356
	Total G.R.C.A. Investments		<b>23,522,654</b>			<b>321,928</b>
	G.R.C.A. Funds		26,680,299			
	Outstanding Cheques		<b>406,494</b>			

**Investment By Category and Institution**

	<u>% of Total Portfolio</u>		<u>% of Total Portfolio</u>
Government	0%	Gov't of Canada	0%
		Province of Ontario	0%
Banks	83%	C.I.B.C.	44%
		Bank of Nova Scotia	0%
		Bank of Montreal	7%
		Royal Bank	8%
		Toronto Dominion	0%
		National	8%
		Laurentian	15%
Other	17%	One Investment Program	17%

# Grand River Conservation Authority

**Report number:** GM-05-17-55  
**Date:** May 26, 2017  
**To:** Members of the Grand River Conservation Authority  
**Subject:** Financial Summary for the Period Ending April 30, 2017

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## **Recommendation:**

THAT the Financial Summary for the period ending April 30, 2017 be approved.

## **Summary:**

The Financial Summary includes the 2017 *actual* income and expenditures. The budget approved at the February 24, 2017 General Meeting is included in the *Budget* column. The *Current Forecast* column will indicate an estimate of income and expenditures for the whole year. Any changes between the *Current Forecast* and the *Previous Forecast* will be discussed during the meeting. At this time a surplus of \$NIL at year-end is anticipated.

## **Report:**

The Financial Summary is attached.

## **Financial implications:**

The activity summarized will result in a NIL net result at December 31, 2017.

## **Other department considerations:**

The management committee and appropriate supervisory staff receive monthly financial reports and advise the finance department of applicable forecast adjustments.

## **Prepared by:**

Sonja Radoja  
Manager Corporate Services

## **Approved by:**

Keith Murch  
Assistant CAO/Secretary-Treasurer

**GRAND RIVER CONSERVATION AUTHORITY  
STATEMENT OF OPERATIONS  
FOR THE PERIOD ENDING April 30, 2017**

SCHEDULE		Actual 2016	Budget 2017	Actual YTD	Previous Forecast	Current Forecast	Forecast Change
<b>REVENUE</b>							
<b>Municipal</b>							
General Municipal Levy (Operating)	various	9,809,000	10,025,000	3,341,666	10,025,000	10,025,000	0
General Municipal Levy (Capital)	various	1,000,000	1,050,000	350,000	1,050,000	1,050,000	0
Special Municipal Levy	various	113,499	150,000	18,486	150,000	150,000	0
Other	various	977,680	800,000	1,039,723	800,000	800,000	0
		<b>11,900,179</b>	<b>12,025,000</b>	<b>4,749,875</b>	<b>12,025,000</b>	<b>12,025,000</b>	<b>0</b>
<b>Government Grants</b>							
MNR Transfer Payments	various	871,073	871,073	0	871,073	871,073	0
Source Protection Program-Provincial	various	1,159,446	835,000	624,398	1,970,000	1,970,000	0
Other Provincial	various	955,572	1,147,500	656,288	1,147,500	1,147,500	0
Federal	various	187,159	289,500	252,786	289,500	289,500	0
		<b>3,173,250</b>	<b>3,143,073</b>	<b>1,533,472</b>	<b>4,278,073</b>	<b>4,278,073</b>	<b>0</b>
<b>Self Generated</b>							
<b>User Fees and Sales</b>							
<i>Enquiries and Permits</i>	4	511,202	428,500	140,551	428,500	428,500	0
<i>Plan Input and Review</i>	4	411,561	398,000	113,162	398,000	398,000	0
<i>Nursery and Woodlot Management</i>	5	502,611	515,000	216,852	515,000	515,000	0
<i>Consulting</i>	4	0	0	3,726	0	0	0
<i>Conservation Lands Income</i>	10	59,091	71,000	2,151	71,000	71,000	0
<i>Conservation Areas User Fees</i>	13	8,533,069	7,300,000	461,708	7,300,000	7,300,000	0
<i>Nature Centres and Camps</i>	8	876,797	876,500	184,136	876,500	876,500	0
<i>Merchandising and Sales</i>	8	3,647	0	644	0	0	0
Property Rentals	11	3,082,548	2,929,700	1,425,028	2,929,700	2,929,700	0
Hydro Generation	12	487,033	470,000	98,916	470,000	470,000	0
Land Sales	10	408,750	0	0	0	0	0
Grand River Conservation Foundation	various	676,104	559,500	50,962	559,500	559,500	0
Donations	various	126,728	244,000	277,104	244,000	244,000	0
Landowner Contributions	5	193,448	300,000	126,472	300,000	300,000	0
Investment Income	14	443,137	450,000	58,192	450,000	450,000	0
Miscellaneous Income	various	55,333	48,000	913	48,000	48,000	0
<b>Total Self-Generated Revenue</b>		<b>16,371,059</b>	<b>14,590,200</b>	<b>3,160,517</b>	<b>14,590,200</b>	<b>14,590,200</b>	<b>0</b>
<b>TOTAL REVENUE</b>		<b>31,444,488</b>	<b>29,758,273</b>	<b>9,443,864</b>	<b>30,893,273</b>	<b>30,893,273</b>	<b>0</b>



**GRAND RIVER CONSERVATION AUTHORITY  
STATEMENT OF OPERATIONS  
FOR THE PERIOD ENDING April 30, 2017**

SCHEDULE	Actual 2016	Budget 2017	Actual YTD	Previous Forecast	Current Forecast	Forecast Change	
<b>EXPENSES</b>							
<b>OPERATING</b>							
Water Resources Planning & Environment	1	1,908,913	2,181,300	651,012	2,181,300	2,181,300	0
Flood Forecasting and Warning	2	692,104	780,300	222,473	780,300	780,300	0
Water Control Structures	3	1,570,819	1,678,900	527,584	1,678,900	1,678,900	0
Resource Planning	4	1,796,981	1,922,900	510,162	1,922,900	1,922,900	0
Forestry & Conservation Land Property Taxes	5	1,305,453	1,489,700	405,023	1,489,700	1,489,700	0
Conservation Services	6	758,769	837,500	216,275	837,500	837,500	0
Communications & Foundation	7	598,583	676,900	167,859	676,900	676,900	0
Environmental Education	8	1,224,383	1,245,800	348,777	1,245,800	1,245,800	0
Corporate Services	9	2,882,470	3,244,705	879,829	3,244,705	3,244,705	0
Conservation Lands	10	1,980,934	1,926,200	648,146	1,926,200	1,926,200	0
Property Rentals	11	1,766,373	1,797,900	421,593	1,797,900	1,797,900	0
Hydro Production	12	211,224	65,000	58,236	65,000	65,000	0
Conservation Areas	13	6,671,933	6,550,000	1,188,405	6,550,000	6,550,000	0
Miscellaneous	14	45,814	70,000	13,915	70,000	70,000	0
Information Systems	16	1,071,038	1,105,000	422,861	1,105,000	1,105,000	0
Motor Pool	16	802,874	888,400	233,424	888,400	888,400	0
Less: Internal Charges (IS & MP)	16	(1,873,912)	(1,993,400)	(656,285)	(1,993,400)	(1,993,400)	0
<b>Total OPERATING Expenses</b>		<b>23,414,753</b>	<b>24,467,105</b>	<b>6,259,289</b>	<b>24,467,105</b>	<b>24,467,105</b>	<b>0</b>
<b>CAPITAL</b>							
Water Resources Planning & Environment	1	52,167	110,000	34,167	110,000	110,000	0
Flood Forecasting and Warning	2	119,443	190,000	25,455	190,000	190,000	0
Water Control Structures	3	1,044,865	1,500,000	270,363	1,500,000	1,500,000	0
Nature Centres	8	0	0	0	0	0	0
Conservation Areas	13	771,510	683,000	199,173	683,000	683,000	0
Corporate Services	9	0	0	0	0	0	0
Information Systems	16	178,349	250,000	56,941	250,000	250,000	0
Motor Pool	16	348,660	300,000	41,011	300,000	300,000	0
Less: Internal Charges (IS & MP)	16	(478,902)	(369,600)	(331,197)	(369,600)	(369,600)	0
<b>Total Capital Expenses</b>		<b>2,036,092</b>	<b>2,663,400</b>	<b>295,913</b>	<b>2,663,400</b>	<b>2,663,400</b>	<b>0</b>
<b>SPECIAL</b>							
Water Resources Planning & Environment	1	301,587	203,000	61,569	203,000	203,000	0
Flood Forecasting and Warning	2	170,975	200,000	80,494	200,000	200,000	0
Forestry	5	80,614	200,000	47,567	200,000	200,000	0
Conservation Services	6	1,154,929	983,000	413,336	983,000	983,000	0
Communications	7	0	0	0	0	0	0
Environmental Education	8	262,426	220,000	245,414	220,000	220,000	0
Conservation Land Purchases	10	67,239	0	26,530	0	0	0
Conservation Lands	10	396,830	587,000	44,502	587,000	587,000	0
Property Development	11	0	50,000	0	50,000	50,000	0
Hydro Generation	12	0	200,000	0	200,000	200,000	0
Miscellaneous	14	29,824	35,000	788	35,000	35,000	0
Source Protection Program	15	1,159,446	835,000	624,398	1,970,000	1,970,000	0
<b>Total SPECIAL PROJECTS Expenses</b>		<b>3,623,870</b>	<b>3,513,000</b>	<b>1,544,598</b>	<b>4,648,000</b>	<b>4,648,000</b>	<b>0</b>
<b>Total Expenses</b>		<b>29,074,715</b>	<b>30,643,505</b>	<b>8,099,800</b>	<b>31,778,505</b>	<b>31,778,505</b>	<b>0</b>
<b>Gross Surplus</b>		<b>2,369,773</b>	<b>(885,232)</b>	<b>1,344,064</b>	<b>(885,232)</b>	<b>(885,232)</b>	<b>0</b>
<b>Prior Year Surplus Carryforward</b>		<b>429,618</b>	<b>315,832</b>	<b>315,832</b>	<b>315,832</b>	<b>315,832</b>	<b>0</b>
<b>Net Funding FROM/(TO) Reserves</b>		<b>(2,483,559)</b>	<b>569,400</b>	<b>0</b>	<b>569,400</b>	<b>569,400</b>	<b>0</b>
<b>NET SURPLUS</b>		<b>315,832</b>	<b>0</b>	<b>1,659,896</b>	<b>0</b>	<b>0</b>	<b>0</b>

# Grand River Conservation Authority

**Report Number:** GM-05-17-52  
**Date:** May 16, 2017  
**To:** Members of the Grand River Conservation Authority  
**Subject:** Quarterly Permit Reports – Revised Format

---

**Recommendation:**

THAT Report GM-05-17-52 Proposed Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation Permit Report Summary be received for information.

