



# LOWER TRENT CONSERVATION

714 Murray Street, R.R. 1, Trenton, Ontario K8V 0N1

■ Tel: 613-394-4829 ■ Fax: 613-394-5226 ■ Website: [www.ltc.on.ca](http://www.ltc.on.ca) ■ Email: [information@ltc.on.ca](mailto:information@ltc.on.ca)

Registered Charitable Organization No. 107646598RR0001

## NOTICE OF REGULAR MEETING OF THE LOWER TRENT CONSERVATION BOARD OF DIRECTORS

*Board of Directors refers to the General Membership as set out in the Lower Trent Conservation Administrative By-Law No. 2023-01*

Administration Office, 714 Murray Street, Trenton  
Virtually [Join Meeting HERE](#)

**Monday September 9, 2024**

**Time: 1:00 p.m.**

### AGENDA

1. Meeting called to order by the Chair

2. First Nations Acknowledgement

3. Disclosure of pecuniary interests

4. Approval of the Agenda

RECOMMENDED:

THAT the agenda be approved as presented.

5. Delegations

There are no requests for delegations received for this meeting.

6. Public Input (3 minutes per speaker)

7. Adoption of the Minutes:

a. Board Meeting Minutes of July 11, 2024

Page # 4

RECOMMENDED:

THAT the Regular and Closed Session Board Meeting Minutes of July 11, 2024 be adopted.

8. Business arising from these minutes

### **CORRESPONDENCE**

9. Correspondence – Rhonda Bateman, CAO/Secretary-Treasurer

None received

**STAFF REPORTS**

- 10. Monthly Payments Issued** – Chitra Gowda, Manager, Corporate Services Page # 10

## RECOMMENDED:

THAT the list of payments issued in the amount of \$218,191.82 for the month of July 2024 and \$280,810.11 for the month of August 2024 be received as information.

- 11. Watershed Management, Planning and Regulations Reports** – Gage Comeau, Manager, Watershed Management, Planning and Regulations

- a. Summary of Permits for Period June 29 – August 23, 2024 Page # 14
- b. Planning and Regulations
- c. Flood Forecasting and Warning (FFW) and Ontario Low Water Response (OLWR)

## RECOMMENDED:

THAT the Watershed Management, Planning and Regulations Reports be received as information.

- 12. Bay of Quinte Remedial Action Plan Program** – Anne Anderson, Manager Community Outreach and Special Projects Page # 23

- a. July 2024 Newsletter
- b. August 2024 Newsletter

## RECOMMENDED:

THAT the Bay of Quinte Remedial Action Plan Newsletter for July and August 2024 be received as information.

- 13. Appointment of Provincial Offences Officer** - Gage Comeau Page # 29

## RECOMMENDED:

THAT Tobias Farrell be appointed as a Provincial Offences Officer for the purpose of performing enforcement and offence related functions under Part VII of the *Conservation Authorities Act*, Section 28.5 and 29 Regulations and the *Trespass to Property Act* within the area of jurisdiction for Lower Trent Conservation, effective during his employment with Lower Trent Conservation.

- 14. Flood and Erosion Control Structures Operations and Maintenance Manual** – Gage Comeau Page # 30

## RECOMMENDED:

THAT the Flood and Erosion Control Structures Operations and Maintenance Manual (FECS Manual) be approved and adopted.

- 15. 2025 Fee Policy and Schedule** – Rhonda Bateman Page # 163

## RECOMMENDED:

THAT staff proceed with public and municipal consultation on the proposed Lower Trent Conservation 2025 Fee Policy and Schedule be approved.

**16. 2025 Budget Subcommittee Presentation – Rhonda Bateman/Chitra Gowda**

RECOMMENDED:

THAT the Lower Trent Conservation 2025 Budget Sub-Committee presentation be accepted as information; and

THAT staff make any required changes to the 2025 preliminary draft budget as directed by the Board and bring a draft budget to the October 10, 2024 meeting for Board review and approval.

**17. CAO's Report – Rhonda Bateman**

Page # 175

RECOMMENDED:

THAT the CAO's Report be received as information.

**18. Members Inquiries/Other Business**

**19. Adjournment**

**PLEASE CONTACT THE OFFICE IF YOU ARE UNABLE TO ATTEND THIS MEETING**

**Chitra Gowda 613-394-3915 ext. #215**

[chitra.gowda@ltc.on.ca](mailto:chitra.gowda@ltc.on.ca)



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Registered Charitable Organization No. 107646598RR0001

## BOARD OF DIRECTORS

Board of Directors refers to the General Membership as set out in the Lower Trent Conservation Administrative By-Law No. 2023-01

### REGULAR BOARD MEETING MINUTES - DRAFT

#### MEETING # 2024-06

**DATE:** July 11, 2024

**TIME:** 1:00 PM

**LOCATION:** Administration Office, 714 Murray Street, Trenton / Virtually

**PRESENT:**

REMOTE SITE (R)	ON SITE	
	Bob Mullin (Chair)	Jim Alyea
	Jeff Wheeldon	Mike Ainsworth
	Eugene Brahaney (Vice Chair)	Sherry Hamilton
	Eric Sandford	

**ABSENT/REGRETS:** Rick English, Lynda Reid, Bobbie Wright

**STAFF:** Rhonda Bateman, Gage Comeau, Chris McLeod, Anne Anderson, Marcus Rice, Massimo Narini, Chitra Gowda, Amanda Dixon

**GUESTS:** None

**1. Meeting called to order by the Chair**

The meeting was called to order by Chair Mullin at 1:00 p.m.

**2. First Nations Acknowledgement**

*"This land is located on the traditional territories of the Anishnabek, Huron-Wendat, and Haudenosaunee (Iroquois) peoples. We acknowledge our shared responsibilities and obligations to preserve and protect the land, air and water. We are grateful to have the privilege to meet, explore, and connect here on these shared lands. In the spirit of friendship, peace and respect, we extend our thanks to all the generations that came before us and cared for these lands - for time immemorial."*

Chair Mullin acknowledged the passing of Keith Reid, husband of Board member Lynda Reid. Mullin remembered Keith Reid's life and community service, including Keith's role as a councillor in Frankford and Quinte West. Condolences were conveyed to Lynda Reid on behalf of the Board.

**3. Disclosure of pecuniary interests**

There were no pecuniary interests declared.

**4. Approval of the Agenda**

RES: G85/24

Moved by: Eugene Brahaney

Seconded by: Mike Ainsworth

THAT the agenda be approved as amended to include a Closed Session under Other Business.

Carried

**5. Delegations**

There were no delegations received for this meeting.

**6. Public Input (3 minutes per speaker)**

There was no public input at this meeting.

**7. Adoption of the Minutes:**

a. Board Meeting Minutes of June 13, 2024

RES: G86/24

Moved by: Jim Alyea

Seconded by: Eric Sandford

THAT the Regular and Closed Session Board Meeting Minutes of June 13, 2024 be adopted as corrected to indicate that Eric Sandford attended in person and not remotely.

Carried

**8. Business arising from these minutes**

None.

**CORRESPONDENCE**

**9. Correspondence**

None received

**STAFF REPORTS**

**10. Monthly Payments Issued**

RES: G87/24

Moved by: Sherry Hamilton

Seconded by: Jeff Wheeldon

THAT the list of payments issued in the total amount of \$261,625.23 for the month of June 2024 be received as information.

Carried

### 11. Watershed Management, Planning and Regulations Reports

Members asked Gage Comeau about the recent rainfall event. Gage confirmed that the rainfall amounts were significant and flows increased, however the creeks were able to handle this event.

RES: G88/24

Moved by: Sherry Hamilton

Seconded by: Eric Sandford

THAT the Watershed Management, Planning and Regulations Reports be received as information.

Carried

### 12. 2023 Annual Monitoring Program Report

Gage Comeau indicated that the report would be prepared annually going forward. Rhonda Bateman added that this report would be distributed to member municipalities.

RES: G89/24

Moved by: Jeff Wheeldon

Seconded by: Sherry Hamilton

THAT the Lower Trent Conservation (LTC) 2023 Annual Monitoring Program report be received as information.

Carried

### 13. Workplace Violence and Harassment Policy

RES: G90/24

Moved by: Jim Alyea

Seconded by: Mike Ainsworth

THAT the Board approve the Workplace Violence and Harassment Policy as presented.

Carried

### 14. Conservation Lands Report – June 28, 2024

Rhonda Bateman presented the report on behalf of Chris McLeod. Members asked about the impacts of Oak wilt disease and Anne Anderson provided information.

RES: G91/24

Moved by: Sherry Hamilton

Seconded by: Eric Sandford

THAT the Conservation Lands Report for the period April 1 – June 28, 2024 be received as information.

Carried

### 15. Goodrich-Loomis Propane Conversion

Jim Alyea recommended that staff provide vendor's information in advance to allow for members to check for conflict of interest. Members discussed the potential energy savings of the proposed fuel conversion project.

RES: G92/24

Moved by: Eugene Brahaney

Seconded by: Jim Alyea

THAT the Board accept the staff report to replace the oil fired hot water tank equipment with a propane on demand boiler system at the Goodrich-Loomis Conservation Centre; and

THAT the Board approve \$10,140 of reserve funds to complete the oil to propane and equipment conversion.

Carried

**16. Conservation Areas and Lands Strategy**

Anne Anderson presented the Strategy and requested members to share widely for input.

RES: G93/24

Moved by: Jeff Wheeldon

Seconded by: Sherry Hamilton

THAT the Board receive the Draft Conservation Lands and Areas Strategy as information; and

THAT staff release the Draft Conservation Lands and Areas Strategy for public engagement.

Carried

**17. Community Outreach, Education and Stewardship Programs Report – June 30, 2024**

RES: G94/24

Moved by: Jim Alyea

Seconded by: Sherry Hamilton

THAT the Community Outreach, Education and Stewardship Programs Report for the period April 1 – June 30, 2024 be received as information.

Carried

**18. Summary of Risk Management Official Activity Report – June 30, 2024**

RES: G95/24

Moved by: Eric Sandford

Seconded by: Mike Ainsworth

THAT the summary of the Risk Management Official Activity pursuant to Part IV of the *Clean Water Act* report for the period of April 1 to June 30, 2024 be received as information.

Carried

**19. Local Drinking Water Source Protection Report - June 30, 2024**

RES: G96/24

Moved by: Sherry Hamilton

Seconded by: Eugene Brahaney

THAT the Local Drinking Water Source Protection Update for the period April 1 – June 30, 2024 be received as information.

Carried

**20. Bay of Quinte Remedial Action Plan Program**

RES: G97/24

Moved by: Jeff Wheeldon

Seconded by: Jim Alyea

THAT the Bay of Quinte Remedial Action Plan Newsletter for June 2024 be received as information.

Carried

**21. 2025 Budget Planning**

Members discussed that Eugene Brahaney, Jeff Wheeldon and Bobbi Wright be appointed per the resolution, with Eric Sandford as an alternate.

RES: G98/24

Moved by: Jeff Wheeldon

Seconded by: Sherry Hamilton

THAT three (3) Board members be appointed to the 2025 Budget Subcommittee.

Carried

**22. CAO's Report**

Rhonda Bateman presented her report, noting that interviews for the Regulations Officer position would be held next week; six submissions were received for the Information Management services request for quotes; and that staff are waiting for an amended transfer payment agreement for the Drinking Water Source Protection program. Members discussed the province's well water testing program and that it remains in effect for now.

RES: G99/24

Moved by: Jeff Wheeldon

Seconded by: Sherry Hamilton

THAT the CAO's Report be received as information.

Carried

**OTHER BUSINESS****23. Members Inquiries/Other Business**CLOSED SESSION

RES: G100/24

Moved by: Jim Alyea

Seconded by: Jeff Wheeldon

THAT the Lower Trent Conservation Board of Directors move to closed session under Municipal Act (s. 239(2)(b)(d)).

Carried

Time: 1:26 p.m.

RES: G101/24

Moved by: Jim Alyea

Seconded by: Eric Sandford

THAT the Lower Trent Conservation Board of Directors return to the regular meeting session.

Carried

Time: 1:52 p.m.

SEPTEMBER 2024 BOARD MEETING

The members determined the date of a regular scheduled meeting to be September 9, 2024, in consideration of the timing of an eastern Ontario municipal conference.

ARTICLES ON REGULATING WETLANDS

Members asked about the recent articles on three other eastern Ontario conservation authorities' changed practice with respect to regulating wetlands. Rhonda Bateman provided clarification on the matter, noting no new impacts to Lower Trent Conservation.

URBAN FORESTS FUNDING

Members discussed a cost-sharing (50%) funding opportunity for urban forests through Trees for Life. It was noted that a second/later intake would be better timing for consideration.

NATURAL ASSET MANAGEMENT PROPOSAL

Chitra Gowda relayed a proposal from Asset Management Ontario (AMOnt). It involves AMOnt partnering with conservation authorities (CAs) to provide training to municipalities and CAs on meeting the requirements of O. Reg. 588/17, with respect to green infrastructure. Interest was expressed by members and staff are to follow up with the requested information.



**24. Adjournment**

There being no further business, the meeting was adjourned.

RES: G102/24

Moved by: Jim Alyea

Seconded by: Eric Sandford

THAT the meeting be adjourned.

Carried

Time: 2:14 p.m.

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Bob Mullin, Chair

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Rhonda Bateman, CAO/ST

DRAFT

**Lower Trent Conservation  
Payments LOG - JULY 2024**

<b>CHEQUE # / EFT #</b>	<b>PAYEE</b>	<b>DETAILS</b>	<b>AMOUNT</b>
	Staff Payroll	Jul/24 Payroll Period #14 and #15	142,901.88
EFT 71995057	Jani-King of Eastern Ontario	Jul/24 Cleaning - Admin and Workshop	1,357.82
EFT 71995088	J.J. Stewart Motors Limited	Jul28-Aug27/24 BQRAP - Leased Vehicle	1,017.00
EFT 71792966	CIBC VISA	Jun/24 Statement	13,823.91
EFT 71995139	Staff	Staff Expenses - Reimbursed	188.19
16689	Voided	For landowner to pay LTC for wetland project	0.00
16690	Waste Management of Canada Corporation	Waste Services - Workshop	91.80
16691	Enbridge	Utilities - gas - Workshop	32.74
16692	Uline Canada Corporation	Polybags supplies	524.04
16693	Hai Precision Waterjets Inc.	Lawn mower repair	508.50
16694	Municipality of Centre Hastings	Final Property Tax Bill Douglas Spring Area	328.90
16695	Trenton Home Hardware Building Centre	Property/building maintenance, small equipment	1,834.91
16696	Canadian Pacific Railway Company	Property leases/rentals - conservation lands	31.24
16697	Audet Enterprises	Consulting services - HR policies	240.00
16698	Tom Trumble	Planning fee refund	220.00
16699	Laura Crews	Permits fee refund	1,000.00
16700	Staples Commercial	Stationary/office supplies	98.62
16701	Staples Commercial	Stationary/office supplies	187.38
16702	Staples Commercial	Stationary/office supplies	372.60
16703	Bill's Johns	Portable toilet rental - conservation areas	847.50
16704	Caduceon Enterprises Inc.	Water Analysis - Monitoring	1,723.92
16705	Obsentia	Vehicles maintenance	97.35
16706	Janbar Electric Ltd.	Signage new and repairs - Workshop	1,977.50
16707	Maglin Site Furniture Inc.	Bench for Trenton Greenbelt	2,922.46
16708	CDW Canada Corp.	Stationary/office supplies	427.11
16709	Credit Valley Conservation	CA University - staff participant fees	1,695.00
16710	Brighton Springs	Drinking water for Admin bldg	74.00
16711	Hoskin Scientific Limited	Monitoring equipment parts	42.09
16712	City of Quinte West	Utilities - Jun/24 water - workshop	81.85
16713	Cogeco Connexion Inc.	Monthly Internet Services - workshop	135.54
16714	OT Group - DCB Business Systems Group Inc	Monthly Photocopier Usage Service fees	354.56
16715	City of Quinte West	Final Property Tax Bill - CAs and lands	23,413.61
16716	Municipality of Brighton	Final Property Tax Bill - CAs and lands	4,164.21
16717	Harvest Hastings	BQRAP - stewardship advertisement	159.00
16718	Snap360 Ltd.	BQRAP - annual website security services	66.67
16719	City of Quinte West	Water Festival hall rental fee	99.00
16720	Free Flow Petroleum	Monthly Vehicle and Equipment Fuel	1,850.80
16721	Telizon Inc	Monthly Telephone Lines	463.47
16722	Hydro One Networks Inc.	Utilities - electricity - admin bldg	707.08
16723	Hydro One Networks Inc.	Utilities - electricity - workshop	126.29
16724	FTS	Water monitoring equipment - PGMN	1,221.25
16725	Templeman LLP	Review of auditor's letter	56.50
16726	McKeown Motor Sales	Tractor repair	915.03
16727	WM. J. Thompson Farm Supply Ltd.	Small equipment (weedwacker) repair	179.84
16728	Flynn Forestry and Tree Services	Hazard tree removal	226.00
16729	John Mahoney	Staff Expenses - Reimbursed	433.45
16730	Bell Mobility Inc.	Monthly Cellular Phones - Service	207.54
16731	Grand & Toy	Admin office furniture	1,560.53
16732	Dows Climate Care	Deposit -propane fuel project at Goodrich Loomis	1,995.00
16733	Staples Commercial	Janitorial and stationary supplies	221.90
16734	JKN Consulting	Engineering Review Services	1,725.00
16735	Enbridge	Utilities - gas - workshop	30.34
16736	Raven Chartrand	Staff Expenses - Reimbursed	18.62
16737	Brighton Springs	Drinking water for Admin bldg	64.75
16738	Waste Management of Canada Corporation	Waste Services - Workshop	116.97

16739	Enbridge	Utilities - gas - admin bldg	31.32
16740	Purolator Inc.	Courier	5.48
16741	407 ETR	407 highway toll	68.73
16742	Hydro One Networks Inc.	Utilities - electricity - Goodrich Loomis	216.96
16743	Obsentia	Vehicles maintenance	176.87
16744	HRCovered Inc.	Annual fee - H&S training, HR services	2,531.20
		<b>Total of Payments July 2024</b>	<b><u>218,191.82</u></b>

Lower Trent Conservation  
Payments LOG - AUGUST 2024

CHEQUE # / EFT #	PAYEE	DETAILS	AMOUNT
	Staff Payroll	Aug/24 Payroll Period #16 and #17	141,378.92
EFT 72646857	OMERS	Aug/24 Pension Contributions	22,982.88
EFT 72646912	Workplace Safety Insurance Board (WSIB)	Aug/24 WSIB Premium	4,594.81
EFT 72647156	Staff	Staff Expenses - Reimbursed	192.02
EFT 72646967	Sun Life Assurance Company of Canada	Sep/24 Group Benefits Premium	7,920.37
EFT 72383904	CIBC VISA	Jul/24 Statement	4,792.88
EFT 72384109	OMERS	Jul/24 Pension Contributions	23,312.86
EFT 72384020	Workplace Safety Insurance Board (WSIB)	Jul/24 WSIB Premium	4,644.41
EFT 72384077	Jani-King of Eastern Ontario	Jul/24 Cleaning - Admin and Workshop	1,357.82
EFT 72383973	Sun Life Assurance Company of Canada	Aug/24 Group Benefits Premium	7,653.94
16745	Bill's Johns	Portable toilet rental - conservation areas	847.50
16746	Trenton Home Hardware Building Centre	Property/building maintenance, small equipment	664.72
16747	CDW Canada Corp.	Stationary/office supplies	425.54
16748	OT Group - DCB Business Systems Group Inc	Monthly Photocopier Usage Service fees	198.41
16749	HRC Law Professional Corporation	Annual fee - HR legal advice services	1,808.00
16750	Campbell Scientific (Canada) Corp.	Monitoring equipment - rain guages	15,425.91
16751	Brighton Springs	Drinking water for Admin bldg	55.50
16752	Purolator Inc.	Courier	14.09
16753	Nesda Technologies Ltd.	Monthly IT services (2 months)	1,130.00
16754	Earl Rosebush Fuels	Propane fuel for Goodrich Loomis	347.72
16755	JB Print Solutions	Source water protection - education materials	200.47
16756	Caduceon Enterprises Inc.	Water Analysis - Monitoring	1,429.50
16757	Corinne Ross	Staff Expenses for staff event - Reimbursed	92.22
16758	Quinte Paint & Wallpaper - Trenton	Paint for signs and structures on CA lands	316.35
16759	Telizon Inc	Monthly Telephone Lines	463.34
16760	Obsentia	Vehicle maintenance	82.82
16761	Reilly's Awards & Embroidery	Engraved plates for photos (board)	16.95
16762	City of Quinte West	Utilities - water/sewer - workshop	78.28
16763	Township of Stirling-Rawdon	Final Property Tax bill - Kings Mill CA	95.63
16764	David Moisey	BQRAP - septic sysytem stewardship program	367.25
16765	Margaret Dick	BQRAP - urban stewardship program	658.51
16766	Township of Stirling-Rawdon	Final Property Tax bill - Kings Mill CA	274.48
16767	Trent Hills Slinger Service Inc.	Equipment rental - removal of bridge at Goodrich Loomis	5,134.72
16768	Massimo Narini	Staff Expenses - Reimbursed	404.34
16769	Waste Management of Canada Corporation	Waste Services - Workshop	121.83
16770	Staples Commercial	Office stationary supplies	116.25
16771	The Napanee Beaver	BQRAP ads - fish consumption survey	244.08
16772	Free Flow Petroleum	Monthly Vehicle and Equipment Fuel	2,747.96
16773	Sarah Midlane-Jones	Staff Recognition - service years	150.00
16774	Kim Stephens	Staff Expenses - Reimbursed	154.81
16775	AIG Insurance Company of Canada	Additional Death & Dismemberment 2024-2025 premium	687.79
16776	Brighton Springs	Drinking water for Admin bldg	111.00
16777	Enbridge	Utilities - gas - admin bldg and workshop	61.17
16778	Cogeco Connexion Inc.	Monthly Internet Services - workshop	135.54
16779	Bell Mobility Inc.	Monthly Cellular Phones - Service	211.41
16780	Purolator Inc.	Courier	8.57
16781	Alarm Systems	Alarm/security monitoring - admin bldg	366.12
16782	Hoskin Scientific Limited	Monitoring equipment	11,080.78
16783	County of Northumberland	Tipping fees - bridge removal Goodrich Loomis	231.40
16784	Pitney Bowes Leasing	Postage machine lease Jul-Sep/24	99.53
16785	Dows Climate Care	Propane fuel tank install at Goodrich Loomis	9,265.45
16786	Hydro One Networks Inc.	Utilities - electricity - admin bldg, workshop, Goodrich Loomis	901.98
16787	Staples Commercial	Janitorial supplies	58.08
16788	A&L Canada Laboratories Inc.	BQRAP stewardship - soil testing	133.36
16789	Battlefield Equipment Rentals	Equipment - new chain for chainsaw	80.03
16790	Janbar Electric Ltd.	Installed smoke detector at Goodrich Loomis	169.50
16791	B&T Sales	Janitorial supplies	51.90
16792	The Napanee Beaver	BQRAP ads - fish consumption survey	244.08
16793	Picton Gazette Ltd.	BQRAP ads - fish consumption survey	367.25
16794	Quinte Broadcasting Company Ltd.	BQRAP ads - BQRAP and fish consumption survey	2,034.00

16795	Nesda Technologies Ltd.	IT services - BQRAP	31.08
16796	William Newell	Invasive species mgmt - Sager Park	<u>1,582.00</u>
		<b>Total of Payments August 2024</b>	<b><u><u>280,810.11</u></u></b>

**Summary of Permits Approved by Staff**  
*Part VI of the Conservation Authorities Act and Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits*  
 Prepared by: Gage Comeau, Manager, Watershed Management, Planning and Regulations  
 For Period: June 29 to August 23, 2024



Permit #	Municipality	Ward	Geographic Township	Concession	Lot	Street Address	Regulated Area	Permitted Activity
P-22-370 (minor; compliance)	Quinte West	Sidney	Sidney	8	25-26	32 Pines Lane	Oak Lake flood hazard	To undergo reconstruct/rebuild of the front porch
P-23-300 (compliance)	Quinte West	Sidney	Sidney	BF-1	27-28	1849 Old Highway 2	Field Verified Wetland (allowance)	To expand the existing golf course from 18 to 36 holes and undertake the necessary restoration and compensation activities
P-24-012 (compliance)	Cramahe	Cramahe Township	Cramahe	7	28	2644 County Road 25	Tributary of Cold Creek (allowance)	To conduct a watercourse and ditch cleanout, to remove the existing entrance east of the watercourse and install a new entrance west of the watercourse
P-24-049	Trent Hills	Seymour	Seymour	14	3	60 Steam Mill Lane	Trent River Floodplain (allowance)	To construct a 24' by 24' addition with a 24' by 28' attached garage and construct a deck with a covered deck portion
P-24-087 (compliance)	Quinte West	Murray	Murray	A	21	DJ Whites Road	Tributary of Lake Ontario (allowance)	To conduct vegetation maintenance and grading works
P-24-090	Trent Hills	Seymour	Seymour	15	12	Trent River Road	Unevaluated Wetland (allowance); Tributary of Trent River (allowance)	To conduct grading works and install two septic systems
P-24-098	Centre Hastings	Huntingdon	Huntingdon	6	3	328 Slab Street	Unevaluated Wetland (allowance)	To construct a single-family dwelling, extend the existing entrance and install a septic system
P-24-105 (compliance)	Brighton	Brighton Township	Murray	B	24	813 County Road 64	Lake Ontario Flood Hazard; Smithfield Creek floodplain and Presqu'île Bay Marsh PSW (allowance)	Undergo the construction of a drive shed structure made out of sea containers and the removal of three existing shed structures
P-24-112 (minor)	Trent Hills	Seymour	Seymour	7	13	1544 7th Line E	Unevaluated Wetland (allowance)	To construct a deck addition of approximately 15.6 m2
P-24-113	Trent Hills	Percy	Percy	4	14	Winter Road	Tributary of Percy Creek (allowance)	Install an entrance
P-24-114 (minor)	Alnwick/Haldimand	Haldimand	Haldimand	B	24	377 Nawautin Drive	Tributary of Lake Ontario (allowance)	Install approximately 75 m of NPS 3/4 PE IP gas service pipeline
P-24-118	Quinte West	Sidney	Sidney	4	1	Parry Drive	Tributary of the Trent River	To replace the existing 14 m x 600mm CSP culvert with a 15 m x 600mm CSP culvert
P-24-119	Quinte West	Murray	Murray	5	18	County Road 5	Tributary of Cold Creek	To replace the existing culvert with a like-for-like replacement
P-24-120	Cramahe	Cramahe Township	Cramahe	3	16	54 Reddick Road	Little Lake Shoreline; Little Lake Flood Hazard	To construct an approximately 58m2 covered porch onto the existing deck
P-24-126 (minor)	Trent Hills	Seymour	Seymour	14	5	362 Calnan Road	Trent River Floodplain	To remove two boathouse piers totaling approximately 11m2
P-24-128 (compliance)	Cramahe	Cramahe Township	Cramahe	1	23	381 Simpson Road	Lake Ontario Flood and Erosion Hazard	Undergo moderate shoreline alterations and slope stabilization along approximately 150' of shoreline
P-24-131 (minor)	Trent Hills	Murray	Murray	10	2	9 Island Park Rd - Site 152	Trent River Floodplain; Wilson Island East Wetland PSW (allowance)	To construct an approximately 24m2 deck
P-24-132	Quinte West	Sidney	Sidney	8	23	8 Empson Lane	Oak Lake Flood Hazard	To demolish and replace the existing 28m2 deck
P-24-133 (minor)	Trent Hills	Percy	Percy	3	16	11 George Street	Burnley Creek floodplain (allowance)	Install NPS 1/2 PE IP gas service pipeline
P-24-134 (minor; compliance)	Stirling-Rawdon	Rawdon Township	Rawdon	1	21	379 Merrick Road	Tributary of the Trent River	Install a tile drainage outlet
P-24-135 (minor)	Trent Hills	Murray	Murray	10	2	9 Island Park Road - Site 197	Trent River Floodplain; Wilson Island East Wetland PSW (allowance)	To construct two deck platforms totaling approximately 28m2
P-24-137 (minor)	Quinte West	Murray	Murray	A	5-6	22571 Loyalist Parkway	Lake Ontario Flood and Erosion Hazard	To remove overhead lines, poles & anchors and replace with underground service at the same location
P-24-138	Stirling-Rawdon	Rawdon Township	Rawdon	1	11	39 Mill Street	Rawdon Creek Floodplain	To construct an approximately 29m2 deck
P-24-139 (minor)	Centre Hastings	Huntingdon	Huntingdon	11	15	546 Quin Mo Lac Road	Unevaluated Wetland (allowance)	To remove the existing roundabout, extend the existing driveway and plant trees
P-24-140	Trent Hills	Percy	Percy	10	7	561 Concession Road 11 W	Unevaluated Wetland (allowance); Trent River Tributary Stream (allowance)	To demolish south wing of the existing house and construct a 2-storey addition on existing footprint
P-24-144 (minor)	Alnwick/Haldimand	Haldimand	Haldimand	B	25	396 Nawautin Drive	Unevaluated Wetland (allowance)	Install approximately 160m of NPS 3/4 PE IP gas service pipeline