**Summary:** Not applicable

**Report:**

In 2012 the Province approved an amendment to Ontario Regulation 150/06 that enabled staff approval of GRCA permits. The approval authority for permits that conform to Board approved policy was delegated to the Chief Administrative Officer at that time. A monthly report of the approved permits has been presented to the Membership for information.

On April 28<sup>th</sup>, 2017 the General Membership passed the following motion:

“THAT the Development, Interference with Wetlands and Alterations to Shorelines reports be removed as a monthly report, and be added as a quarterly report which will include an overview of data segregated by municipality.”

The format would summarize the information provided to the membership in a quarterly report, with the number of permits issued broken down by lower tier municipality (see below). This would result in fewer reports and a more efficient permit process.

Staff are proposing quarterly reports provided the month following the quarter as follows:

<b>Quarter</b>	Jan., Feb., Mar.	Apr., May, June	July, Aug., Sept.	Oct., Nov., Dec.
<b>Board Meeting</b>	April	July	October	January

The proposed report format would contain the following information:

# Quarterly Permit Report - 2017 Q1

<b>Municipality</b>	<b>Total</b>
City of Brantford	7
City of Cambridge	17
City of Guelph	4
City of Hamilton	10
City of Kitchener	9
City of Waterloo	6
County of Brant	15
Haldimand County	12
Town of Erin	5
Town of Milton	1
Township of Amaranth	5
Township of Blandford-Blenheim	1
Township of Centre Wellington	11
Township of East Garafraxa	1
Township of Guelph-Eramosa	6
Township of Mapleton	9
Township of Melancthon	1
Township of North Dumfries	7
Township of Perth East	1
Township of Puslinch	14
Township of Southgate	1
Township of Wellesley	4
Township of Wilmot	5
Township of Woolwich	2
<b>Total permits:</b>	<b>155</b>

## **Financial implications:**

None

## **Other department considerations:**

Not applicable

## **Prepared by:**

Beth Brown  
Supervisor of Resource Planning

Fred Natolochny  
Supervisor of Resource Planning

## **Approved by:**

Nancy Davy  
Director of Resource Management

# Grand River Conservation Authority

**Report number:** GM-05-17-56  
**Date:** May 26, 2017  
**To:** Members of the Grand River Conservation Authority  
**Subject:** **Environmental Assessments**

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## **Recommendation:**

THAT Report GM-05-17-56 - Environmental Assessments be received as information.

## **Summary:**

To provide the General Membership of the Grand River Conservation Authority with information on Environmental Assessments being reviewed, a summary report is presented below. The report has been prepared as directed through Motion No. P44-99 (May 18/99) adopted through General Membership Res. No. 55-99 (May 28, 1999).

## **Report:**

Report on Environmental Assessments for May 26, 2017.

### A. New Environmental Assessments Received

New: Environmental Assessments received by the Grand River Conservation Authority and currently under review.

None for this report

### B. Classification of Reviewed Environmental Assessments

Minor: Minimal potential resource impacts that can be mitigated using conventional construction methods.

Major: Significant impacts on identified resource features. Alternatives and proposed mitigation will be outlined in detail.

## **Minor Impacts:**

### **Final Notice- Ancaster Elevated Water Reservoir, City of Hamilton**

The City of Hamilton has finalized the Ancaster Elevated Water Reservoir Schedule 'B' Class Environmental Assessment to determine the preferred location to construct an elevated water reservoir within the study area. The preferred general area for the elevated water reservoir is southwest of the Fiddler's Green Road and Garner Road intersection. Twelve sites within this general area have been identified, and final site selection will be made dependent on the outcome of additional studies and investigations. Two of the twelve sites under consideration have GRCA regulated features; however there appears to be sufficient space outside the regulated areas to construct an elevated water tower.

Major Impacts: None for this report

**Financial implications:**

Not Applicable.

**Other department considerations:**

Not Applicable.

**Prepared by:**

Beth Brown  
Supervisor of Resource Planning

**Approved by:**

Nancy Davy  
Director of Resource Management

# Grand River Conservation Authority

**Report number:** GM-05-17-51  
**Date:** May 16, 2017  
**To:** Management Committee /GRCA Board May 26, 2017  
**Subject:** Grand River Water Management Plan: 2016 Report on Actions

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## **Recommendation:**

THAT report GM-05-17-51 - Grand River Water Management Plan: 2016 Report on Actions be received as information.

## **Summary:**

N/A

## **Report:**

The Grand River Water Management Plan as endorsed in 2014. The Plan compiles actions from 14 partners that will advance efforts to achieve the following goals:

1. Improve water quality to improve river health and reduce the river's impact on Lake Erie.
2. Ensure water supplies for communities, economies and ecosystems
3. Reduce flood damage potential
4. Build resilience to deal with climate change.

Partners include municipalities of the Grand River watershed, three provincial ministries, one federal department and the Six Nations of the Grand River Territory.

Since 2014, members of the Water Managers Working Group – a committee of senior staff representing partner organizations, meet quarterly to share their progress of implementing the actions identified in the Plan. Every year, the Water Managers Working Group prepares a “*Report on Actions*” that summarizes completed actions implemented by partners and tracks the progress of Plan Implementation.

The “*Report on Actions*” is presented to the Grand River Implementation Committee – a committee of executive staff from partner organizations who champion the plan in the respective organizations, address barriers to implementation and advocate for continuous improvement to achieve the goals of the Plan. This year, the Implementation Committee met on May 2, 2017, reviewed and approved the report.

Attached is the annual report for 2016.

## **Financial implications:**

In 2016, expenses of \$82,000 were incurred for consulting services (\$68,000) and staff costs (\$14,000) related to implementing the Water Management Plan. External funding was received from Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) (\$60,000) and

Environment and Climate Change Canada (\$22,000). The OMAFRA Funding was in support of a pilot project to apply a soil erosion prediction tool in Ontario and Environment and Climate Change Canada funding was for general support of the plan.

**Other department considerations:**

Staff from the Engineering and Resource Management Divisions, and Geomatics Departments work together to advance the actions in the Plan on behalf of GRCA.

**Prepared by:**

Sandra Cooke

Senior Water Quality Supervisor

Attachments: 2016 Report on Actions

REGIONAL MUNICIPALITY OF WATERLOO  
Elmira  
Guelph  
Rockwood  
Eramosa River  
Guelph Lake  
WATERLOO  
GUELPH

# An **ACTION** Plan for the Grand

## 2016 Report on *Actions*





## Partners

Municipalities of the Grand River watershed including:

- Township of Centre Wellington
- City of Guelph
- Regional Municipality of Waterloo
- City of Waterloo
- City of Kitchener
- City of Cambridge
- County of Brant
- Oxford County
- City of Brantford
- Haldimand County

Six Nations of the Grand River

Grand River Conservation Authority

Ministry of the Environment and Climate Change

Ministry of Natural Resources and Forestry

Ministry of Agriculture, Food and Rural Affairs

Environment and Climate Change Canada

The **Water Managers Working Group**, a committee of senior staff from partner organizations, prepares this progress report annually and presents it to the **Grand River Implementation Committee** – an Executive Committee who oversees the progress of implementing the actions in the Grand River Water Management Plan.

May 2017

## Contents

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## Summary

The *2016 Report on Actions* marks the third progress report summarizing the status of partner actions since the Plan was endorsed in 2014. Implementation continues with most partners continuing to meet quarterly to share their progress of implementing their actions.

Emphasis was on updating floodplain mapping and modelling tools – two very important adaptation strategies to ensure preparedness for extreme events. In February, researchers from the **University of Waterloo** highlighted research that illustrated increased frequency of weather extremes and the need to adapt to the changing conditions.

Stormwater management was highlighted in 2016 with a great deal of planning and work undertaken at the local municipal level in **Kitchener, Waterloo, Cambridge, and Guelph**. Evaluating actions for reducing both nonpoint sources and point sources to ensure water quality was a focus in April.

September's meeting was the annual joint meeting of policy planners and water managers. **Municipal Affairs** attended the meeting to get feedback on the coordinated review of Provincial Plans.

Securing water supplies was highlighted at the December meeting. Tier III water budgets for the **Region of Waterloo** and **Guelph** area have provided a great deal of technical information for decision-making to ensure future water supplies.

Population growth and development pressures continue especially in the headwater region: **Centre Wellington** is continuing to see rapid development while **Mapleton, Wellington North** and **Southgate** all have projects underway to determine how to expand their wastewater treatment plants. A new wastewater treatment plant is also being reviewed in the headwaters and **Brant County** and **Brantford** finalized their municipal boundaries.

### Water Management Plan Goals:

1. Improve water quality
2. Ensure Water Supplies
3. Reduce Flood Damages
4. Build Resilience to deal with climate change

## Collaboration & Partnerships

Water Managers continued to meet quarterly in 2016. Municipal policy planners and the Ministry of Municipal Affairs joined water managers in September for the annual joint meeting.

Many watershed issues require a collaborative effort to understand and develop best value solutions. The contribution of nutrients and sediment to the central Grand River region is one of these issues. To address this, the cities of **Kitchener, Waterloo, Region of Waterloo, GRCA,** and the **University of Waterloo** collaborated on a study evaluating existing monitoring efforts to determine whether contributing areas can be identified. Another key outcome of this work was the need to integrate monitoring efforts better to use existing data and effort more efficiently.

**ECCC** provided some project funding to the **GRCA** to continue to facilitate the implementation of the Water Management Plan and to ensure alignment with the Lake Erie Lakewide Action and Management Plan.

## A Changing Climate

2016 was a moderate to severe low water year. Precipitation was low and evaporation was high but sufficient groundwater levels helped to add flow to the rivers. It was the first year of significant low water conditions since the Drought Contingency plan was written in 2014.