P-24-145	Alnwick/Haldimand	Haldimand	Haldimand	8	18	County Road 29	Unevaluated wetland (allowance); Burnley Creek Headwaters Wetland Complex PSW (allowance)	Install an entrance
P-24-146 (minor)	Trent Hills	Seymour	Seymour	4	6-7	5th Line West	Unevaluated Wetland (allowance); Tributary of Trent River (allowance)	Install new distribution poles along 5th Line West
P-24-147	Trent Hills	Seymour	Seymour	12	15	7690 B County Road 50	Trent River Floodplain (allowance)	To construct a seasonal dwelling using the existing septic system
P-24-148	Trent Hills	Seymour	Seymour	14	6	63 Wight Island Road	Trent River Floodplain	Undergo the removal of the existing concrete and stone seawall and undergo the installation of new erosion protection along the river bank
P-24-149 (compliance)	Trent Hills	Percy	Percy	13	18	41 Valley View Lane	Trent River Floodplain; Unevaluated Wetland (allowance); Trent River Tributary Stream valleylands	to undergo the removal of 80m3 of fill material that was brought onto the property without prior written approval and allow 20m3 to be used on the property in historically disturbed areas
P-24-150	Quinte West	Sidney	Sidney	8	14	491 Rosebush Road	Trent River floodplain; Trent River tributary stream (allowance)	Undergo the removal of the existing retaining wall and undergo the installation of new erosion protection along the river bank
P-24-151	Cramahe	Cramahe Township	Cramahe	4	27	13305 County Road 21	Cold Creek (allowance); Lone Pine Marsh PSW (allowance); Field Verified Wetland (allowance)	To conduct a ditch cleanout
P-24-153	Quinte West	Murray	Murray	C	12	838 Barcovan Beach Road	Lake Ontario Flood Hazard (allowance)	To demolish and reconstruct the existing single-family dwelling
P-24-154	Quinte West	Murray	Murray	CPL	13	27 Carriage Lane	Bay of Quinte Flood and Erosion Hazard, coastal wetland; Carrying Place PSW (allowance)	To restore the existing shoreline protection by reinforcing existing gabion wall with river rocks
P-24-155	Quinte West	Sidney	Sidney	1	15	Eastview Bouelvard - Kenron Estates	Tributary of of the Bay of Quinte (allowance)	To demolish and reconstruct the pumping station and install hydro service upgrades
P-24-157	Brighton	Brighton Township	Murray	B	23-34	County Road 64	Tributary of Lake Ontario; Smithfield Creek; Proctor Creek; Field Verified Wetlands (allowance); Unevaluated Wetlands (allowance); Presqu'ile Bay Marsh PSW (allowance)	To conduct like-for-like culvert replacements and road works along County Road 64
P-24-158	Quinte West	Murray	Murray	C	8	24 Alyea Road	Lake Ontario Flood Hazard	To construct a 1-bedroom addition to the existing dwelling
P-24-159	Cramahe	Cramahe Township	Cramahe	1	22	127 Blyth Park Road	Unevaluated Wetland (allowance); Lake Ontario Erosion Hazard (allowance)	To install an inground pool
P-24-162	Trent Hills	Seymour	Seymour	14	6	132 Centennial Lane	Trent River Floodplain	To conduct shoreline restoration works
P-24-163 (minor)	Quinte West	Sidney	Sidney	4	A	51 Nelson Street	Unevaluated Wetland (allowance)	To demolish and reconstruct a 2nd storey deck structure
P-24-164	Cramahe	Cramahe Township	Cramahe	5	13	County Road 21	Cold Creek Shiloh to Wooler PSW (allowance)	To construct a single-family dwelling, detached non-habitable accessory structure and septic system
P-24-165 (minor)	Trent Hills	Murray	Murray	10	2	9 Island Park Road - Site 161	Trent River Floodplain; Wilson Island East Wetland PSW (allowance)	To construct two deck platforms totaling approximately 28m2
P-24-168	Trent Hills	Seymour	Seymour	2	6	Meyers Island Road	Field Verified Wetland (allowance)	To construct a road extension along Meyers Island Road (i.e., upgrade existing access road to municipal road standards)
P-24-169	Cramahe	Cramahe Township	Cramahe	3	17	25 McDonald Road	Little Lake Shoreline; Little Lake Flood Hazard	To restore existing shoreline protection by reinforcing existing shoreline protection with river rocks
P-24-170	Quinte West	Trenton	Sidney	1	2 & 3	Huff Ave	Unevaluated Wetland (allowance)	Undergo the construction of a 13,118 m2 industrial building and associated parking lots, driveways, landscaped areas and servicing
P-24-171	Quinte West	Sidney	Sidney	9	7	13 Grist Mill Lane	Trent River Floodplain	Undergo the replacement of the existing septic system
P-24-173 (minor)	Alnwick/Haldimand	Haldimand	Haldimand	A	29	461 Lakeshore Road	Unevaluated Wetland (allowance); Lake Ontario Erosion Hazard (allowance)	Install approximately 100 m of NPS 3/4 PE IP gas service pipeline
P-24-175	Quinte West	Sidney	Sidney	1	13	454 Whites Road	Unevaluated Wetland (allowance)	To construct a 436 ft2 deck structure
P-24-176 (minor)	Trent Hills	Seymour	Seymour	14	6	37 Wight Island Road	Trent River Floodplain	To repair the existing (damaged) deck
P-24-177	Quinte West	Sidney	Sidney	BF	16	46 Hunt Lane	Bay of Quinte Flood & Erosion Hazard (allowance)	To replace the existing (failed) septic system
<b>AMENDMENTS</b>								
P-22-349	Alnwick/Haldimand	Alnwick	Alnwick	7	18	14 Parkers Drive	Rice Lake Flood Hazard	To demolish and reconstruct boathouse that was damaged due to tree impact damage; Amended to include the updated plans for the proposed reconstruction of the boathouse







**LOWER TRENT**  
CONSERVATION

# STAFF REPORT

**Date:** August 23, 2024  
**To:** LTC Board of Directors  
**Re:** Watershed Management, Planning and Regulations UPDATE  
**Prepared by:** Gage Comeau, Manager, Watershed Management, Planning and Regulations

**PROPOSED RESOLUTION:**

THAT the Watershed Management, Planning and Regulations update be accepted as information.

**BY THE NUMBERS:**

Here are the numbers for new files and deliverables in 2024 and compared to similar numbers for previous years. Highlighted boxes indicate that 2024 has MORE files to date than previous years.

Table 1. File review – New files and deliverables in 2024 versus previous years

	# Files for 2024 (as of August 23, 2024)	Dates for Similar Number for Previous Years (Total for Year)			
		2023	2022	2021	2020
Permits	<b>186</b>	Jul 27 (320)	Jun 14 (398)	Jun 18 (383)	Aug 12 (351)
Planning	<b>140</b>	Aug 30 (198)	Jun 13 (310)	Jun 22 (259)	Nov 9 (169)
Complaints	<b>67</b>	Oct 14 (74)	n/a (66)	n/a (65)	n/a (56)
Enforcement	<b>26</b>	Aug 24 (35)	May 31 (63)	Jul 8 (45)	Sep 21 (32)
Online Inquiries	<b>1071</b>	n/a (1003)	n/a (738)	Nov 18 (1132)	n/a (645)
Legal Requests	<b>40</b>	Sept 19 (58)	n/a (36)	Nov 11 (48)	n/a (28)
Clearance Letters	<b>81</b>	n/a (52)	n/a (25)	n/a	n/a
Site Visits	<b>186</b>	Oct 10 (246)	Jul 5 (363)	Sep 1 (282)	n/a (166)

Legal Cases:

- **ENF-20-028** –Status: **ONGOING** – Update – Legal team is preparing next steps on the restoration order and will be in touch with staff in the coming weeks.
- **ENF-21-005:** Status: **ONGOING** – Update – Restorations works are almost complete. Staff are waiting on the final works (i.e., buffer plantings) to be completed in September.

Watershed Management

- Wetland assessments are being scheduled and assessments have begun. So far, 42 wetland assessments have been conducted by staff and we are making attempts to get through the list as fast as time permits. There are currently over 20 wetland assessments on the wait list, and the list is growing.
- LTC staff have almost completed the full installation of all the rain gauges that were purchased through Community Emergency Preparedness Grant. Staff are installing the final 4 units and ensuring that we are on track with the September 13, 2024 report back date to the Province.

Online Inquiries

Below is a quarterly update of the current online inquiry numbers staff have received in comparison to previous years (Table 2). Staff are currently managing large volumes of inquiries that are consistent with numbers seen in 2021 when the housing market was experiencing large volumes of real estate sales. These files are taking staff long periods of time to manage as many of the properties are regulated and development may be restricted or require further review from staff. Additionally, properties with historical planning and permitting approvals are appearing that require staff time to review prior to providing formal responses. If the number of inquiries received continues on this trend, we are projected to exceed the numbers we saw in 2021, which was the highest number inquiries ever managed by staff. Through these inquiries staff have circulated and provided our permit application to a large portion of the proponents that have submitted inquiries. An important note to report is that online/general inquiries are a free service that LTC provides. Cost recovery is received through various items noted in our Board approved fee schedule including but not limited to clearance letters, legal requests, site visits, pre-consultation meetings and technical report reviews (prior to receiving formal circulation of applications). However, these cost recovery mechanisms are not always triggered by inquiries. Staff strongly encourage proponents to schedule pre-consultation meetings to reduce lengthy calls and walk-in style meetings to allow staff to manage workloads appropriately where questions/inquiries go beyond our generalized responses. It is important to note that we are seeing an increased trend for clearance letter requests that matches the high volume of inquiries. Currently, we have provided 81 clearance letters to assist with the issuance of building permits or other necessary permissions that may be granted by a regulatory agency.

**Table 2. Inquiry review - Annual and quarterly numbers for inquiries received (as of August 23,2024)**

	2019	2020	2021	2022	2023	2024
Q1	105	111	<b>369</b>	214	141	340
Q2	146	163	<b>324</b>	251	232	131
Q3	116	228	269	142	<b>408</b>	252
Q4	79	193	170	127	<b>222</b>	
Total	446	695	<b>1132</b>	734	1003	1071

*\*Bolded font indicates record number of files for a specific quarter or year. Highlighted area indicates current calendar year.*

Permitting:

Ongoing Permit files:

- Staff have issued **51** permits since the previous reporting period. **4** permit files were amended to revise or update a previously issued permit.
- Staff are currently reviewing and commenting on **31** open 2024 permit files and **34** files from previous years as well.
- Staff are currently working on the creation of Standard Operating Procedures (SOPs) for the use of the Planning and Regulations department. It is our hope to have the SOPs completed by the year end. Currently, we do not have formal SOPs in place and we hope that this will help create further efficiencies within the department.

Below is a quarterly update of our current permit numbers in comparison to previous years. In the first quarter of 2023, LTC staff received 74 applications which is comparable to applications received in 2021 and 2022. A similar trend was seen in the second quarter of 2023 as well. The majority of the inquiries staff have received in the past few months are for projects in regulated areas and would require an LTC permit prior to the commencement of any on-site work. With the current cost of living and high interest rates, it is possible that volume of inquiries and permit applications we have sent to proponents may not translate to permit applications received. It is important to note that as of April 1, 2024, regulatory changes may impact the number of permit applications staff may receive. An informal review conducted by staff suggests that the change in legislation has accounted for approximately a 10% reduction in the permits received this year so far. Although, the number of permits received so far this year is lower than expected, other file types such as inquiries,

complaints and enforcement matters have kept Planning and Regulations busy due to their increased numbers.

**Table 3. Annual and quarterly numbers for permits received (as of August 23,2024)**

Permitting								
Quarter/Year	2017	2018	2019	2020	2021	2022	2023	2024
Q1	40	48	32	52	71	78	<b>82</b>	74
Q2	81	81	88	94	<b>127</b>	125	81	78
Q3	81	80	<b>149</b>	117	101	112	93	34
Q4	56	40	69	<b>88</b>	84	83	64	
total	258	249	338	351	383	<b>398</b>	320	186

*\*Bolded font indicates record number of files for a specific quarter or year. Highlighted area indicates current calendar year.*

Planning:

- LTC Staff reviewed and commented on **27** Subdivision and Condominium Files in 2024 (new and ongoing). Since the last reporting period, LTC Staff reviewed and commented on 12 Subdivision and Condominium files. Many of these files are ongoing and staff expect to work on these continuously throughout the year.
- Since the last reporting period, LTC Staff reviewed and commented on **26** Planning Act Applications (Severances, Zoning By-law amendments, Official Plan amendments, Site Plan Control applications and/or Minor Variances). Additionally, we are reviewing several technical reports for pre-consultation files including but not limited to; **3** site plans and **7** Environmental Impact Studies.

Below is a quarterly update of our current planning numbers in comparison to previous years. In the first quarter of 2023, LTC staff received a number of planning files that surpassed the Q1 numbers from 2022 and 2023. Although, we saw a decreased number of applications in the second quarter, a large majority of the applications were associated with complex Planning Act applications as well as new subdivisions. Planning Act application submissions have increased since the second quarter and appear to be coming in as large batches. Staff expect that with the new Provincial Planning Statement (PPS) release that we will see more ups and downs in planning submissions until it takes effect on October 20, 2024. Staff's current expectation is that large volumes of applications may be seen once the new PPS is in place. Overall, the bulk of staff's workload since the previous reporting period for Planning files are related to both new and historic subdivision files.

**Table 4. Annual and quarterly numbers for Planning Applications received for comment (as of August 23,2024)**

Planning								
Quarter/Year	2017	2018	2019	2020	2021	2022	2023	2024
Q1	45	55	<b>71</b>	45	69	58	45	62
Q2	53	60	59	17	73	<b>98</b>	63	40
Q3	61	69	59	57	68	<b>83</b>	45	38
Q4	34	58	41	50	48	<b>71</b>	60	
total	193	242	230	169	258	310	213	140

Lastly, kind reminder to let your Municipal staff know that LTC is here to assist our Municipal partners where possible. LTC Staff can walk landowners through our permitting process, the planning process and other procedures/processes that may be applicable to their proposal or inquiries. LTC Staff are incredibly knowledgeable and we are here to help the residents of our Watershed.

It is important to note that Planning and Regulations staff are increasingly busy in all file categories and timelines for responses and deliverables for all file types may take longer than expected. Additionally, with recent legislative changes,

staff workload may continue to increase due to misinformation that is present in the public, new directives from the Province and new administrative changes in the Conservation Authorities Act.

**RECOMMENDATION:**

- Staff recommends to the Board of Directors that the Planning and Regulations Update be accepted as information.



**LOWER TRENT**  
CONSERVATION

# STAFF REPORT

**Date:** August 23, 2024  
**To:** LTC Board of Directors  
**Re:** Flood Forecasting & Warning UPDATE  
**Prepared by:** Gage Comeau, Manager, Watershed Management, Planning and Regulations

**PROPOSED RESOLUTION:**

THAT the Flood Forecasting and Warning Update be accepted as information.

**BY THE NUMBERS:**

Here are the number of flood communications issued and compared to the total of number of statements issued in previous.

Table 1. Number of flood communications issued by Staff.