Reservoirs were used extensively to augment river flows in the summer considering the hot and dry conditions. Generally, low flow targets were met during the summer – the most sensitive time for aquatic life. River low flow targets were not met during the fall as water was being held back to ensure supplies over the winter months.

Proactive water management and conservation programs have built resiliency in the watershed to handle low water conditions. Municipal water conservation bylaws (e.g. outdoor lawn watering) have helped to reduce the peak water use during the summer period.

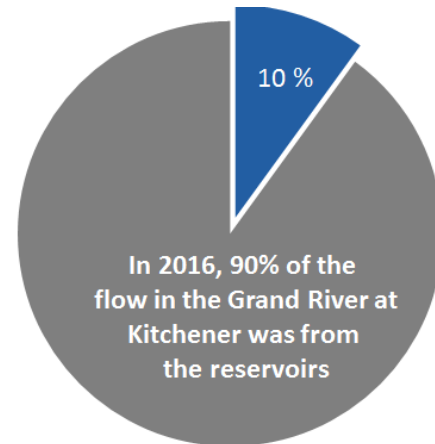
## Planning for Extremes

Flood mitigation requires solid policies to protect life and property. Special policy areas are being reviewed in downtown **Waterloo** (Laurel Creek) and **Cambridge** (Groff Mill Creek) for managing risk.

**MOECC** continues to maintain and improve an inventory of water taking permits and actual water use across the province. Work continues on the Grand River Tier III Water Budget which has the potential to inform permitting.

**MNRF** provided funding to **GRCA** to complete pilot projects to test new technologies and approaches to deliver floodplain mapping. These pilot projects will create base mapping used to define the extent of flooding to better assess flood risk and to adapt the United States Army Corps of Engineers hydrology and forecasting models for use in Ontario.

Water management reservoirs provided much of the flow in the Grand River in the summer of 2016



Safety studies and routine maintenance on **GRCA** dams is an on-going commitment. **GRCA** completed **19** cost-shared projects in 2016 to ensure dams are safe and functioning properly. **GRCA** in consultation with **MNRF** finalized a Dam Safety review investigating the ability of the Conestogo Dam to pass the inflow design flood. A significant outcome of this study was the determination that an emergency spillway at Conestogo Reservoir is not required at this time.

**Waterloo** with support from the **GRCA** is updating floodplain mapping along Laurel Creek. **GRCA** initiated the Laurel Creek Dam Safety Review to align with the city's floodplain mapping study to be efficient. New approaches were used to update the hydrology upstream of Laurel Creek Dam to better reflect water storage on the landscape. **MNRF** provided funding to the University of Waterloo's Intact Centre to estimate the economic value of wetlands in the Laurel Creek watershed.



**GRCA** completed an update to the surface hydrology layer for the entire watershed – over 10,000 km of streams were mapped. This data layer is the foundation for managing water as it provides the basis for updating the regulation limit mapping for planning for flood hazard identification and improves our ability to model watershed processes like runoff (e.g. erosion processes) and groundwater recharge (e.g. Identifying closed drainage).

**OMAFRA** commissioned LiDAR (Light Detection and Ranging imagery) for the Lake Erie basin. This technology allows for the creation of Digital Elevation Models that can then support integrated landscape-hydrology modelling.

**OMAFRA** and **GRCA** worked together to pilot a soil erosion prediction tool “SoilCalculator” to estimate in-field field erosion. **GRCA** worked with **University of Waterloo** researchers to identify landscape and in-river erosion for Fairchild’s Creek. These tools will help to identify areas that would benefit from best management practices.

**ECCC**, on behalf of Canada, and the U.S. have adopted a 40% phosphorus reduction target for the tributaries draining to the western and central basins of Lake Erie. Due to the complexity of the eastern basin nearshore ecosystem, a target has not been set for the eastern basin.

**MOECC** continues to monitor two research sites in the Grand River Watershed (Larches Creek and Smith Creek) for the Multi-Watershed Nutrient Study. The **GRCA** and the **MOECC** continue to partner on collecting long-term ambient water quality data at 37 sites across the watershed. The **Region of Waterloo** continues to monitor the Grand, Speed and Nith Rivers above and below their wastewater treatment plants to measure the progress of investing millions of dollars to improve wastewater treatment.

**Kitchener** and **Waterloo** are working with the **MOECC** on the beneficial reuse of sediment captured in stormwater management ponds.

### Urban stream restoration builds resilience



*“Rehabilitation of Clair Creek builds resilience to deal with extreme events”  
Jessica Kellerman, City of Waterloo*

As part of **Kitchener’s** new Integrated Stormwater Management Master Plan, revised monitoring recommendations were made to ensure that the objectives of the master plan are achieved.

**Waterloo** is refocusing the Laurel Creek monitoring program to address stormwater performance. Both **Kitchener** and **Waterloo** continue to monitor high profile stream restoration projects (Forwell, Clair, and Filsinger creeks). **Brantford** expanded rainfall and stormwater flow monitoring to support a future update to their Master Plan.

**Region of Waterloo** completed their Water Supply Master Plan and is now implementing the Strange and William Streets Environmental Assessment that combines two groundwater systems together at one treatment plant to build flexibility and reliability in the water supply system. Further, the **Cambridge** Environmental Assessment will build on the Master Plan recommendations to bring the **Cambridge** East Water Treatment Plants to full capacity providing redundancy within the Cambridge water supply system.

**MOECC** is contributing to the Great Lakes Nearshore Framework and is supporting **ECCC** in developing a research plan for understanding *Cladophora* growth in the eastern basin of Lake Erie. The Lake Erie Action Plan should be final by 2018.

New stormwater targets set in **Kitchener** for include a volumetric target of **12.5 mm** and enhanced water quality requirements. **Waterloo** completed a SWM Pond assessment study and has started cleaning out priority ponds.

**Centre Wellington** is replacing the Elora mill street sewage pumping station to improve the operation of the station to safeguard against by-pass events to the Grand River.

**Waterloo** and **Guelph** are using new mobile devices and technology to improve annual stormwater inspections. This helps to streamlined data capture for better decision making.

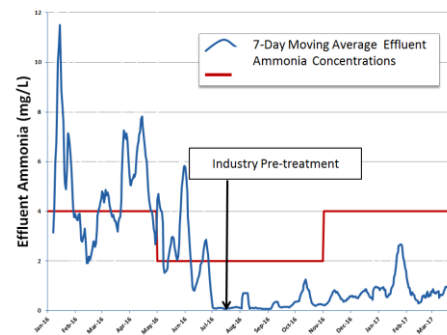
## Building Resilience

**GRCA** continued the development of the Grand River Watershed Natural Heritage Systems Framework in 2016. Much of the southern Grand River region is complete.

The Conservation Authorities Act has specific regulations for protecting land in or near rivers, streams, ponds, wetlands, steep slopes, floodplains and the Lake Erie shoreline to help reduce damages from flooding or erosion. In 2016, **GRCA** reviewed **291** permits for construction in and around wetlands while they reviewed **187** floodplain permits.

**OMAFRA** launched the development of an Agricultural Soil Health and Conservation Strategy with a discussion paper on soil health and how it is linked to climate change, water quality and water quantity.

### Effective sewer use bylaws help stabilize effluent quality in Brantford



*“Through enhanced process control, good data collection and an effective sewer use bylaw, we have been able to have better control of ammonia in our final effluent”*

**Tim Howarth, City of Brantford**

Investing in people enhances skills and improves operations. Improved process control in many wastewater treatment plants have improved effluent quality and deferred substantial capital costs. **Southgate Township, Wellington North, Centre Wellington, Region of Waterloo, Guelph, County of Brant, Oxford County, Brantford, and Haldimand County** all continue to participate in the Watershed-wide Wastewater Optimization community of practice.

The wastewater treatment plant upgrades provided the **Region of Waterloo** an opportunity to build resilience into infrastructure and re-engineer the effluent pumping stations to accommodate anticipated higher peak flows in the river. They elevated the aeration building, motor control and electrical systems at Kitchener WWTP for flood proofing.

**Region of Waterloo** is working on several pilots to optimize chemical addition to improve performance at the Galt WWTP related to phosphorus removal, tertiary filter performance and biosolids management. Another study is testing new technology to improve the secondary treatment and increase treatment capacity.

**Brant, Region of Waterloo, and Centre Wellington** continue to participate in Performance Based Training facilitated by the **MOECC** to achieve improved effluent quality at the Paris, Hespeler and Elora WWTPs, respectively. Four modules were held that covered process control, quantifying performance potential, and sludge treatment and handling.

**MNRF** advanced work in the middle Grand River, from Breslau to Freeport, to determine Best Bets for enhancing aquatic habitat. Re-engineering river form may help to enhance the functions that the river provides for fish and other aquatic organisms. It may also help to improve the river's assimilative capacity.

Research on the southern Grand River by **MNRF** has highlighted the decreasing trend of the walleye population. Current methods for maintaining the population such as the hand transfer of fish over the Dunnville Dam, have limited effectiveness.

**Grand River Fish Management Plan Implementation Committee** continued work to prioritize 18 GRCA-owned dams, weirs and fishways for further study to determine whether modification or removal would help support building in-river resilience.

**Kitchener** collaborated with REEP Green Solutions to educate, promote and transform two residential neighbourhoods through the Rain Smart Neighbourhoods Project. This project has already inspired multiple residential property owners to implement best practices for stormwater management.

### Best Practices in wastewater treatment



*“Wastewater Operators, who are knowledgeable and are empowered to make data-based process decisions mitigate risk of [plant] process failure”*

*Tim Robertson, City of Guelph*

The **Guelph** and **Region of Waterloo** continue to improve their water efficiency and actively manage water demand through various conservation programs to meet future reduction goals of **138** and **165** litres per person per day respectively. The **Region of Waterloo** also has a certification program for restaurants and businesses to reduce water consumption.

**Guelph's** Water Loss Mitigation Strategy will help reduce water loss through the distribution system – reducing water loss is a huge ‘gain’ for ensuring water supplies. Similarly, **Waterloo** has started their “Smart Metering” where they can quickly identify leaks for maintenance. **Centre Wellington** is also working on a leak detection project to help advance conservation efforts.

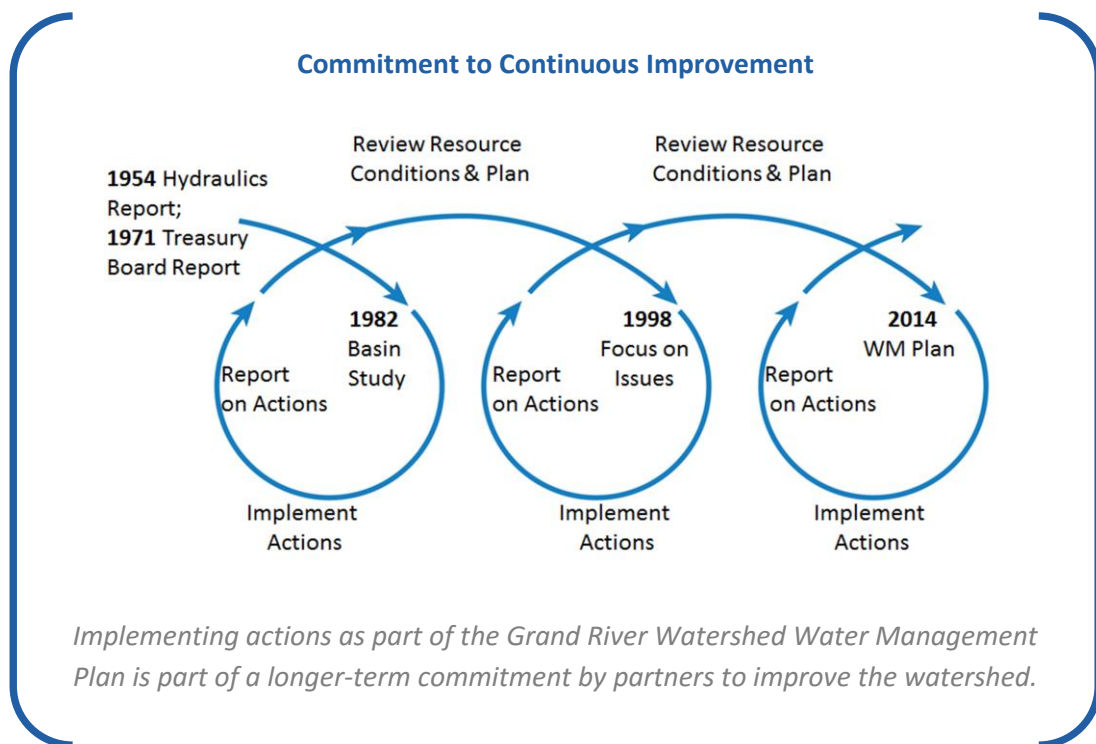
**Guelph** is continuing to pilot Annamox to deal with high ammonia from biosolids dewatering with success.

## Continuous Improvement

Many of the actions in the Plan are underway. Moving water management forward is about balancing priorities and seizing opportunities when funding and capacity are available. Some actions are not scheduled to start until 2019 such as a review of the reservoir operating policy or undertaking a comprehensive watershed conditions report. As water management activities in the watershed continue by all Plan partners, it is important to ensure that we share information and build on the best practices that have already started.

The following highlights the major activities over the next 2-3 years:

- **MOECC** will be moving forward with the Low Impact Development Guidelines in 2017
- **Guelph** is to update wastewater master plan in 2017-18
- **Waterloo** to update SWM Master Plan in 2017
- **Region of Waterloo** continues to upgrade the Kitchener wastewater treatment plant with the construction of new aeration tanks and secondary clarifiers and a new tertiary filter process by 2018
- **Centre Wellington** to start a Water Supply Master Plan in 2017 and to be completed by 2018
- **Region of Waterloo** is planning to upgrade the Waterloo WWTP aeration tank in 2018 to support nitrification.
- **GRCA** will help to facilitate the completion of the Watershed Conditions report for 2019 to evaluate the progress toward achieving the Plan’s goals
- **ECCC, AAFC, MOECC, OMAFRA and MNRF** will be finalizing the Domestic Action plan for reducing phosphorus to Lake Erie in 2018





## Summary of Progress

### Partnerships and Collaboration

- A.1. Ongoing support for the Water Managers Working Group and
- A.2. Reporting on Actions and Watershed Conditions
- A.3. Plan Review

### Framework for Integrated Water Management

- B1. Ensuring the linkage of the Water Management Plan with other Watershed-based plans
- B.2 Establishing and reviewing water management indicators and targets

### Ensuring Water Supplies

- C.1. Water supply master planning
- C.2. Water demand management
- C.3. Securing water supplies
- C.4. Agricultural water use
- C.5. Reservoir operations to maintain operational targets
- C.6. Reservoir operations for adapting to a changing climate
- C.7. Reservoir operations to maintain waste assimilation targets (7Q20)
- C.8. Reviewing permits to take water on the regulated river
- C.9. Verification of environmental flows
- C.10. Creating a groundwater-surface water working groups
- C.11. Improving understanding of groundwater resources
- C.12. Local water management plans in areas of conflict
- C.13. Creating and maintaining a drought contingency plan

### Improving Water Quality

- D.1. Upgrading wastewater treatment plants
- D.2. Wastewater treatment plant optimization and best practices
- D.3. Effective sewer use bylaws
- D.4. Best practices for spill prevention and reporting.
- D.5. Maintaining the Grand River Simulation Model for cumulative effects assessment
- D.6. Subwatershed or regional assessments for managing water quality and quantity
- D.7. Maintain and enhance the rural water quality program to promote/implement best practices
- D.8. Managing nitrogen to reduce increasing nitrate levels
- D.9. Promoting best practices for municipal drains
- D.10. Promoting best practices for urban stormwater
- D.11. Managing road salt and water softeners to reduce increasing levels of chloride
- D.12. Continue to monitor and evaluate pathogens in the Grand River
- D.13. Evaluate options for improving the southern Grand River
- D.14. Evaluating small dams and on-line weirs for water quality improvements
- D.15. Data collection for improved decision making

### Reducing Flood Damages

- E.1. Dam and dyke safety studies to ensure flood control infrastructure
- E.2. Major system assessments for stormwater systems.
- E.3. Update and improve floodplain mapping in flood damage centres
- E.4. Flood inundation mapping for developing vulnerable structures database
- E.5. Reliable flood communication systems
- E.6. Continuous improvement of flood forecasting and decision support tools
- E.7. Maintaining an emergency communications framework
- E.8. Reducing flood damage potential in vulnerable communities
- E.9. Reducing flood damages due to ice

### Next Steps

- Maintain a venue to advance discussion on new, innovative water management approaches

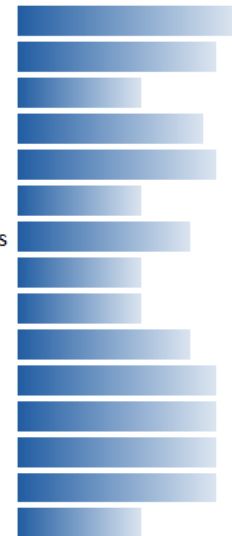
Progress  
0 -----100%



to start in 2019



to start in 2019



# Grand River Conservation Authority

**Report number:** GM-05-17-59  
**Date:** May 26, 2017  
**To:** Members of the Grand River Conservation Authority  
**Subject:** Beach Management in GRCA Conservation Areas

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## **Recommendation:**

THAT Report GM-05-17-59 – Beach Management in GRCA Conservation Areas be received as information.

## **Report:**

The Grand River Conservation Authority (GRCA) operates nine beaches at eight Conservation Areas. These parks are in three public health regions – Wellington-Dufferin-Guelph, Region of Waterloo and Brant Public Health Units (PHUs). Historically, GRCA and the PHUs worked together to sample beaches according to the Ministry of Health and Long-Term Care's Ontario Public Health Standards (OPHS) and the Recreational Water Protocols (2014, 2016).

In April, the Region of Waterloo and Wellington-Dufferin-Guelph Public Health Units (PHU) met with GRCA staff to discuss and review the management of the beaches at Grand River Conservation Authority conservation areas. As part of a review of activities, PHU staff at all three Public Health Units in the watershed have decided to stop sampling GRCA beaches which is based on three important considerations:

1. Water quality in natural water bodies can be highly variable due to weather conditions (rain, wind etc). Consequently, PHU staff do not support the current approach of sampling beaches as it does not provide timely public health information for GRCA beach users; the decision to post or not to post the beach by signage, is based on bacteriological sampling conducted 24-48 hours prior to when the decision is made and therefore, the
2. Current approach for posting a notice at the beach is not timely public information; and
3. Upon review of the OPHS Recreation Water Protocol, 2016, a public beach is defined as a public bathing area owned and operated by a municipality to which the general public has access. GRCA beaches do not constitute a municipal public beach as defined by the OPHS protocols;

GRCA takes the health and safety of park patrons seriously. This review is an opportunity for GRCA to review the beach program and improve the effectiveness of public safety and awareness.

GRCA staff recommend that a proactive education and awareness campaign will enable park patrons to evaluate whether or not to participate in swimming in natural water bodies in GRCA parks.

GRCA staff agree with PHU staff's rationale for not supporting the current sampling and notification approach and recommend that the following preliminary steps be taken to proactively educate patrons of risks associated with swimming in natural water bodies:

1. PHUs will develop appropriate messaging to ensure the public is educated on the proposed changes. GRCA staff will work with PHU staff to develop a communications strategy, including permanent signage and key messages, that will help patrons better understand observed beach conditions as well as informing them of the risk associated with swimming in natural water bodies;
2. GRCA Park staff to continue to do daily beach inspections to identify and eliminate any hazards / issues that may cause water quality problems. This information will be logged as due-diligence to ensuring a clean beach.

The PHUs are the lead agencies with respect to public health. The ROW, WDG and Brant PHUs have committed to maintaining a strong working relationship with GRCA and will continue to take the lead in assessing public health matters.

A follow-up report on beach management will be prepared for the June GRCA General membership meeting that will include a summary of the communications strategy.

**Financial implications:**

There will be cost reductions associated with eliminating sampling offset by expenses incurred to create new signage at beaches. There will be reduced staff time associated with collecting samples offset by increased staff time to monitor the beaches. Cost implications will be discussed in more detail in the full report in June.

**Other department considerations:**

Operational changes are expected at the conservation area which will include increase surveillance and housing keeping associated with the beaches. New signage will need to be erected at each of the beaches.