Statements	Flood Communications Issued (as of August 23, 2024)	Total Number for Previous Years					
		2023	2022	2021	2020	2019*	2018
Water Safety	5	4	2	2	3	8	2
Flood Outlook	1	8	4	4	5	5	5
Flood Watch	2	2	0	0	3	6	7
Flood Warning	0	2	0	0	0	13	0
Total (System)	8	15	6	6	11	32	14

Summary of Current Conditions

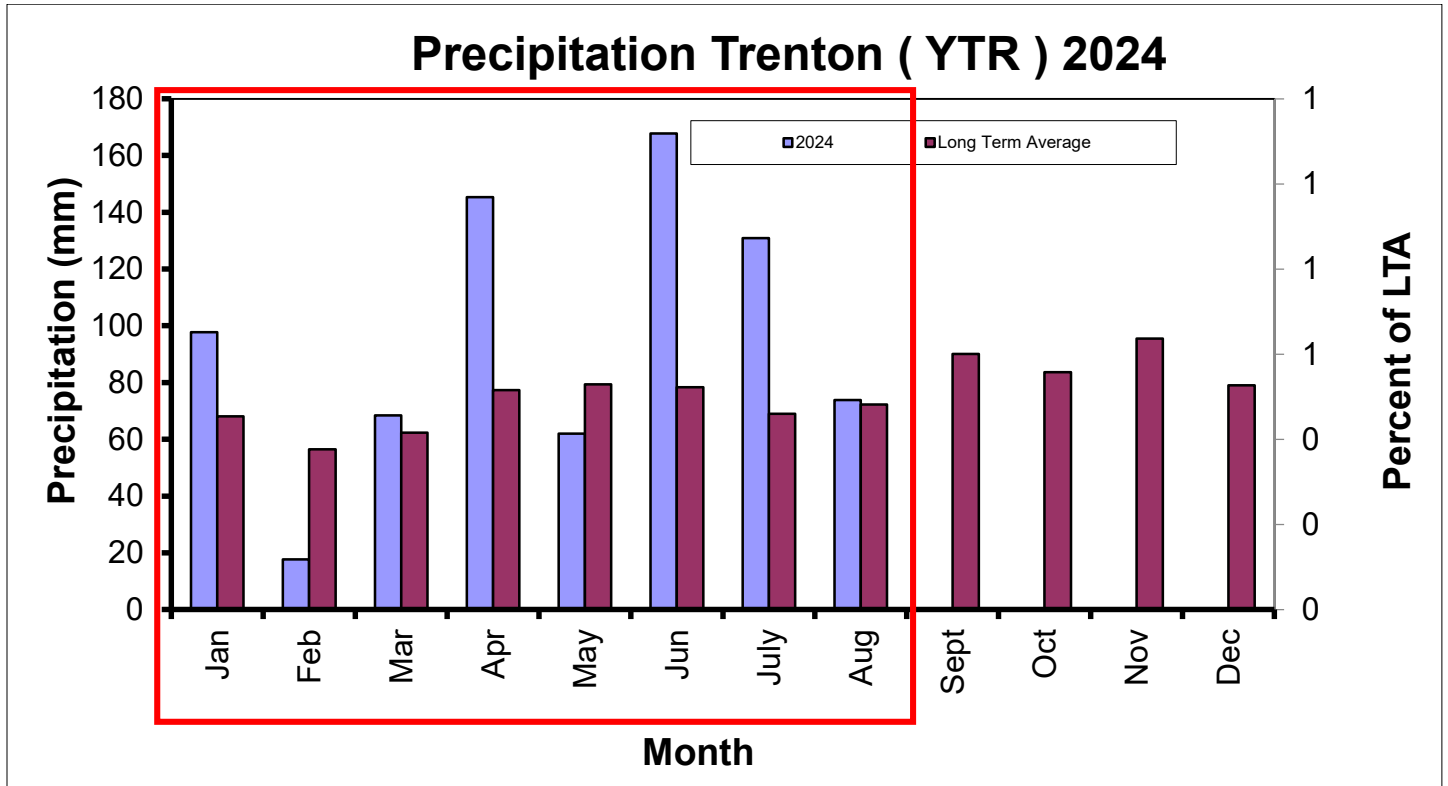
Observed precipitation volumes were far greater than the monthly long-term average for the month of July (see Table 2). So far, the observed precipitation for the month of August slightly exceeded the long-term average. Although, we are still in the month of August, this has been the third month in a row where we have seen total precipitation volumes that have exceeded the long-term averages.

Stream flows are elevated for this time of year; however, they are still within an acceptable range and well within the observed long-term average flows. LTC staff will be continuing to review the weather and stream conditions and will report further if there appears to be any potential flood or drought issues. Currently, there is no concern for low water conditions as the indicators and thresholds are not being triggered. An update has been provided to the Low Water Response Team notifying them of the current conditions.

Local Creeks

The local creek systems took in higher than average rainfall volumes this month; however, the stream flows did not show much response to these rainfall events. The majority of the creeks are experiencing higher than average streamflow through the month of July and August, but water levels and flows are within the acceptable ranges. Staff will be continuing to review the conditions and forecast for updates.

Table 2. Observed Monthly Precipitation (mm) in 2024 compared to the monthly long-term average.



Trent River

The Trent River system is experiencing average water levels and flows when compared to previous years. Due to the larger than average rainfall, Parks Canada-Trent Severn Waterway is undergoing operations to push water through the system, so owners should expect slight variability in the water levels and flows during peak navigation times. If there are any concerns or issues with the water levels on the Trent River system, owners are advised to contact Parks Canada-Trent Severn Waterway.

Lake Ontario

Currently, water levels are around average for this time of year. Staff are continuing to review weather conditions for any high wind events that may result in storm surges with waves exceeding 1 metre.

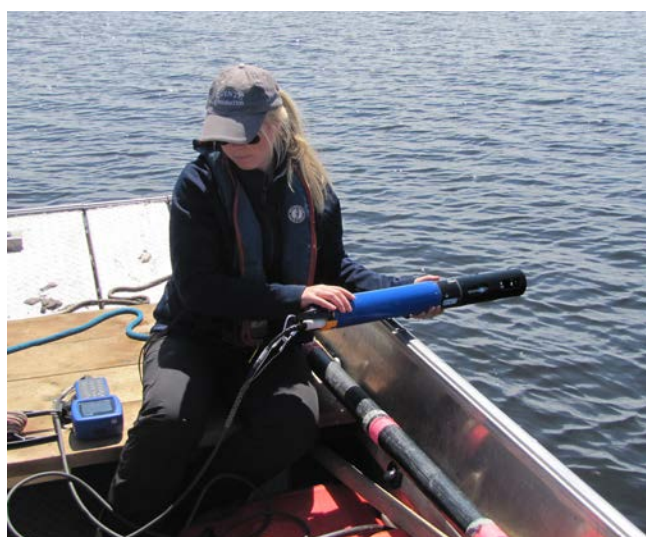
**RECOMMENDATION:**

Staff recommends to the Board of Directors that the Flood Forecasting and Warning Update be received as information.

## Waterlogs - July 2024

Today, the Bay of Quinte is a healthy and vibrant ecosystem.  
Now, we must focus on keeping it this way

### A SUMMER OF SCIENCE



It's summer monitoring season on the Bay. Numerous BQRAP partner agencies are out-on-the-water monitoring and collecting data for a variety of water quality indicators like: fish populations, wetland habitat, phosphorus levels, algae species, and a host of other indicators.

The Ministry of Natural Resources (MNR) is assessing fish populations as part of their ongoing monitoring of the Bay. They collect information about species type and abundance. This includes detailed biological analysis like: length, weight, age, and taking tissue samples to send for contaminant analysis. MNR assessment projects are used to compare trends over time, or compared the Bay to other areas, and evaluate the overall health of the fish populations in the Bay of Quinte.

Several monitoring programs are implemented through BQRAP staff and Quinte Conservation.

The Coastal Wetland Monitoring Program, Quinte Conservation along with the Bay of Quinte Remedial Action Plan (BQRAP) has been monitoring 15 coastal wetlands in the Bay of Quinte since 2006, sampling water quality, underwater bugs, fish and wildlife, and vegetation. This provides valuable information for future management and protection of coastal wetlands.

As well, the Bay of Quinte Long-term Monitoring Program, occurs every two weeks from May to October monitoring for water quality, including algae species and their concentrations, at nine sites around the Bay, from the Murray Canal to Picton Harbour.

In its 2nd year, is a summer monitoring partnership with the St. Lawrence River Institute to assess baseline levels of Mercury in wetland sediments. The first year results showed that levels were well below the LEL (lowest effect levels). There are no known sources of Mercury in the Bay of Quinte. This assessment is being done as an additional line of evidence for the fish consumption environmental challenge.

This summer, Ontario Federation of Anglers and Hunters summer students are out on the bay looking for additional populations of the invasive species Water Soldier. This plant is quickly spreading in the Bay, identifying new populations means management plans and control measures can be implemented in a timely manner.

Another project is the Bay of Quinte Fish Consumption Survey, which is designed to collect data on what fish species are caught and consumed from the Bay. The environmental challenge that addresses fish consumption is in the final phases of data assessment. Part of the assessment is to gather public consumption preferences.

Behind the scenes are a number of other BQRAP partners contributing to the collection, analysis and administration of these BQRAP projects. Keeping the Bay, a healthy and vibrant ecosystem takes multiple partners collaborating and implementing a variety of scientific research and monitoring projects.

## FISH CONSUMPTION SURVEY



# BAY OF QUINTE FISH CONSUMPTION SURVEY

[WWW.BQRAP.CA](http://WWW.BQRAP.CA)

PHOTO BY ELAINE KEMP

### Do you fish in the Bay of Quinte?

The Bay of Quinte Remedial Action Plan is conducting a Fish Consumption Survey to collect data on what people catch and eat from the Bay of Quinte..

You will be entered in to a random draw for a \$100.00 Canadian Tire gift card by filling in the survey.

The **Bay of Quinte Fish Consumption Survey** will only take a couple of minutes to complete.

## IMPROVING WATER QUALITY WITH COVER CROPS

### Bay of Quinte Remedial Action Plan Rural Stewardship Program

#### \*FREE SOIL TESTING\*

Knowing what's going on with your soil is the first step in creating high yielding sustainable agriculture. Book your site visit, Today.

#### \*COVER CROPS\*

We offer a cover crop seed grant of \$30.00 per acre - grant maximum up to \$2,500.

Jason Jobin  
Bay of Quinte Remedial Action Plan  
Lower Trent Conservation  
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 **Bay of Quinte**  
Remedial Action Plan  
Healthy Bay + Healthy Community  
[www.bqrap.ca](http://www.bqrap.ca)

Cover crops provide farmers with numerous benefits like erosion control, added organic matter, increased infiltration of water, weed suppression etc. If you are thinking of planting a cover crop this season we have a grant that can help.

Our stewardship programs are in high gear this summer. Book your FREE site visit, Today!

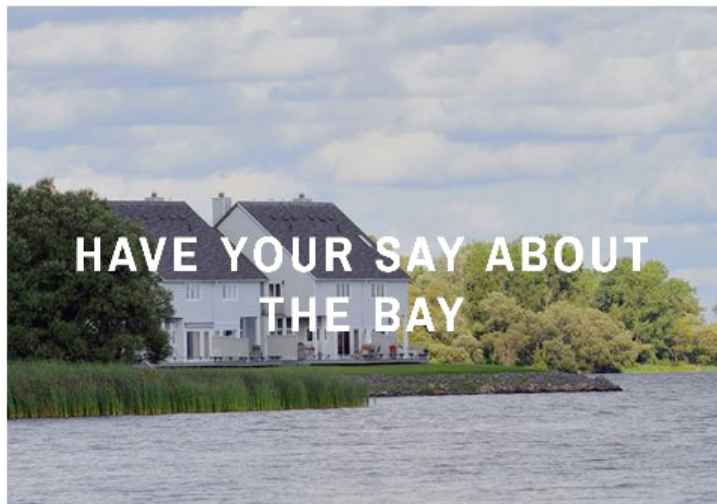
For details [www.bqrap.ca](http://www.bqrap.ca)

### Benefits of Cover Crops video



6:37



**LET US KNOW YOUR THOUGHTS ABOUT THE BAY**

We are always interested in what you have to say about the Bay.

As the Bay of Quinte Remedial Action Plan moves closer to its ultimate goal of removing the Bay from the Areas of Concern list, your comments, concerns, ideas, and questions are vitally important. Only through community engagement will the Bay of Quinte remain a vibrant and healthy ecosystem.

**Let us know your thoughts.**

# Waterlogs - August 2024

Today, the Bay of Quinte is a healthy and vibrant ecosystem.  
Now, we must focus on keeping it this way

## HASTINGS COUNTY PLOWING MATCH AND FARM SHOW

A sure sign summer is starting to wind down is the Hastings County Plowing Match and Farm Show. We attend this event each year to connect with the agricultural community. Farmers have always been big supporters of the Remedial Action Plan and its objective to improve water quality through stewardship initiatives. Here are some photos and an action packed video of the two days we spent at the plowing match.



Hastings County Plowing Match and Farm Show 2024 video

## IMPROVING WATER QUALITY WITH STEWARDSHIP PROJECTS

### Bay of Quinte Remedial Action Plan Rural Stewardship Program

#### **LIVESTOCK FENCING**

• Install fencing to restrict livestock access to a waterway or wetland.  
Grant rate - 75% - maximum up to \$7,500

#### **ALTERNATE WATERING SYSTEMS**

• To be eligible for funding, livestock must be fenced out of a waterway or wetland  
Grant rate - 75% - maximum up to \$7,500

#### **SHORELINE/WATERWAY PLANTING PROJECTS**

• Native plants and materials to help with plant survival (mulch, plant guards, hemp mats) for an area along a shoreline/waterway or wetland  
Grant rate - 75% - maximum up to \$1,000

#### **EROSION/WATER QUALITY IMPROVEMENT PROJECTS**

• stream bank stabilization • barnyard runoff control  
• manure storage improvements • constructed wetlands  
• erosion control structures • storm water management  
Grant rate - 75% - maximum up to \$7,500

Jason Jobin

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Kaitlin Maurer

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#### **\*FREE SOIL TESTING**

Knowing what's going on with your soil is the first step in creating high yielding sustainable agriculture.  
Book your site visit, Today.

#### **\*COVER CROPS\***

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**Bay of Quinte**  
Remedial Action Plan  
Healthy Bay • Healthy Community

[www.bqrap.ca](http://www.bqrap.ca)

## FISH CONSUMPTION SURVEY

# BAY OF QUINTE FISH CONSUMPTION SURVEY [WWW.BQRAP.CA](http://WWW.BQRAP.CA)

PHOTO BY ELAINE KEMP

### Do you fish in the Bay of Quinte?

The Bay of Quinte Remedial Action Plan is conducting a Fish Consumption Survey to collect data on what people catch and eat from the Bay of Quinte.

The environmental challenge that addresses fish consumption in the bay is in the final phases of data assessment. Part of the assessment is to gather public consumption preferences.

You will be entered in to a random draw for a \$100.00 Canadian Tire gift card by completing the survey.

The [Bay of Quinte Fish Consumption Survey](http://www.bqrap.ca) will only take a couple of minutes to complete.