**Prepared by:**

Sandra Cooke  
Senior Water Quality Supervisor

**Approved by:**

Dwight Boyd, P. Eng.  
Director of Engineering

# Grand River Conservation Authority

**Report number:** GM-05-17-53  
**Date:** May 26, 2017  
**To:** Members of the Grand River Conservation Authority  
**Subject:** Grand Trails Project Update

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## **Recommendation:**

THAT report GM-05-17-53 – Grand Trails Project Update be received as information.

## **Summary:**

A local group of interested citizens are promoting the idea of a “Grand Trail” along the entire length of the Grand River. The group has been meeting with local municipalities to obtain their support and are proceeding towards incorporation as a not-for-profit organization. A portion of the future trail would follow existing rail trails owned by the GRCA. This project aligns with several of the GRCA Strategic Objectives and could have long-term benefits for the GRCA through enhanced recreational and educational opportunities.

## **Report:**

In June 2015 staff presented a report to the General Membership regarding the establishment of a “Grand River Trail” which would be an interconnected, multi-use pathway following the Grand River from the source to the mouth. To date, involvement in the Grand Trails Project has included representatives from local municipalities, Regional Tourism Offices, Ontario Tourism, Six Nations, trail clubs, outfitters, members of the general public and the GRCA. The purpose of this report is to update the General Membership on the status of the Grand Trails Project and to highlight how the project fits with the goals of the Grand River Conservation Authority.

The work of the Grand Trails Project is being done through a volunteer steering committee. Recently that committee developed a vision statement, values statement and project description.

### ***Vision Statement***

The Grand Trails project will connect people and communities through heritage, cultural and outdoor experiences in the Grand River watershed.

### ***Value Statements***

- Develop the Grand River Watershed as a living storybook of adventure by partnering with all stakeholders to re-connect people and communities with the Grand River and each other, through intertwining trails on and off the river.
- Be inclusive of everyone and accessible to people of all ages, interests and abilities in all seasons.
- Encourage community-focused cultural, heritage, educational, athletic and spiritual events on and around the river, acknowledging Indigenous connections with the river.
- Encourage people to live in harmony with the environment by allowing people to interact with nature and educating them about the ecological diversity of the watershed.
- Encourage research into the heritage and ecology of the watershed.

### ***Project Description***

The Grand Trails project will form a network of interconnected trails following the Grand River and its tributaries – a designated Canadian Heritage River – from the source in the Dundalk Highlands to the mouth of the river at Lake Erie. The network will include existing and new, land and water trails, to form a truly unique recreational experience. It will include appropriately accessible and serviced destination and experiential trails which will connect communities, places of interest and activities. The network will also provide connections to Lake Ontario, Lake Huron and Georgian Bay via other major regional trails in line with the Ontario Trails Strategy.

The role of the Grand Trails Project group is to promote a common vision for the trail amongst the municipalities through which it would run. It is recognized that that the fulfillment of the trail vision is not possible without the involvement of the local municipalities. As a result, the steering committee held meetings with senior municipal staff, to gauge the reaction to the proposal and to get advice on how to engage municipalities in the project. Municipal staff were overwhelmingly positive in their response and encouraged the steering committee to present the project to municipal councils.

Presentations have been made to the following councils, aimed at receiving council endorsement in principle for the project and permission for municipal staff to participate in the discussions:

- County of Haldimand – Council endorsed
- Six Nations of the Grand – Council endorsed
- County of Brant – Council endorsed
- City of Brantford – Council endorsed
- Region of Waterloo – Presentation scheduled for June 1, 2017
- City of Cambridge – Council endorsed
- City of Kitchener – Committee endorsed; Council presentation on May 29<sup>th</sup>
- City of Waterloo – Council endorsed

- Township of Southgate – Council deferred vote; Approved staff participation

The steering committee is now in the process of having letters patent and bylaws prepared in order to establish a not - for-profit organization. The intention is to formalize the organization of the group and then pursue seed funding for feasibility studies and the preparation of a formal project proposal.

The GRCA’s involvement in this project is as a landowner (77 km of rail trail) and as the single organization with ties to all municipalities across the watershed. The vision and values of the Grand Trails Project align very well with several of the GRCA Strategic Objectives, most notably:

- Strategic Objective 3: Connect people with the environment through outdoor experiences
- Strategic Objective 5: Deliver value and innovation to our watershed stakeholders
  - Strategic Priority - “Support municipalities to develop stronger links between their communities, the river system and GRCA conservation areas, and to encourage municipalities to improve river-related links (such as trails) between communities”.

A fully developed, multi-use trail along the Grand River would provide a recreational linkage between GRCA conservation areas and other areas of tourism interest. This could allow for a broader range of recreation and environmental education opportunities which would enhance the experience for GRCA park users and provide more expose to the conservation areas.

**Financial implications:**

To date the GRCA has been supporting the Grand Trails Project by providing meeting space and some technical support. It is not anticipated that the Grand Trails Project will be seeking any financial support from the GRCA.

**Other department considerations:**

None.

**Prepared by:**

**Dave Bennett**  
**Director of Operations**

**Approved by:**

**Joe Farwell**  
**Chief Administrative Officer**

# Grand River Conservation Authority

**Report number:** GM-05-17-58  
**Date:** May 26, 2017  
**To:** Members of the Grand River Conservation Authority  
**Subject:** Parkhill Dam Hydro Project Update

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## **Recommendation:**

THAT Report No. GM-05-17-58 – Parkhill Dam Hydro Project Update be received as information.

## **Report:**

In February of this year, the board approved the proposal from WSP Consultants to enter into agreement for the Environmental Assessment and Design of the Parkhill Dam Hydro Plant. The proposal includes five phases of engineering services summarized below:

- Phase 1 – Background review and update of the conceptual design prepared by Genivar Consultants in 2012.
- Phase 2 – Background data review, identification of data gaps and design of plan to collect additional field data and information required to support the Class Environment Assessment (EA) for Water Power projects.
- Phase 3 – Completion of the EA for water power projects and approvals for development of a small hydro power project at Parkhill Dam.
- Phase 4 – Detailed design, approvals, tender specifications and plans to construct a new hydro plant at the Parkhill Hydro site.
- Phase 5 – Assistance with tendering, review of tenders through to award of contracts.

Phase 1 was completed earlier this year. During this phase, WSP reviewed previous studies by Acres and Genivar. The general layout design plans were revised to reduce the number of turbines from two to one and the building height was reduced to not exceed the top of the existing flood wall.

Phase 2 is currently underway, existing data has been reviewed and field surveys scheduled to obtain additional aquatic information near the site.

Prior to initiating the EA, WSP staff recommended GRCA complete pre-consultation meetings with potential affected stakeholders. Pre-consultation meetings or communication have been held with the following stakeholders:

- Regulating agencies (MNR, MOECC)
- Six Nations of the Grand River
- City of Cambridge
- Fisheries Management Plan Implementation Committee
- Cambridge Mill owners
- Owner of 20 Hobson Street, Cambridge (location of Napa Grille restaurant)
- Energy Plus (Cambridge)

The pre-consultation meetings provide information about the project and to advise stakeholders that an EA is about to start. Pre-consultation creates awareness so that stakeholders are not surprised by the notice to commence an EA.

Pre-consultation meetings will be held with the Mississaugas of the New Credit First Nation, City of Cambridge Planning & Development Committee, and the Cambridge Municipal Heritage Advisory Committee prior to the first public information centre.

WSP has completed the project description report to be circulated to the agencies, and a communication plan that details the timing and content for notifications for the EA.

The formal announcement of the EA is scheduled to take place the last week of May or first week of June, 2017. The GRCA is responsible for advertising in local media and creating a project web page; information about the project will be displayed on the web page. An email account has been created for this project to receive and organize comments and feedback. The project email address is [parkhill@grandriver.ca](mailto:parkhill@grandriver.ca).

The first Public Information Centre (PIC) meeting is being organized for Tuesday, June 27<sup>th</sup> from 3 to 8 pm at the Cambridge Mill in the Falls room.

The project schedule includes a second public meeting in September and a third public meeting in November. Depending on feedback from the public and reviews by government agencies, the EA for this project may be ready to file with MOECC in early 2018.

### **Financial implications:**

Work described in the above is part of the consultant proposal presented in board report GM-02-17-30 approved on February 24, 2017. Local advertising and the venue for the public meeting are separate costs from the consultant proposal. The Parkhill hydro project will be financed from land sale reserves. The Parkhill hydro budget for 2017 is \$200,000.

### **Other department considerations:**

Not applicable.

### **Prepared by:**

Naomi Moore  
Water Resources Project Coordinator

### **Approved by:**

Dwight Boyd, P. Eng.  
Director of Engineering



# Grand River Conservation Authority

**Report number:** GM-05-17-57  
**Date:** May 26, 2017  
**To:** Members of the Grand River Conservation Authority  
**Subject:** Current Watershed Conditions as of May 17, 2017

## **Recommendation:**

THAT Report GM-05-17-57 – Current Watershed Conditions as of May 17, 2017 be received as information.

## **Report:**

### **Precipitation**

Precipitation in the first 17 days of May has surpassed the long term average precipitation for the entire month. Most of the watershed climate stations recorded a month’s worth of rain in the first week of May. Much of the precipitation occurred over a 3 day period, May 3 -5, when a slow moving weather system delivered high amounts of rain to most of Southern Ontario. Rain gauges in the Grand River watershed recorded between 60 and 75mm of rain during this period.

April was also a wet month, with all of the watershed climate stations recording well over the normal monthly precipitation. Precipitation throughout the spring period has been fairly uniform over the watershed with low intensity soaking rains rather than high intensity storm events.

Monthly precipitation at the Shand Dam and Shades Mill climate stations from 2012 to 2017 are shown in Figures 1 and 2. Table 1 includes monthly and recent precipitation trends for watershed climate stations.