## SUMMER WRAP-UP



If haven't already done so, now, is a great time to have a summer fish fry. Get everyone together, before the kids go back to school and the flurry of fall activities begin. The Bay of Quinte is renowned as a world-class fishery. Bay of Quinte fish are healthy, abundant, and perfectly fine to eat. After spending a great day on the water, fishing, there is nothing better than fresh fish for supper. Here are a couple recipes for your next get-together.

**Be sure to review the [Guide to Eating Ontario Fish](#)** - Use this guide to help you identify the types and amounts of fish that are safe to eat from more than 2,700 fishing locations in Ontario.

### Pan Fried Largemouth Bass with Lemon Garlic Herb Butter Sauce

4 large mouth bass fillets, skin removed  
Salt  
Pepper  
1 cup flour  
4 tablespoons unsalted butter  
1 tablespoon garlic, sliced thin  
1/4 cup mild fresh herbs such as basil, parsley, chervil, oregano  
2 tablespoons fresh lemon juice

Season the fillets with salt and pepper. Heat a saute pan on top of the grill. When the pan is hot add 2 tablespoons of the olive oil and heat.

Dredge the bass fillets in the flour and shake off any excess. Place the fillets in the pan and pan fry about 3 minutes per side, until golden brown. Remove the fish from the pan.

Add the rest of the butter to the pan and melt. When the butter is hot, add the sliced garlic. Fry the garlic until it just begins to turn light golden brown. Add the herbs and remove from the heat.

Carefully, add the lemon juice. Season with salt and pepper. To serve, place a fillet on a plate and spoon some of the lemon garlic herb butter over the fish.

### Lancaster Perch Rolls

Enjoy the distinct succulent, almost sweet flavour of fresh perch in a traditional perch roll. The sauce is perfect to serve with perch or pickerel on a bun.

#### **Sauce**

1 egg  
1/2 tsp dry mustard  
1/2 cup milk  
1 1/2 tbsp flour  
1/4 cup white sugar  
1/2 cup white vinegar

#### **Perch Roll**

1 lb freshwater perch or pickerel  
1/2 cup flour  
2 tbsp butter  
1/2 tsp salt  
1/2 tsp pepper  
6-8 hot dog buns

Prepare the sauce. In a small saucepan, whisk together the egg, mustard, milk and flour. Cook on medium heat until thickened, stirring frequently.

Add the white sugar and vinegar to a large mug and microwave for about 30 seconds to dissolve the sugar. A double boiler may also be used to warm and dissolve the sugar.

Stir the vinegar and sugar mixture into to the remaining sauce ingredients and simmer for a few minutes. Prepare the fish and buns. Filet the fresh fish, wash and pat dry, then sprinkle with salt and pepper Dredge the fish in flour. Add the butter to a frying pan and fry the fish for about 2 minutes per side. Toast the buns, add the fish to the buns and top generously with the sauce. Servings: 4



**LOWER TRENT**  
CONSERVATION

# STAFF REPORT

**Date:** August 23, 2024  
**To:** Board of Directors  
**Re:** Provincial Offences Officer Appointment  
**Prepared by:** Gage Comeau, Manager, Watershed Management,  
Planning and Regulations

---

## PROPOSED RESOLUTION:

THAT Tobias Farrell be appointed as a Provincial Offences Officer for the purpose of performing enforcement and offence related functions under Part VII of the *Conservation Authorities Act*, Section 28.5 and 29 Regulations and the *Trespass to Property Act* within the area of jurisdiction for Lower Trent Conservation, effective during his employment with Lower Trent Conservation.

## BACKGROUND:

Lower Trent Conservation currently has the following two staff members designated as Provincial Offences Officers for the purpose of enforcing Part VII of the *Conservation Authorities Act*, Section 28.5 and 29 Regulations, and the *Trespass to Property Act*: Gage Comeau and Scott Robertson. In order to ensure appropriate coverage and workload volumes, we require a third staff member be appointed.

Toby Farrell was hired by Lower Trent Conservation (LTC) in August 2024 as the Regulation and Enforcement Officer. Prior to working at LTC, Toby worked on pro bono representation of Indigenous persons in British Columbia, Columbia and commercial litigation as a member of the Canadian Bar Association – BC Branch. For approximately seven years, Toby has gained experience with courtroom advocacy, economic development, governance, capital project services, and natural disaster response and recovery. Toby holds both a law degree and a Bachelor of Arts (Honours), Philosophy from the University of Toronto. Through his previous experience as a lawyer in BC, Toby is familiar with legal procedures, crown briefs and general court processes.

Section 30.1 of the *Conservation Authorities Act* provides for the appointment of officers for ensuring compliance with the *Act* and the regulations. In this regard, Conservation Ontario, in consultation with the Ministry of Natural Resources, has established a protocol to establish documentation requirements for designating staff as Provincial Offences Officers. Based on Toby's experience as a member of the Canadian Bar Association – BC Branch, Toby meets the requirements necessary to be appointed as an officer.

Toby will be asked to take an oath as part of the appointment process, declaring that they will serve Lower Trent Conservation as an Enforcement Officer and will administer the regulations in a fair and equitable manner.

## RECOMMENDATION:

Staff recommends to the Board of Directors that the Tobias Farrell be appointed as a Provincial Offences officer for the purpose of performing enforcement and offence related functions under Part VII of the *Conservation Authorities Act*, Section 28.5 and 29 Regulations and the *Trespass to Property Act*.



**LOWER TRENT**  
CONSERVATION

# STAFF REPORT

**Date:** August 27, 2024  
**To:** Board of Directors  
**Re:** Flood and Erosion Control Structures – Annual Inspection Report  
**Prepared by:** Gage Comeau, Manager, Watershed Management, Planning and Regulations

## PROPOSED RESOLUTION:

THAT the Flood and Erosion Control Structures Operations and Maintenance Manual be approved and adopted.

## BACKGROUND:

Section 21.1 of the *Conservation Authorities Act* and Ontario Regulation 686/21: Mandatory Programs and Services (O. Reg. 686/21) made under the Act requires that each Conservation Authority have a Flood and Erosion Control Structure Operations and Maintenance Manual by December 31, 2024.

Pursuant to Ontario Regulation 686/21, Section 5 - Infrastructure states:

5. (1) Subject to subsection (3), an authority shall provide programs and services that support the operation, maintenance, repair and decommissioning of the following types of infrastructure the authority owns or manages:

1. Any water control infrastructure, the purpose of which is to mitigate risks to life and damage to property resulting from flooding or to assist in flow augmentation.
2. Any erosion control infrastructure.

(2) Programs or services provided under subsection (1) shall include the following components:

1. The development and implementation of an operational plan on or before December 31, 2024.
2. The development and implementation of an asset management plan on or before December 31, 2024.
3. The undertaking of any technical or engineering studies necessary to ensure the proper operation and maintenance of the infrastructure to which the program or service applies.

(3) If an authority enters into an agreement with an owner of infrastructure mentioned in paragraph 1 or 2 of subsection (1) to manage the infrastructure on the owner's behalf, the authority shall provide the programs and services to operate, maintain, repair and decommission the infrastructure only in accordance with its obligations under the agreement.

(4) An authority may update the plans mentioned in paragraphs 1 and 2 of subsection (2), from time to time, as the authority considers it advisable.

The purpose of this document is to fulfill the requirements of subsection 5 (2) by developing and implementing an operation plan, supporting the existing and future asset management plan and providing guidance to LTC

Staff on the operation, maintenance and surveillance of the flood and erosion control structures that LTC owns. Furthermore, this document also applies to flood and erosion control structures where an agreement between LTC and owner of infrastructure exists to undertake any operation, maintenance or surveillance activities on their behalf.

Currently, LTC has agreements with the City of Quinte West, Municipality of Trent Hills and the Township of Stirling-Rawdon that identify the responsibilities of LTC staff, which are to conduct an annual inspection and reporting for municipally owned flood and erosion control structures. As these agreements have come into effect this year (2024), an annual inspection and report will be generated and provided to the subject Municipalities as noted in the agreement. Inspection forms and the minimum reporting requirements are outlined in the Flood and Erosion Control Structures Operations and Maintenance Manual.

Overall, to ensure that we meet the legislative requirements, staff are requesting that this operations and maintenance manual be approved and adopted.

**RECOMMENDATION:**

Staff recommends that the Flood and Erosion Control Structures Operations and Maintenance Manual be approved and adopted by the Board of Directors.



**Lower Trent Region  
Conservation Authority**

**Flood and Erosion Control Structures  
Operation and Maintenance Manual**

**May 2024**



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# 1 INTRODUCTION

## 1.1 The Lower Trent Watershed

The Lower Trent Conservation watershed region includes the furthest downstream section of the Trent River watershed, encompassing 2,070 square kilometres. It includes the Trent River, which flows out of Rice Lake to the Bay of Quinte at Trenton, and includes the watersheds of eight main tributaries. The watershed region also includes a number of smaller watercourses that flow directly into Lake Ontario and the Bay of Quinte from Grafton to Quinte West.

Many of the urban centres within the Lower Trent watershed region were settled along river valleys and in close proximity to watercourses. While there were many benefits to locating in these places, there were also risks from flooding and erosion.

In order to protect existing homes and businesses against these natural hazards, Lower Trent Conservation, with support from municipal partners and the province, has constructed a number of flood and erosion control structures in ten project areas in various municipalities throughout the watershed. Grants were provided by the Province of Ontario to implement these projects with the remaining funds coming from the individual municipalities that directly benefited from the project. As these structures were constructed around 40 years ago, a maintenance program and regular inspections are required to ensure that they are in good condition and continue to function as designed.

## 1.2 Purpose of this Document

Under the *Conservation Authorities Act* (CAA, R.S.O. 1990, c. C.27), *Ontario Regulation 686/21: Mandatory Programs and Services* (O.Reg. 686/21) originally came into effect on October 21, 2021 and this regulation includes **Section 5 – Infrastructure**, which reads as follows (current as of January 1, 2023):

- (1) Subject to subsection (3), an authority shall provide programs and services that support the operation, maintenance, repair and decommissioning of the following types of infrastructure the authority owns or manages:
  1. Any water control infrastructure, the purpose of which is to mitigate risks to life and damage to property resulting from flooding or to assist in flow augmentation.
  2. Any erosion control infrastructure.
- (2) Programs or services provided under subsection (1) shall include the following components:
  1. The development and implementation of an operational plan on or before December 31, 2024.
  2. The development and implementation of an asset management plan on or before December 31, 2024.
  3. The undertaking of any technical or engineering studies necessary to ensure the proper operation and maintenance of the infrastructure to which the program or service applies.
- (3) If an authority enters into an agreement with an owner of infrastructure mentioned in paragraph 1 or 2 of subsection (1) to manage the infrastructure on the owner's behalf, the authority shall provide the programs and services to operate, maintain, repair and decommission the infrastructure only in accordance with its obligations under the agreement.
- (4) An authority may update the plans mentioned in paragraphs 1 and 2 of subsection (2), from time to time, as the authority considers it advisable.

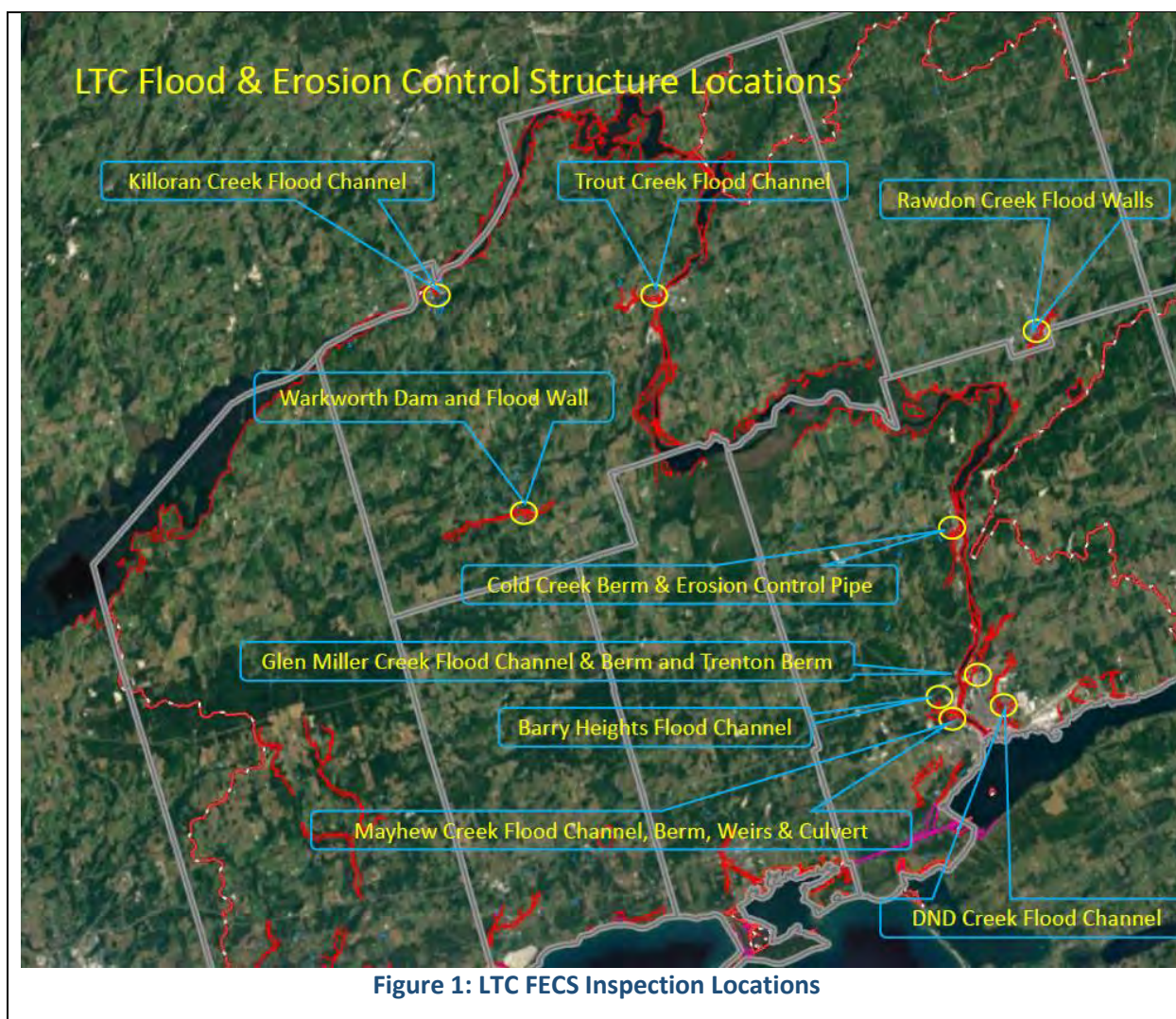


The purpose of this document is to fulfill the Operational Plan requirements under Section (2) 1. O.Reg. 686/21, support the Asset Management portion (Subsection (1) 2.) and provide guidance to LTC staff on the operation, maintenance and surveillance (OMS) of the flood and erosion control structures that LTC owns. This document also applies to other FEC structures that LTC has an agreement with the owners to undertake the OMS on their behalf (Subsection (3)).

LTC has historically undertaken this work since the structures had been constructed with the funding being sourced from the general levy from municipal partners with potentially small portions funded through the Section 39 funding from the province. Currently, there are Municipal agreements with the City of Quinte West, Municipality of Trent Hills and Township of Stirling-Rawdon that outline the roles and responsibilities of LTC staff (annual inspection and reporting).

### 1.3 Locations of FECS in LTC Watershed

The general locations of the Flood and Erosion Control Structures located within the LTC watershed, that LTC staff have historically conducted inspections on can be seen in Figure 1 below.



## 1.4 What are Flood Control Structures?

The primary goals of floodplain management are reduction of economic losses and threats to public health and safety from flooding, and preservation and restoration of the natural and beneficial functions and resources within floodplains.

There are three basic strategies that may be applied individually or in combination to reduce threats to life and property from flooding. Under each “strategy” there are a number of “tools” that can be employed. The strategies and tools are listed below:

- Modify the susceptibility to flood damage and disruption by the following:
  - Floodplain Regulations
  - Development and redevelopment policies
  - Disaster Preparedness, Assistance and Recovery
  - Floodproofing
  - Flood Forecasting and Warning – Emergency Plans
- Modify the adverse impacts of floods on the individual and the community:
  - Information and Education
  - Flood Insurance
  - Tax Adjustments
  - Flood Emergency Measures
  - Post-Flood Recovery
- Modify floods
  - Dams and Reservoirs
  - Dykes, Levees and Floodwalls
  - Channel alterations
  - High-Flow Diversions and Spillways
  - Land Treatment
  - On-Site Detention
  - Shoreline Protection Measures

Flood control structures are the tools mentioned above to modify floods and are typically permanent structures that are specifically designed and used for reducing flood impact in local areas. Flood control structures are designed to handle large volumes of water for a sustained period of time.

These tools modify floods by allowing changes in:

- the volume of runoff;
- the peak stage of the flood;
- the time of rise and duration;
- the extent of the area flooded;
- the velocity and depth of floodwaters; and
- the amount of debris, sediment, and pollutants that floods carry.

While the effectiveness of these tools in protecting property and saving lives has been demonstrated repeatedly, sole reliance upon a flood modification strategy is neither practical nor desirable. Flood modification (structural) measures acting alone leave a residual flood loss potential within the

remaining floodplain and add the risk of rare but potentially devastating damages from structural failure or from uncontrolled flows of major storms. Unless accompanied by appropriate non-structural measures, the structural measures could lead to a false sense of security and encourage floodplain landowners to develop inappropriate uses of their lands. For this reason, some form of land use regulations and other appropriate non-structural measures should accompany the implementation of structural measures.

### 1.5 What are Erosion Control Structures?

Streambank erosion is when the flow of water becomes too powerful for the banks of a creek or stream to contain. As a result, the water will carry sediments and debris from the streambank and into primary sources of water. Streambanks become weak due to the force of water flow or the loss of vegetation around the sides of the water.

Sometimes, the natural changes in temperature, water flow or the environment lend to the occurrence of streambank erosion. However, in the case of property development, human-made structures also contribute to the effects of erosion. It can be as simple as a shift in the soil due to construction that causes plant life along the banks of a stream to recede. Other times, dams and levees, which can reroute and increase the flow of water, can cause significant erosion to occur.

Erosion control is a catch-all phrase encompassing a variety of projects and methods for reducing river and stream erosion and involves the practice of stabilizing river and stream banks. Erosion control structures are a set of common physical measures intentionally built to manage, redirect, or control erosive concentrated water runoff flows that can cause significant water-induced erosion damage. Riparian erosion caused by the action of high stream flows on the stream banks can provoke damage to adjacent lands, infrastructure causing economic losses and pollute the water of reservoirs and rivers bringing and creating environmental damage.

Erosion control structures are used to manage surface runoff and soil loss and they reduce the damage of future floods, especially in urban areas where developments are located near rivers and streams. More naturalized erosion control is important for protecting man-made structures.

There are typically three options for erosion control measures including hardened channels, bank armoring or vegetative erosion controls. Hard engineered structures refer mainly to retaining walls built from concrete that prevent soil and vegetation erosion but increase the rate of channel flow. Hardened channels will prevent future erosion but prevents natural meandering of the stream or river. Channel bank armoring includes riprap projects where rocks are placed along river banks to prevent soil erosion and gabion structures where rocks are held back using meshed wiring at different levels to mitigate flooding. Vegetative options include cement-sand bagging and planting more water-retaining vegetation along river and stream beds.

### 1.6 LTC's Flood and Erosion Control Structures

Historically LTC has been involved in the construction of a number of Flood and Erosion Control Structures (FECS), as defined in the background sections in the following chapters. It should be noted that LTC is not the owner of many of these structures but was involved in the construction and ongoing maintenance and surveillance of these structures. Most of the structures that are listed below have been identified by LTC to the province and are registered on the province's Water and Erosion Control Infrastructure (WECl) database. The structures owned by LTC are discussed in Chapter 2 and the

structures not owned by LTC are discussed in Chapter 3 of this report. There are also a few structures that are not listed in the WECl database that LTC has some historic files and these are listed at the end of this section for information purposes only.

#### 1.6.1 LTC Owned and Maintained Structures

The list of FECSs owned and maintained by LTC are discussed in further detail in Chapter 2 and are listed below:

- Kings Mill Dam (LTC Capital Works Project W.1.4) – is listed as a Capital Works project in Rawdon Township in the Township of Stirling-Rawdon. There is no information in the FECS files on the new dam that was constructed in 1989 in partnership with Ducks Unlimited Canada (DUC) so any information on this site may be found in the Conservation Areas information.
- Vacant Property on Inkerman Street (LTC Capital Works Project W.1.7) – Flood Control – located in the former Town of Campbellford in the Municipality of Trent Hills (note that this property is not listed as a separate structure but is included with the Trout Creek Flood Wall – see below);
- Warkworth Dam and Reservoir (LTC Capital Works Project W.1.8)– located in the former Village of Warkworth in the Municipality of Trent Hills;
- Warkworth Flood Wall (LTC Capital Works Project W.1.8) – located in the former Village of Warkworth in the Municipality of Trent Hills;
- Barry Heights Flood Channel (LTC Capital Works Project W.1.15) – located in the former Murray Township of the City of Quinte West; and
- Cold Creek Pipe – Erosion Control Structure (LTC Capital Works Project W.1.16) – located in the former Village of Frankford in the City of Quinte West.

#### 1.6.2 FECS Structures Owned by Others and Maintained by LTC

Other FECS that are not owned by LTC but have been maintained and inspected by LTC are discussed further in Chapter 3 of this manual. These structures are included in the provincial WECl database and are listed below:

- Killoran Creek Flood Channel (LTC Capital Works Project W.1.3) in the Village of Hastings in the Municipality of Trent Hills includes the two road crossings of Killoran Creek and the flood channel:
  - Bay Street Box Culvert
  - Killoran Creek Concrete Flood Wall
  - Water Street Double Box Culvert
- Rawdon Creek Flood and Erosion Control Structures (LTC Capital Works Project W.1.5) located in the Village of Stirling in the Township of Stirling-Rawdon. There are four main structures of interest:
  - Gabion Walls for erosion control on both banks of the creek between James Street and Front Street Bridge
  - Concrete Flood Wall upstream of James Street
  - Weir and Apron under James Street Bridge
  - Concrete abutments for the covered pedestrian bridge and associated concrete flood walls upstream and downstream
- Trent River Berm (LTC Capital Works Project W.1.6) located along the east bank of the Trent River, upstream of Highway 401 in the Town of Trenton in the City of Quinte West.

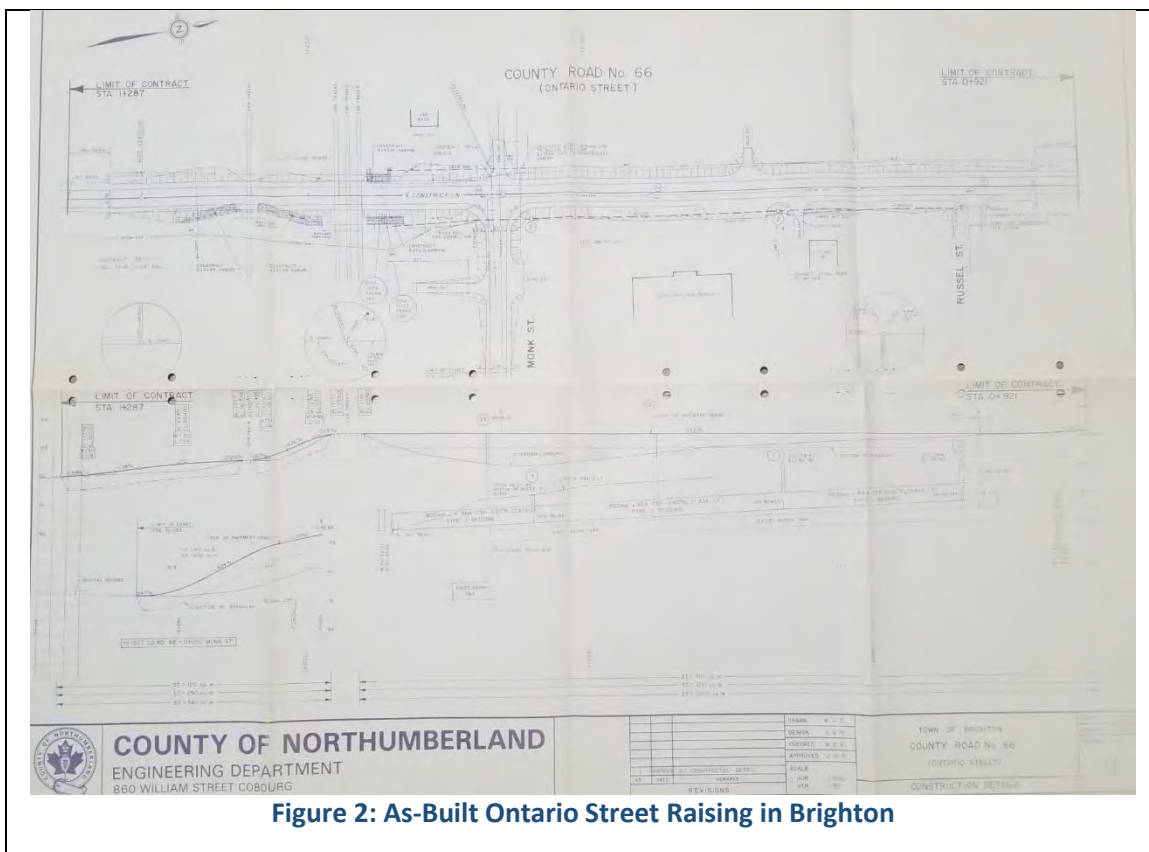
- Trout Creek Flood Channel (LTC Capital Works Project W.1.7) located in the Town of Campbellford in the Municipality of Trent Hills includes the flood wall in two sections:
  - DuraHold Block wall north of Inkerman Street between Simpson and Pellissier Streets;
  - DuraHold Block wall south of Inkerman Street between Pellissier and Balaclava Streets
- Glen Miller Creek Flood Control Works (LTC Capital Works Project W.1.10) focuses on three separate flood damage areas.
  - Trenton Industrial Park – Douglas Road in the Town of Trenton in the City of Quinte West. This work includes three separate structures are:
    - Flood Control Berm
    - Flood Channel on south side of Highway 401 from Glen Miller Road to Foster Stearns Road;
    - Box Culvert for Foster Stearns Road crossing of Glen Miller Creek
  - Peterson Road Box Culvert in the former Sidney Township in the City of Quinte West;
  - Munroe Estates and Johnstown Road in the former Sidney Township in the City of Quinte West – no actual flood control works were completed here.
- Mayhew Creek Flood Control Structures (LTC Capital Works Project W.1.12) include six (6) separate structures which are located in the former Town of Trenton and former Murray Township in the City of Quinte West. These flood control works include the following individual structures:
  - North-South Flood Control Berm – located between Telephone Road and the CN Rail line in the former Township of Murray in the City of Quinte West;
  - Two-Step Weir Flood Control Structure – located in the former Murray Township south of the CN Rail line on the main branch of Mayhew Creek, in the City of Quinte West;
  - Flat Weir Flood Control Structure – located in the former Murray Township in the by-pass channel for Mayhew Creek in the City of Quinte West;
  - Flood Control Channel – west of Old Wooler Road – located in Murray Township and the Town of Trenton in the City of Quinte West;
  - Flood Control Channel – east of Old Wooler Road – located in the Town of Trenton in the City of Quinte West;
  - Double Arch Culvert under Old Wooler Road – located in the Town of Trenton in the City of Quinte West.
- Cold Creek Flood Control Works (LTC Capital Works Project W.1.13) includes two specific structures in the Village of Frankford in the City of Quinte West including:
  - Flood Control Berm on the east side of the Frankford Golf Course
  - Weir Spillway from the Golf Course
- DND Creek Gabion Channel (LTC Capital Works Project W.1.14) includes two separate sections and is located in the Town of Trenton in the City of Quinte West;
  - Byron Street Gabion Channel
  - Connolly Street Gabion Channel

### 1.6.3 Other FECS Structures

As noted above, there are archive files for other flood control infrastructure that are not owned by LTC, not included in the provincial WECl database and are not inspected or maintained by LTC staff. This additional information is included to advise LTC staff of the historic files and involvement of LTC in the

past in these projects. A full review of the archive files was not undertaken for these facilities but a short description is provided below.

- Barnum House Creek Flow Equalizing Weir (LTC Capital Works Project W.1.1) – This weir was constructed by the Ministry of Natural Resources in 1977 to address conflicts between two landowners on the flow diversions of the creek and resulting water supply to the landowners. After the weir was constructed, the lands were transferred to LTC in 1978 and the property is now known as Barnum House Creek Conservation Area. Occasional inspections by LTC CA Lands staff are undertaken to ensure no sediment build up at the weir. In 1995 there was some erosion around the weir on the downstream side and LTC staff applied to the MNR for a work permit to complete some erosion protection around the weir. It is recommended that the weir be inspected on a yearly basis for structural integrity and for any potential erosion and/or sedimentation around the weir. Further information on the LTC T:drive: T:\ASSET MANAGEMENT & MAINTENANCE\Capital Assets & Works\Asset Register\Flood & Erosion Control Structures\Barnum House Creek Weir
- Butler Creek Flood Reduction (LTC Capital Works Project W.1.2) – In 1988 the Flood Damage Study for Butler Creek through the Town of Brighton was undertaken and a number of flood damage areas were identified. The most significant being the areas upstream of the CN Rail line along the west side of Ontario Street (formerly County Road 66). The floodplain mapping study indicated that flooding across Ontario Street would occur and this was observed during the 1980 flood. The recommendation from the Flood Damage Study was to raise Ontario Street on the approach to the rail line to act as a dyke to prevent flooding to areas east of Ontario Street. As this was a Northumberland County Road, this would be a project in partnership with the County. LTC applied for funding to the province for a number of years but funding from the province was never obtained. In 1989 there is an “as-built” drawing of Ontario Street from Northumberland County showing the raised Ontario Street grades that were undertaken by the County. It is LTC’s understanding that the Town of Brighton also undertook additional road-raising activities for roads that approach Ontario Street as well. During the Butler Creek Floodplain Mapping Update Study in 2023/2024, a number of berms along Butler Creek were identified through the analysis of the topographic information from the LiDAR. The rough locations of these berms are as follows: north of Butler Street West, southwest of Grimes Street, and between Prince Edward Street and Mill Pond Court. There is no further information available on the road improvements or the berms and LTC has had no further involvement with these identified flood protections. A photo of the “as-built” drawing of Ontario Street improvements from Northumberland County is shown below.