**Table 1: Precipitation Averages at Watershed Climate Stations**

Reservoir	Monthly Precipitation		Percentage of Long Term Average					
	17-May (mm)	Long Term Average (mm)	Current Month	Last Full Month	Last Full Three Months	Last Full Six Months	Last Full Twelve Months	Last Full Fifteen Months
Shand	83.6	79.5	105%	137%	129%	137%	107%	113%
Conestogo	85.2	82.0	104%	140%	125%	121%	99%	106%
Guelph	100.7	75.2	134%	167%	159%	147%	112%	117%
Luther	95.4	74.0	129%	154%	131%	127%	99%	108%
Woolwich	75.8	70.1	108%	167%	139%	129%	102%	109%
Laurel	93.4	80.4	116%	156%	128%	134%	107%	113%
Shades	87.2	75.4	116%	161%	150%	140%	117%	119%
Brantford	70.4	75.9	93%	149%	149%	118%	93%	101%

## **Air Temperatures**

Temperatures in May to date have been cool. The average air temperature in the first half of May was 7.9 degrees at the Shand Dam climate station, which is about 3.0 degrees cooler than normal for this time of year and almost the same average temperature as the month of April.

April temperatures were warmer than normal with an average temperature of 7.8 degrees. The climate station at Shand Dam recorded two days in April over 20 degrees, but most daily high temperatures were in the low teens. Daily low temperatures ranged from a high of 11 to a low of -2.5 degrees.

Figure 3 presents recent mean monthly air temperature departures from normal recorded at Shand Dam.

## **Lake Erie Conditions**

The level of Lake Erie continues to be well above the long term average. The average lake level for the first half of April was 174.77m, which is the highest average lake level since 1998. Forecast water levels for Lake Erie from May 1<sup>st</sup> show that the lake level is following the higher forecast with levels predicted to continue to climb for the next couple of months.

Figure 4 presents current and forecast Lake Erie level from the Canadian Hydrographic Service.

## **Reservoir Conditions**

Water levels in the four large reservoirs are in their normal operating ranges. High precipitation this spring has provided more than enough water to fill the reservoirs.

The reservoirs were actively operated during the large rainfall event the first week of May. Prior to the event, excess water was released from the reservoirs to ensure storage was available to manage high flows. As the event progressed discharges were adjusted to balance levels in the reservoirs and flows downstream.

Reservoir levels for 2017 are shown in Figures 5 and 6 for Shand Dam, Conestogo Dam, Guelph Dam, and Luther Dam.

## **Long Range Outlook**

Environment Canada's seasonal forecast is predicting near normal temperatures for southern Ontario for the next 3 months including May. Precipitation is also forecast to be near normal for the May to July period for Southern Ontario.

## **Flood Operations Centre Activities**

The Flood Operations Centre was very active in the first half of May. A total of three flood messages were issued in the first week of May.

On May 3<sup>rd</sup> a flood watch message was issued in anticipation of a large rainfall event that was forecast to deliver between 50 and 75mm of rain to the watershed. The flood watch was upgraded to a flood warning with a combined message issued on May 5<sup>th</sup>. High water levels resulted in the closing of low level bridges in St. Jacobs and Cambridge, and a warning for potential flooding in New Hamburg, Ayr and for several seasonal trailer parks along the main Grand River. A combined flood termination and water safety message was issued on May 8<sup>th</sup> as water levels were receding throughout the watershed.

The reservoirs were actively managed during the event to reduce peak flows in reaches downstream of the large reservoirs. Although there is reduced flood storage available in the reservoirs this time of year, the limited storage was used to reduce peak flows by up to 30% directly downstream of the reservoirs. Peak flows along the central Grand River were reduced by about 20% and in the southern Grand River by about 15%.

Leading up to the May 3<sup>rd</sup> to 5<sup>th</sup> event many comparisons were made to the May 1974 flood. While conditions leading up to the recent event were similar in that the watershed was saturated and weather forecasts call for 75 to 100 mm of rain, much has changed since 1974 to improve preparedness.

The inquiry into the 1974 flood provided 21 recommendations, all of which have been implemented. One of the most important recommendations from the 1974 flood inquiry was the review of the reservoir operating policy. The reservoir operating policy was revised after the 1974 flood inquiry to define specific available flood control storage amounts for April 1<sup>st</sup>, May 1<sup>st</sup> and June 1<sup>st</sup> for the large dams operated by GRCA. This change to the operating policy creates a balance between competing reservoir objectives to provide flood control and low flow augmentation.

Since 1974, real-time monitoring, real-time flood forecasting, improved delivery of flood warning messages, improved weather forecasts, construction of the Guelph Dam, Bridgeport dykes, Cambridge dykes and Brantford dykes and continued regulation of development in floodplains have all contributed to reducing the risk of flooding today compared to May 1974.

GRCA staff meets annually with municipal flood co-ordinators, police and other agencies to review roles and responsibilities and to receive input on how to further improve the flood warning system.

Our dam and dyke safety program ensure the dams and dykes are properly maintained and ready to manage large flood events.

The improved weather forecasts available today and for this past event allow decisions to be made early and allowed tracking of the weather event. Weather radar was not available in 1974. Many of the weather forecasts leading up to the recent event quoted the potential 75 to 100 mm rainfall totals; this tended to create some confusion. These totals were spread over a 3 to 4 day period; intense local thunderstorms were not forecast as part of the event. This differed from the rainfall event that triggered the 1974 flood – although forecast totals were similar, the 1974 rainfall event occurred over several hours, not days, and included intense thunderstorms.

On Monday May 1<sup>st</sup> reservoir discharges were increased from the large dams immediately following the Monday rainfall event. The weather forecasts for May 3<sup>rd</sup> thru May 6<sup>th</sup> were closely monitored. Discharges from the large dams were held higher than normal through to the morning of Thursday May 4<sup>th</sup>. The higher than normal discharges leading up to May 4<sup>th</sup> created available reservoir storage needed to manage May 3<sup>rd</sup> to 6<sup>th</sup> event. Reservoir discharges were reduced on Thursday May 4<sup>th</sup>, reducing discharges that morning created space in the river downstream of the dams ahead of the incoming rainfall. This space in the river was needed to accommodate runoff from areas downstream of the reservoirs. We continued to monitor the weather forecasts through the event. Our flood forecast model helped inform decisions, and plans were made to staff the office 24-7 to manage the event; fortunately rainfall totals were less than forecast and major flooding did not result from this event.

Staff were in contact with flood co-ordinators prior and during the recent event, providing briefing and keeping them informed. The GRCA website provided an important role delivering real time information to flood co-ordinators and the general public.

The proactive management of this event coupled with the many changes implemented since the 1974 flood and continued regulation of development in floodplains all contributed to reduce the impacts of flooding from the recent event.

**Flood Preparedness**

Conditions are being monitored closely. Staff continue to hold weekly Senior Operator meetings as part of overall succession planning initiatives and flood emergency preparedness

Spring inspections of all GRCA owned water control structures have begun and will continue over the next two months.

**Financial implications:**

Not applicable

**Other department considerations:**

Not applicable

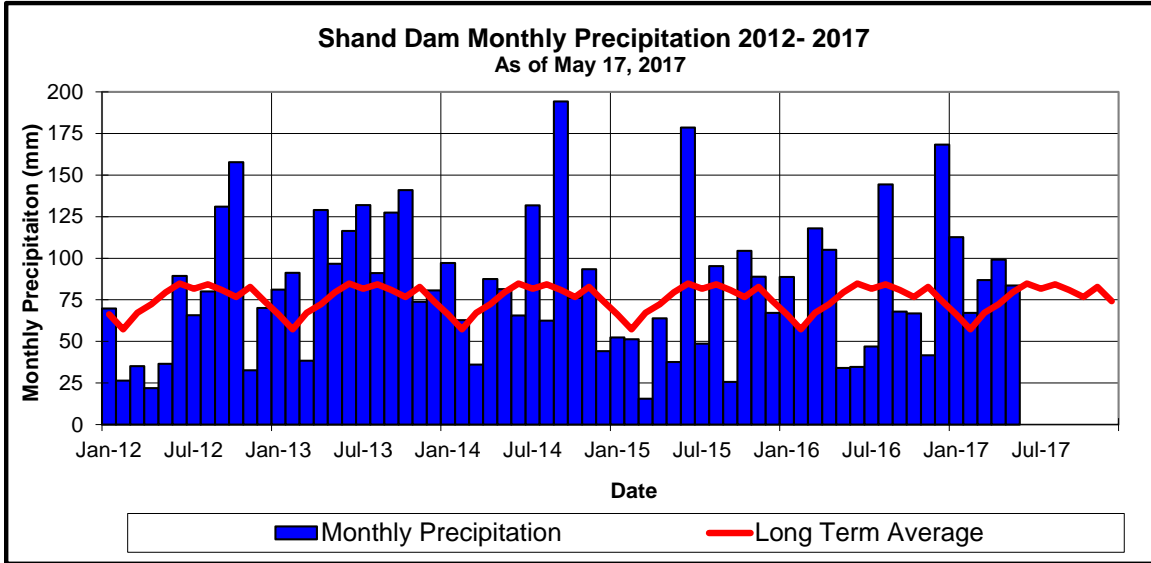
**Prepared by:**

Stephanie Shifflett  
Water Resources Engineer

**Approved by:**

Dwight Boyd  
Director of Engineering

**Figure 1: Precipitation at Shand Dam 2012 to present**



**Figure 2: Precipitation at Shades Mill Dam 2011 to present**

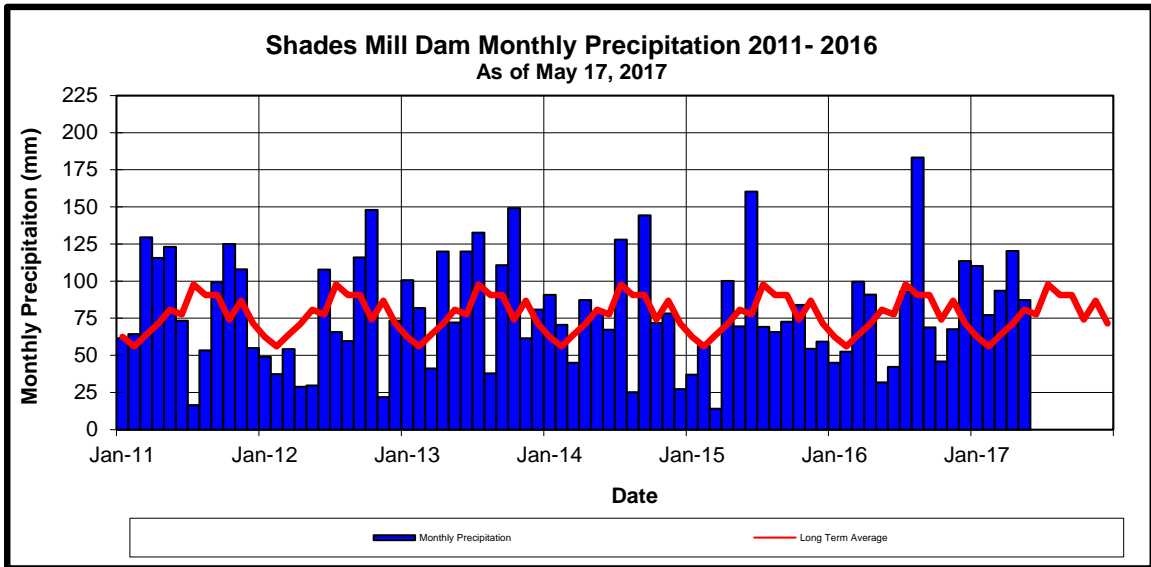


Figure 3: Departures from Average Air Temperatures

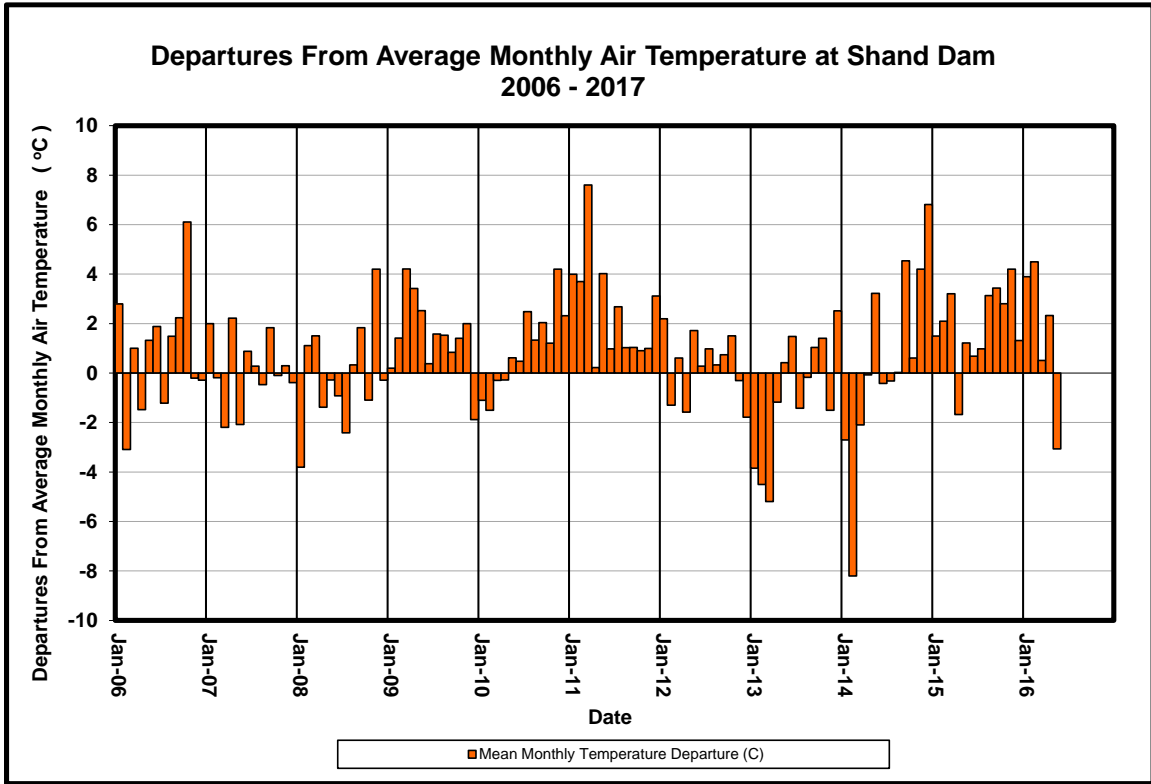


Figure 4: Forecasted Lake Erie Levels

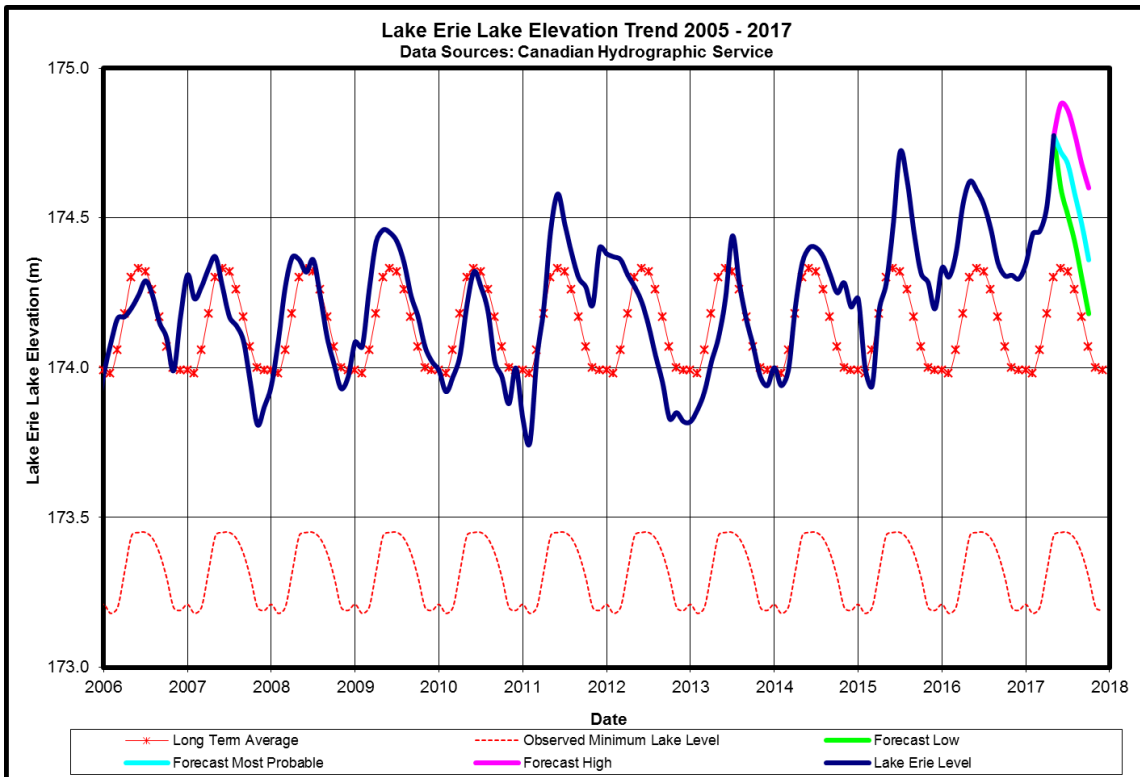
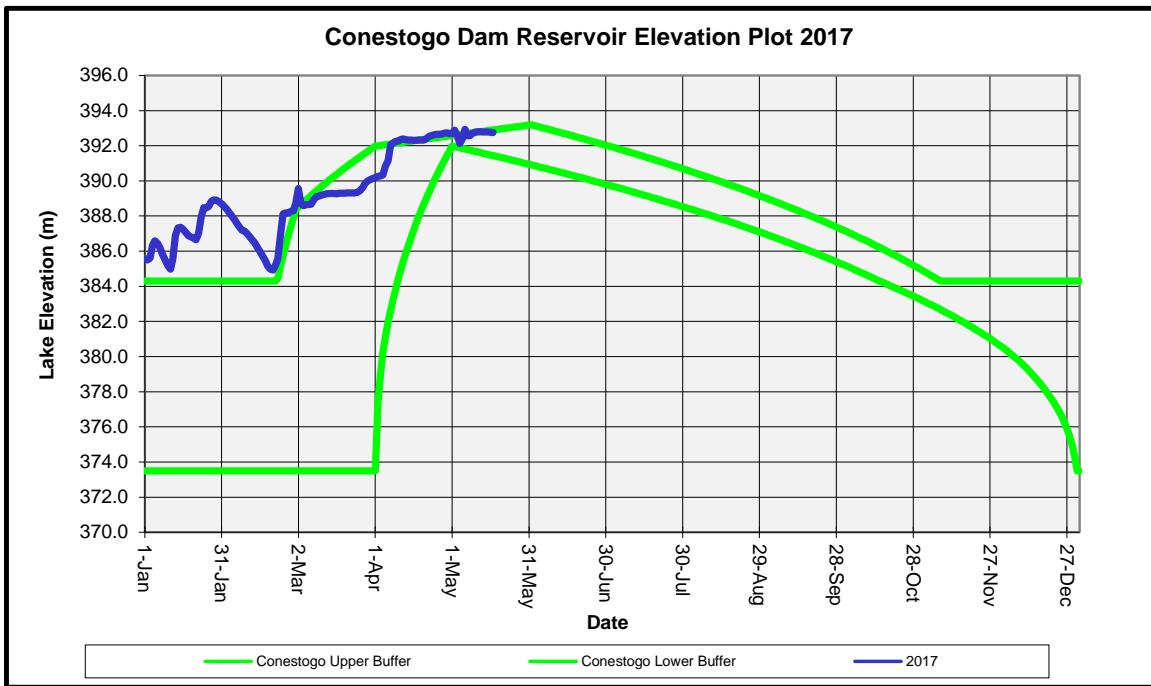
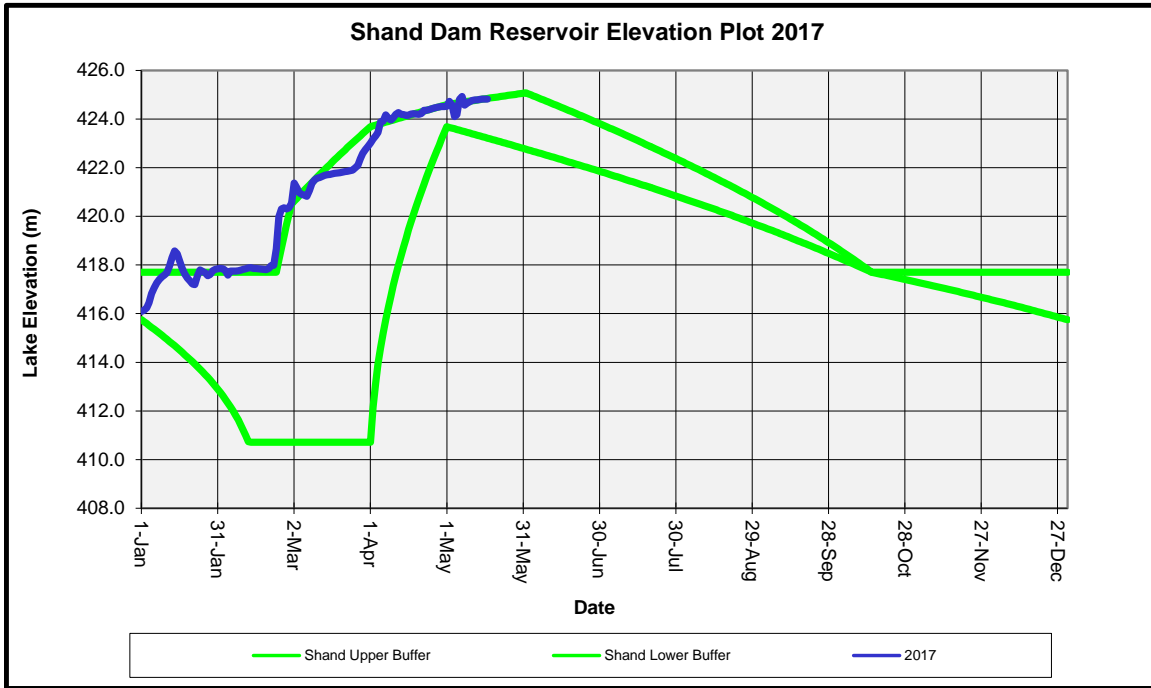
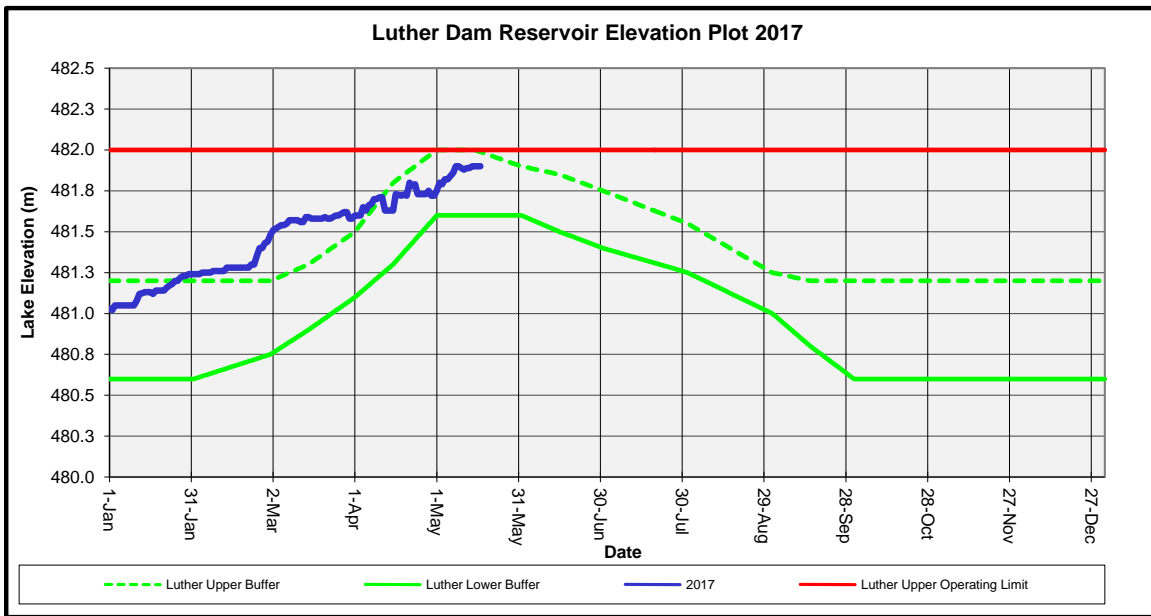
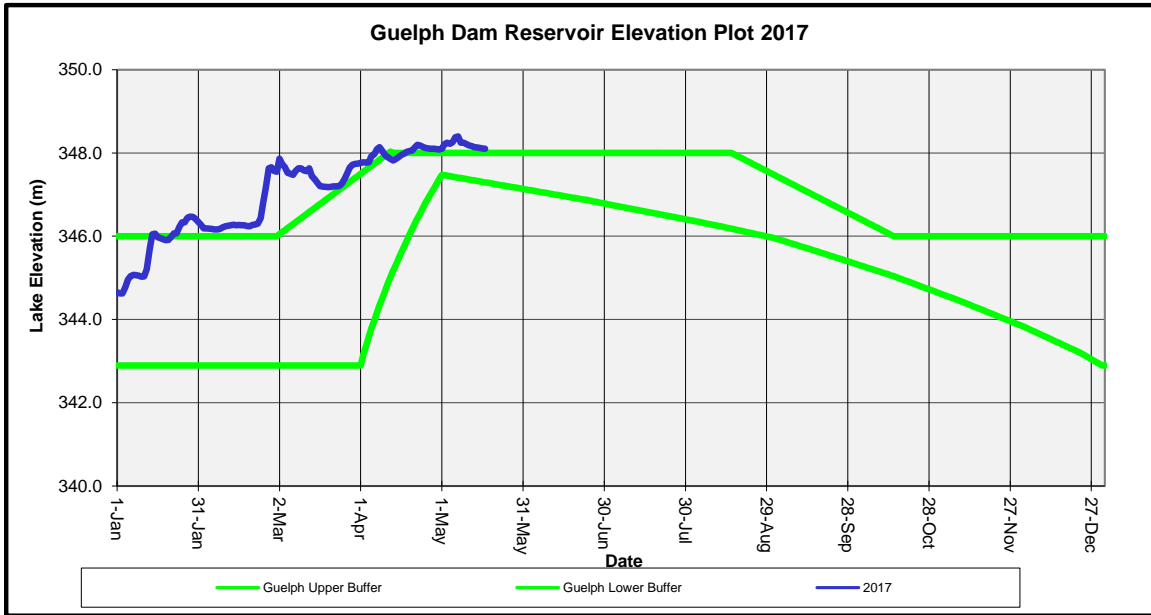


Figure 5: Shand and Conestogo Reservoir Elevation Plots



**Figure 6: Guelph and Luther Reservoir Elevation Plots**



**Luther Dam Operating Curves**

Luther Dam primarily provides a flow augmentation function to the upper Grand River and to Shand Dam. While it does provide some benefits from a flood control perspective, these benefits are limited due to the small drainage area regulated by Luther Dam.

The buffers between March 1<sup>st</sup> and September 30<sup>th</sup> define the operating range to meet downstream low flow targets. The lower buffer defines the lowest operating range for flow augmentation before reducing downstream flow augmentation targets. The earlier winter (January 1<sup>st</sup> to March 1<sup>st</sup>) and late fall (October 1<sup>st</sup> to December 31<sup>st</sup>) upper buffer curve is defined from ecologic considerations from the Luther Marsh Master Plan. The upper operating limit defines the maximum operating level from a dam safety perspective.



**Table 2: May 3<sup>rd</sup> to May 6<sup>th</sup> 2017 Flood Event Summary**

Location	Water Course	Natural Flow (m <sup>3</sup> /s)	Regulated Flow (m <sup>3</sup> /s)	Flood Frequency		Flow Reduction %