**Figure 2: As-Built Ontario Street Raising in Brighton**

- York Subdivision Drainage Works (LTC Capital Works Project W.1.9) – The York Creek Subdivision was constructed in the mid-1960’s in Concession A, Lot 10 in the former Murray Township. In 1981 LTC was approached by the Township of Murray to undertake a feasibility study for drainage improvements in the York Subdivision as the subdivision had been developed on lands that regularly flooded with two headwater streams of York Creek passing through the lands in a westerly direction. Significant flooding had incurred flood damages on both the roads and houses in the subdivision. Terms of Reference were prepared in July 1982 and Totten Sims Hubicki (TSH) was the selected consultant. They prepared a study that was reviewed by MNR and finalized in October 1983. The study made recommendations about constructing an open diversion channel to convey flows from the westerly flowing headwaters streams southward along the east side of the subdivision to York Creek as well as interior drainage improvements for local drainage in the subdivision. The diversion channel would require easements from the receiving landowner (either Lot 9 or Lot 10). At the request of the Township LTC staff applied to the MNR for funding for this project numerous times but it was the opinion of the province that due to the small upstream drainage area (approximately 32 ha), that this work is the responsibility of the municipality. There were numerous presentations to council and the poor drainage issue appears to reappear every few years after significant melt and/or rainfall events but there is no information in the file that any works were completed. The last communications were from 1991 when LTC presented to Township Council and noted the estimated costs for remedial work had gone from \$75,000 in 1983 to \$178,500 in 1992. No further information is

available on file. LTC notes that the City of Quinte West has been undertaking drainage improvements in this area but LTC has not been involved.

- Wellers Bay Channel Works (LTC Capital Works Project W.1.11) – In 1988, LTC was approached by the Wellers Bay Community for assistance and support to improve access to Wellers Bay to increase access for fishing and recreation and to improve the water quality in the Bay. LTC spearheaded the plans to undertake channel dredging and construction of piers to aid in keeping the channel open. This project involved the hiring of a coastal engineering team to design the works and significant consultations with the federal government (Coast Guard – Small Craft Harbours and Department of Fisheries and Oceans) as well as the province (Ministry of Natural Resources). Channel Improvements were eventually undertaken in 1989 with a maintenance dredging contract in place. The “Friends of Wellers Bay” undertook the maintenance dredging after the original work was completed and eventually the City of Quinte West took over the maintenance dredging projects on an as-needed basis (typically 5-years). Permitting includes temporary storage for dewatering and eventual disposal of the dredgeate sands by the City. Original plans included dredgeate disposal along the sand bar for ensuring sediment supply but now the sediment (sand) is used for development/construction. LTC’s role in this project now only involves permitting for the work.
- Northern Spillway Berm in Frankford (LTC Capital Works Project W.1.13 – portion) – in reviewing floodplain mapping reports for Cold Creek in Frankford, there was mention of a berm constructed along a small stream whose valley acts as an overflow spillway for Cold Creek during high flows. This berm was first viewed by LTC staff in 2022 and was confirmed to be present at the west end of Wallace Street in an unopened road allowance between Wallace Street and 129 and 125 Mill Street. Photos of this berm can be found on LTC T:drive: T:\ASSET MANAGEMENT & MAINTENANCE\Capital Assets & Works\Asset Register\Flood & Erosion Control Structures\Cold Creek Frankford\2022-10-14 Inspection Photos\Wallace St Berm
- Butler Creek Spill Berm (No Capital Works Reference) – As part of the 1988 Flood Damage Study for the Town of Brighton, a spill from Butler Creek was identified south of the rail lines and west of Ontario Street. The 1988 Report had recommended that a berm be constructed to protect the lands on the west side of Ontario Street along an unnamed Lake Ontario tributary stream that the Butler Creek Spill was conveyed through. This berm was not originally constructed and a Master Drainage Plan for Southwest Brighton was undertaken to delineate the flood hazards along this unnamed tributary stream with the Butler Creek Spill included. In 1991-1992, a property along Butler Street West had applied for a severance and LTC recommended against the application because it was located in the flood hazard. The Town approved the application and LTC appealed the decision to the Ontario Municipal Board (OMB). As part of the deliberations at the OMB Hearing, the Town constructed the berm that had been recommended in the Flood Damage Study and LTC shared in the cost of construction (\$5,000). As a result of the construction of this berm, LTC dropped the appeal and the severance application was approved. There are no files at LTC detailing the location and or construction details of this berm, just a note to file written in 2007. LTC has had no further involvement with this berm and this structure is included for information purposes only.



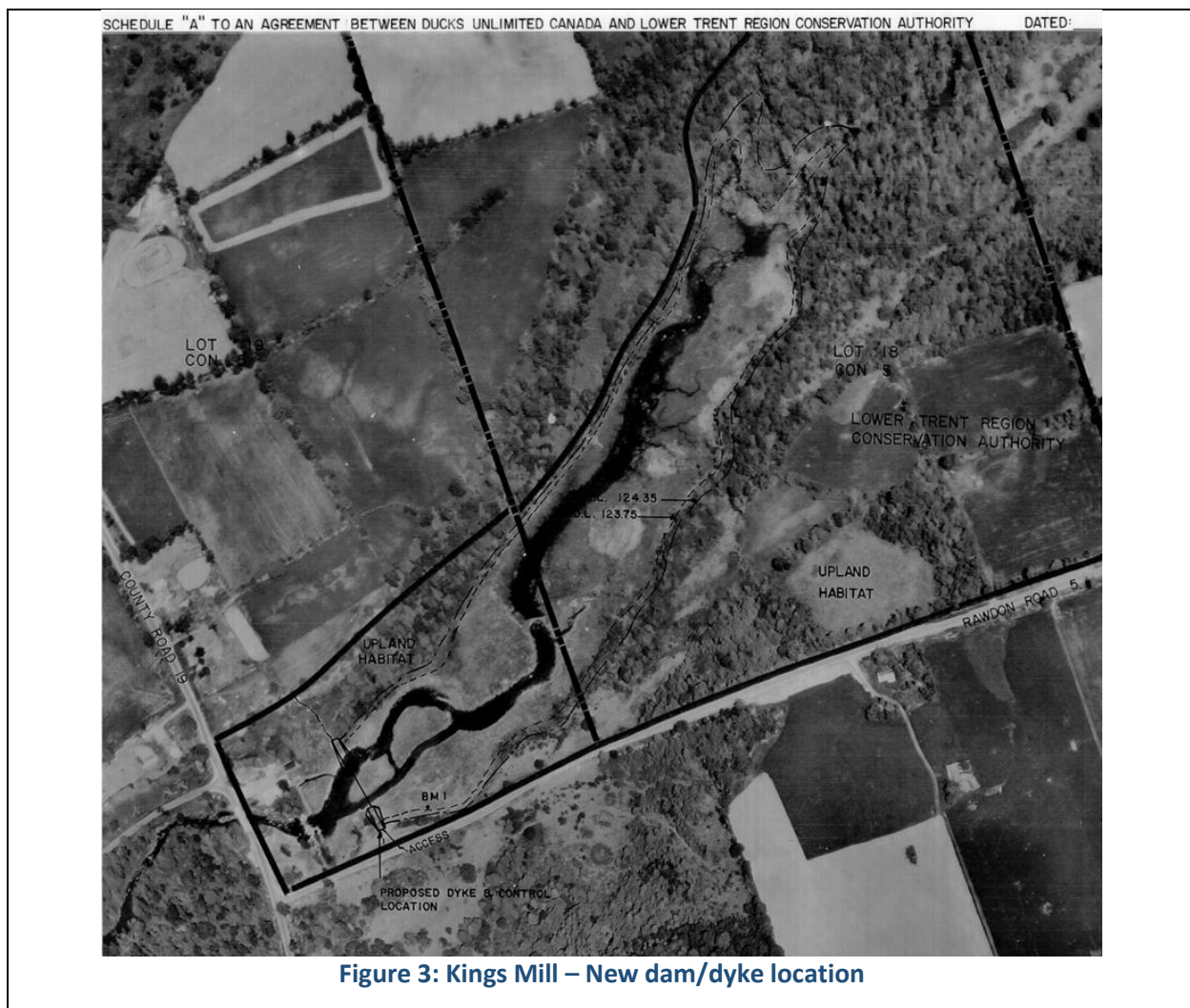
## 2 LTC OWNED FECS – DESCRIPTIONS AND HISTORY

### 2.1 Kings Mill Dam – Township of Stirling-Rawdon

#### 2.1.1 Background

As noted in the section above, there is no information on the Kings Mill Dam in the Flood and Erosion Control Structures archives. It is expected that some information and background may be found in the Conservation Lands files but these files were not accessed during the writing of this manual.

As also noted earlier, the dam was re-built in partnership with Ducks Unlimited Canada (DUC) and they provided some background documentation on the dam that was constructed in 1989. There is a signed agreement with a management plan from 1989 in the files. The drawing referred as Schedule A is shown below.



This structure is not typically included in the Flood and Erosion Control Structure surveys at the time of the writing of this manual and this structure is not listed in the provincial WECS database at this time. To the knowledge of the writer of this manual, there has not been a dam safety study completed for this structure but the Conservation Lands files should be referenced for any further information on this structure.

## 2.2 Trout Creek Channel – Vacant Property – Campbellford, Municipality of Trent Hills

### 2.2.1 Background

The vacant property with the legal description of Instrument 73748, Part Lot 8 in Block 11 on the southerly side of Inkerman Street, Registered Plan 112 in the Town of Campbellford, was known as the Muriel Seymour property. In late spring of 1988 as part of obtaining easements for the proposed flood control project on Trout Creek, access to the property was obtained. Noting that the flood control works and mapped floodplain confirmed that the currently vacant property could not be further developed, it was suggested that Lower Trent Conservation purchase the property from the owner, Muriel Seymour. The associated Capital Works file for the Trout Creek Flood Control Channel is W.1.7, in the LTC archives.

An appraisal of the property was undertaken and dated June 1, 1988, with an estimated market value of \$5,000. The appraisal document is in the file. On July 14, 1988, the land was purchased by LTC for \$7,500, as the offer of \$5,000 was not acceptable to the owner. The property survey is shown below with the required easements identified by Parts. Note that the entire property is rectangular and is labelled with the Instrument with the outlined Part 3 illustrates the area where the flood control work easement was required. Also note the Trent Canal portion (Instrument 5548) directly to the south (Lot 41 and Part Lot 8).

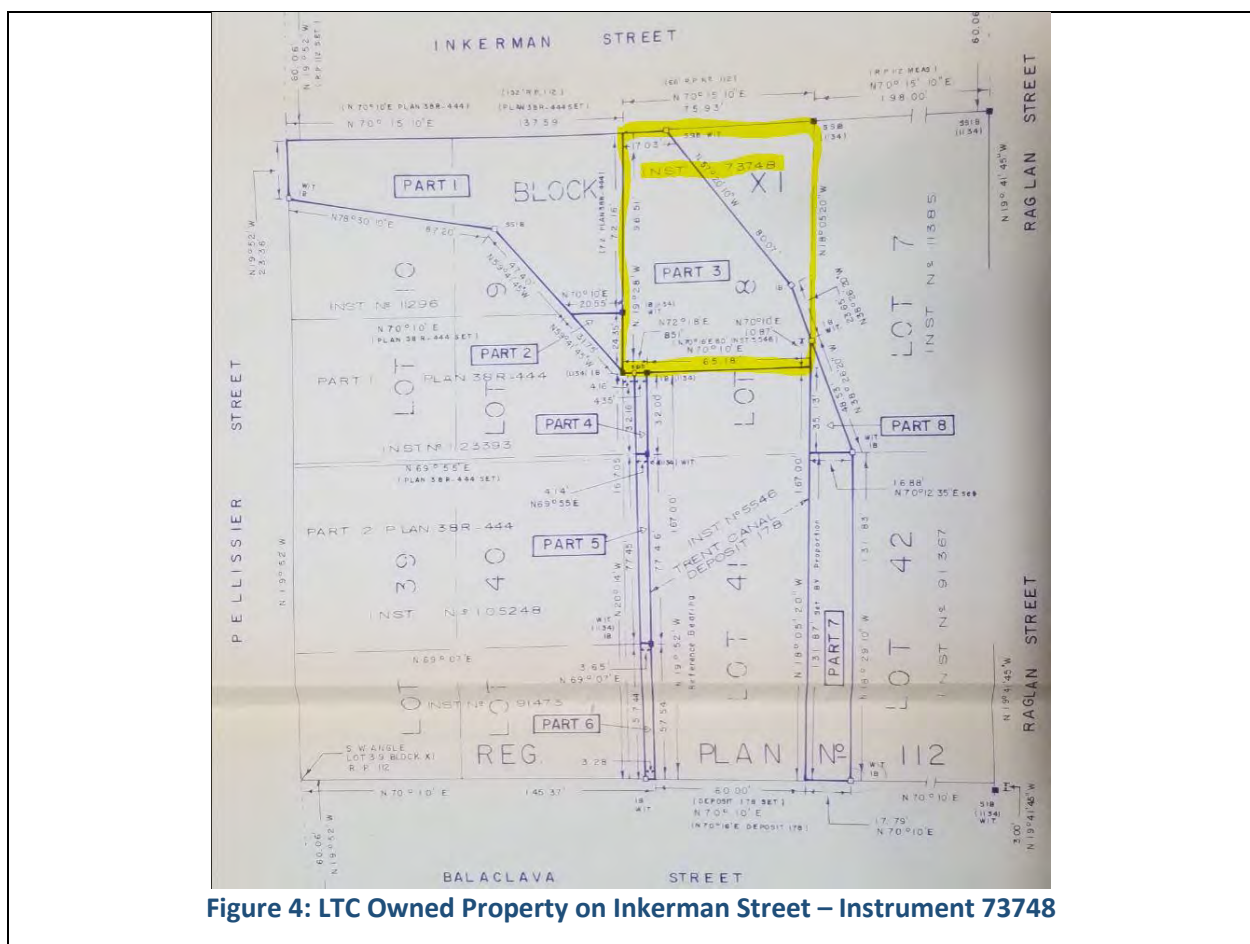


Figure 4: LTC Owned Property on Inkerman Street – Instrument 73748

### 2.2.2 Costs & Funding (1988 \$CA)

In a letter from the Town of Campbellford to LTC, dated June 23, 1988, the funding sources for the purchase of the Muriel Seymour property are outlined. The letter also notes that LTC will obtain title of the property and will assume maintenance of the property. Funding for the purchase of the property was as follows:

- Town of Campbellford portion                      \$ 3,250.00
- Provincial Grant    \$ 4,250.00

The total cost of the property was **\$ 7,500.00**

The description of the flood control works and costs for the project are described in the Trout Creek Flood Channel section in Chapter 3 of this report. A small portion of the flood control works are located on this vacant property, now owned by LTC.