				Natural (yr)	Regulated (yr)	
Legatt-Grand Valley	Grand River	79	--	< 2yr		
Marsville	Grand River	119	--	< 2yr		
Shand Dam	Grand River	126	82	< 2yr		35%
Elora	Grand River	126	82	< 2yr	< 2yr	35%
Irvine Salem	Irvine River	40	--	< 2yr		
West Montrose	Grand River	181	128	< 2yr	< 2yr	29%
Bridgeport	Grand River	379	284	< 2yr	< 2yr	25%
Doon	Grand River	388	293	< 2yr	< 2yr	24%
Galt	Grand River	473	371	< 2yr	< 2yr	22%
Paris	Grand River	473	371	< 2yr	< 2yr	22%
Brantford	Grand River	595	512	< 2yr	< 2yr	14%
Caledonia	Grand River	752	653	< 2yr	< 2yr	13%
York	Grand River	752	653	< 2yr	< 2yr	13%
Dunnville	Grand River	801	714	< 2yr	2 to 5 yr	11%
Above Drayton	Conestogo River	84	--	< 2yr		
Drayton	Conestogo River	83	--	< 2yr		
Moorefield	Moorefield Creek	22	--	< 2yr		
Conestogo Dam <sup>1</sup>	Conestogo River	123	95	< 2yr		
Glen Allan <sup>1</sup>	Conestogo River	123	95	< 2yr	< 2yr	23%
St. Jacobs	Conestogo River	170	140	< 2yr	< 2yr	17%
Floradale	Canagagigue Creek	15	--			
Woolwich Dam	Canagagigue Creek	15	7		< 2yr	53%
Below Elmira	Canagagigue Creek	25	18		< 2yr	30%
Armstrong Mills	Speed River	23	--	< 2yr		
Guelph Dam	Speed River	30	21	< 2yr		28%
Victoria Rd Gauge	Speed River	30	21	< 2yr	2 to 5 yr	
Eramosa River	Eramosa River	18	--	< 2yr		
Speed River Edinburgh	Speed River	51	51	< 2yr	2 to 5 yr	0%
Speed River Beaverdale	Speed River	62	58	< 2yr	< 2yr	5%
Speed River Preston	Speed River	62	58	< 2yr	< 2yr	5%
Nithburg	Nith River	79	--	< 2yr		
New Hamburg	Nith River	99	--	< 2yr		
Ayr	Nith River	141	--	< 2yr		
Canning	Nith River	130	--	< 2yr		
Whitemans Creek	Whitemans Creek	47	--	< 2yr		
McKenzie Creek	McKenzie Creek	24	--	2 to 5 yr		
Note: Regulated Flow is with reservoir regulation						
Natural Flow is without reservoir regulation						
1 Regulated flow based on gate discharge tables (Glen Allen gauge data suspect during this event)						