## 2.3 Warkworth Dam and Reservoir – Warkworth, Municipality of Trent Hills

### 2.3.1 Background

In July of 1966 the Township of Percy contracted Totten Sims Hubicki and Associates (TSH) to undertake a Preliminary Engineering Report regarding the two dams and two ponds in the Police Village of Warkworth. The Township had recently come into ownership of this property that was located on both sides of County Road 25 and was planning to create a park for the Centennial Park Project for the Township of Percy. The pond was originally a mill pond providing power for the adjacent mill property but since the mill was now electrified, this power source was not required. The reference to two dams refers to the two spillways from the mill pond – the main spillway (located in the northeast corner of the pond, approximately in the same location as the current dam) and an emergency by-pass (secondary) spillway that discharged to the south, crossing under Mill Street and George Street before reconnecting with Burnley Creek (also known as Mill Creek). There were at least two houses constructed over this spillway by-pass channel as well.



**Figure 5: Photo of "Old" Warkworth Dam – 1967**



**Figure 6: By-Pass Channel (Secondary Spillway) under 2 roads and houses**

The Preliminary Engineering Report submitted in January 1967 provided general hydrology for the area and calculated design flows and capacity flows for the existing structures and proposed improvements for the main spillway. The engineering report was also to look at the feasibility of removing the emergency spillway. The proposed main dam upgrades and closure of the emergency spillway was proposed to cost \$52,000.



Figure 7: Drawing of Proposed Work from the 1967 Report

In a review of the TSH 1967 report by the Department of Energy and Resources (pre-cursor to Ministry of Natural Resources) Engineer dated September 11, 1967, it was noted that originally the pond consisted of an upper and lower pond bisected by Old County Road 25 (now referred to as Old Hastings Road). The engineer's review questioned why the upper pond had been filled in and reduced the capacity of the storage of the ponds. Thus the reference to the two ponds and two spillways in the Police Village of Warkworth. Note a Police Village was a form of municipal government that was used in the province of Ontario in the early 20th century if the finances or the population of an area did not permit the creation of a village.

Lower Trent Region Conservation Authority was created in 1968 and the reconstruction of the Warkworth Dam was the first large project undertaken. Discussions began in 1970 for the work to be undertaken through the Conservation Authority. Updated costs were provided which increased the project to \$70,200. TSH was contracted to manage this project (Part A) and a partner project for the United Counties of Northumberland and Durham for bridge upgrades for two bridges as part of the Warkworth Dam project (Part B). Funding for Part A followed standard provincial funding mechanisms at the time with the province providing 75% of the funding and the Conservation Authority providing the remaining 25%. Of the CA portion, typically the benefitting municipality would be levied 95% with the remaining 5% coming from the general levy.

The project construction began in September 1971 and was completed in the summer of 1972 with an official opening of the new dam and reservoir on September 13, 1972. The new dam, with two 17-foot (5.2 metre) wide spillways replaces the old 19-foot (5.8 metre) wide spillway and the by-pass channel. The new spillway increased the discharge capacity from 3000 cfs (cubic feet per second) (85 cms – cubic metres per second) to 5200 cfs (147 cms) with stoplogs removed, and a 24-inch (0.6-metre) low flow pipe ensured a controlled downstream flow at all times. Photos of the “new” dam and reservoir from May 25, 1972 are shown below.

The hard copy files for the Warkworth Dam are archived in Capital Works Project W.1.8.



### 2.3.2 Costs & Funding (1972 \$CA)

• Contractor	\$ 71,382.91
• Advertising	\$ 58.00
• Interest	\$ 1,380.00
• Legal	\$ 344.00
• Survey	\$ 100.00
• Engineering	\$ 12,943.00
• Contingencies	\$ 250.00

The total cost of the project was \$ **86,457.91**

• Provincial Grant (75 % of original \$70K)	\$ 51,874.74
• Township of Percy	\$ 8,645.80
• United Counties of Northumberland & Durham	\$ 8,645.80
• LTR Conservation Authority	\$ 17,291.57

### 2.3.3 Ownership and Easement Considerations

On November 23, 1971, LTRCA was gifted the “Mill Property” from the Township of Percy, which included other lots owned by the Township of Percy along the ponds and a 15-foot easement access

along the east side of the pond to the dam. See the figure below for the parcels included in this transaction. A copy of the Deed is in the archive files.

Sometime later (date not included in Capital Works files) LTC returned the parcels west of Old Hastings Road to the municipality for the purposes of a park.

Early in LTC's ownership of the property, the Liquor Control Board of Ontario (LCBO) rented space for a trailer retail outlet on one of the parcels included in the transfer to LTC (Parcel 5). This lease was terminated in the late 1970's and the space converted into tennis courts. The Warkworth Fire Hall is now located in this space (shaded orange as Parcel 5 in the Figure below).

A building lot at the southwest corner of Mill and George Streets was originally owned by the County and was transferred to LTC as part of the works undertaken for the dam and reservoir upgrades and bypass spillway removal in 1972. In 1979 LTC sold this small parcel of land to the Warkworth Cooperative Services.

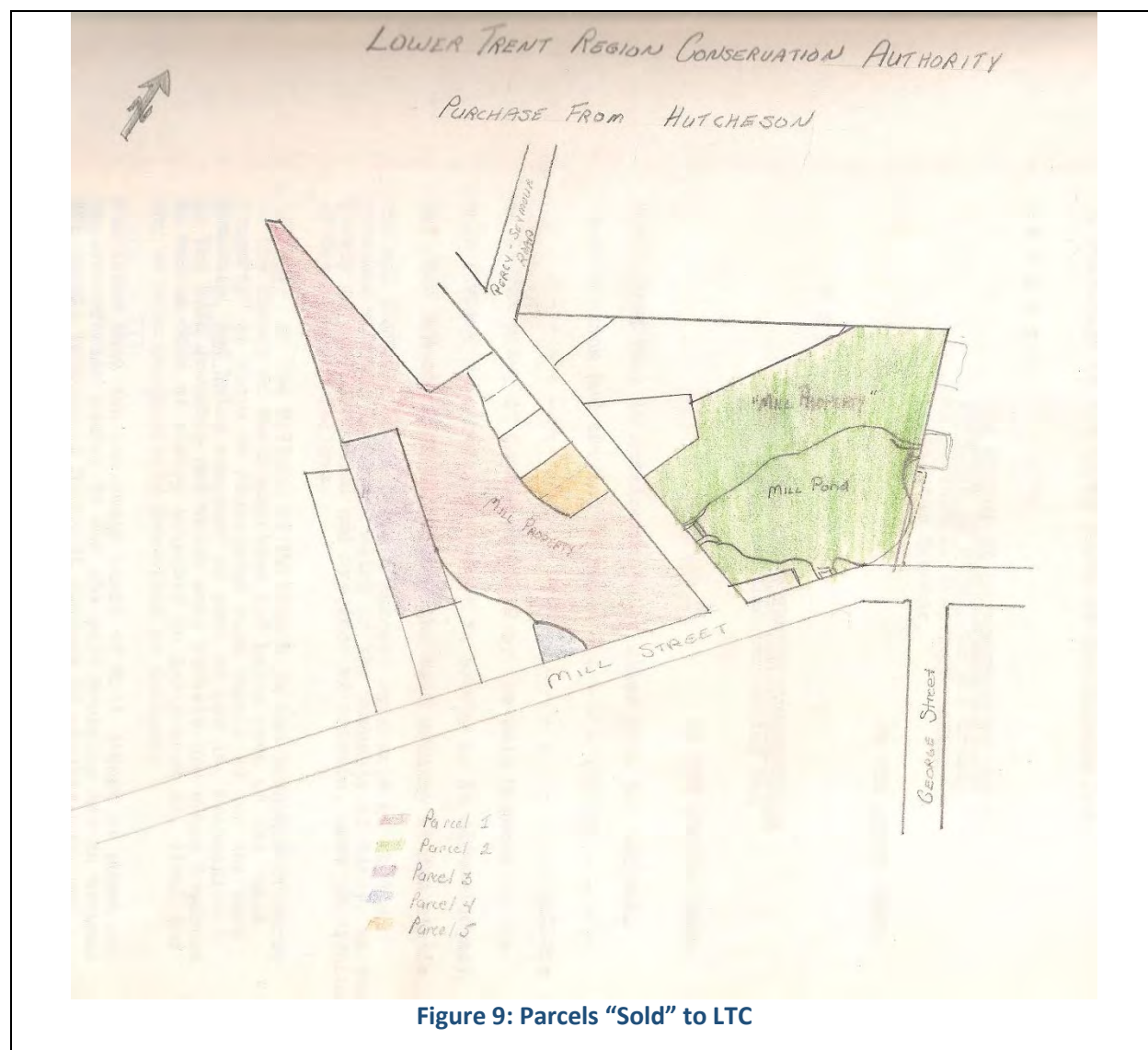


Figure 9: Parcels "Sold" to LTC



Prior to the new dam being constructed an easement onto the adjacent property was obtained in early 1972 to be able to construct the spillway and provide the access to the dam and spillway area. This additional easement area is shown in the figure below.

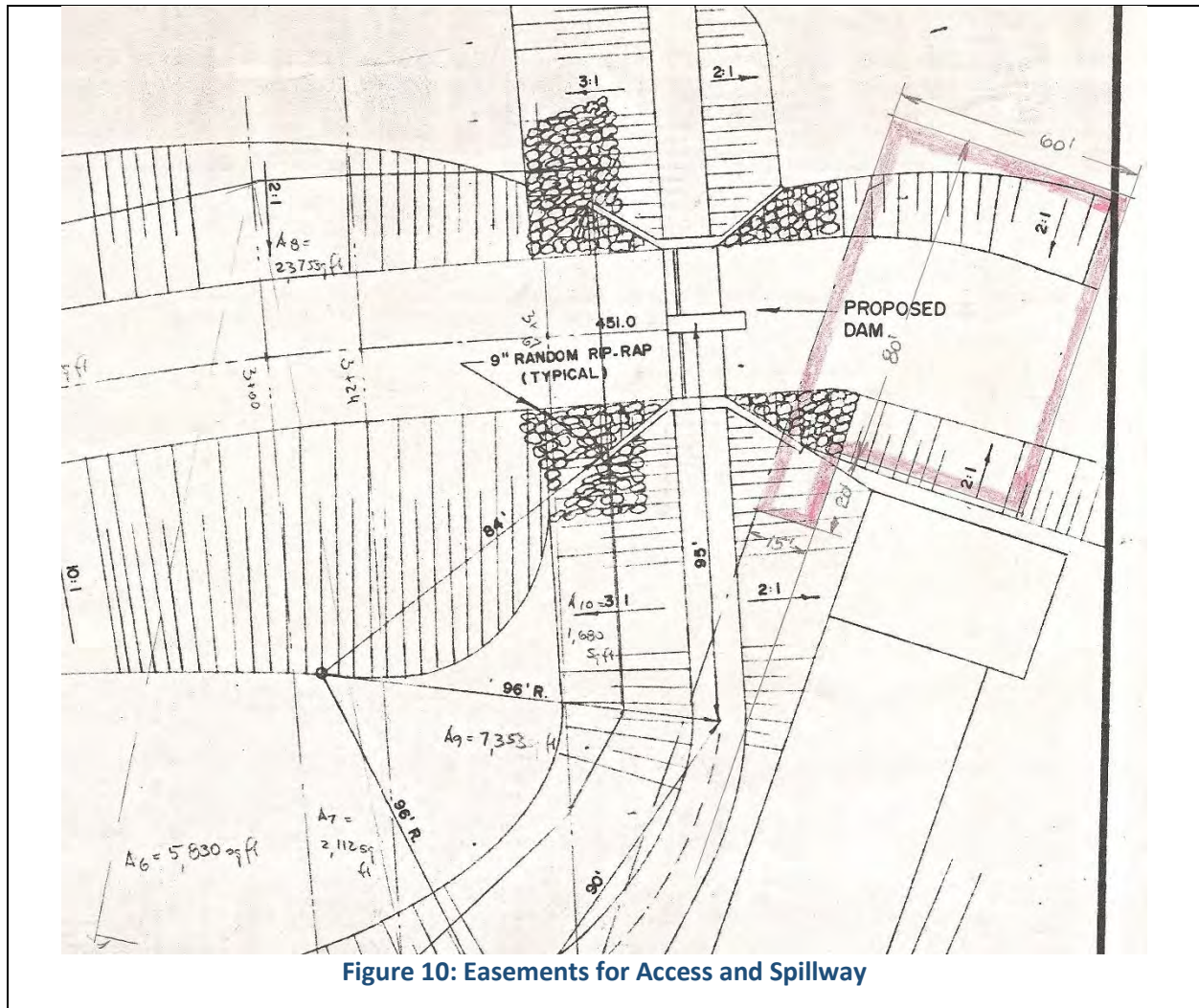


Figure 10: Easements for Access and Spillway

#### 2.3.4 General Maintenance Notes

Below is a summarized chronology of major general maintenance completed on the Warkworth Dam after the construction in 1972.

- 1977: Rip Rap stone placed in SW and NW corners of dam wing walls due to erosion (\$1,200)
- 1980: New Logs – no details. Note that the March 1980 flood event resulted in damage to the railings and low flow gate in the dam. Total rainfall was only considered a 5-year event (52 mm in 24 hours) but frozen ground and large ice flows resulted in larger runoff and damaging impacts from the ice. Both upstream dams (Skinkles and Bowen) failed and released the ice contained behind both dams.
- 1982: MNRF conducted dam inspection. Rip Rap placed in areas showing erosion downstream of dam and spillway on north side and under apron.

- 1983: Mill Creek Preliminary Engineering Study completed by Crysler and Lathem Ltd. Included first dam classification and hydrotechnical assessment.
- 1987: Gabion Baskets added along east side of pond and southwest wing wall
- 1992: Repairs to the pier foundation, repairs to rock protection in reservoir, erosion control works at the Co-op parking lot (concrete retaining wall) (R&M Construction) with TSH providing design and construction supervision. (\$32,000). This could have been when the separate flood control wall was constructed.
- 1996: 12 of the stop logs replaced using recycled logs from the Trent Severn Waterway (according to file notes)
- 1996: Concrete repairs for minor spalling (BDS Contracting) \$800.
- 1998: 10 remaining stoplogs replaced and concrete work (\$9,000)
- 2000: engineering assessment of concrete (GD Jewell Engineering), concrete work on spillway and wingwalls (BDS) \$4942.
- 2006: Warkworth Dam Safety Review and Emergency Preparedness Plan. The DSR provided background hydrology, rating curve for dam and included downstream floodplain mapping. Recommendations for a number of safety issues was provided including the installation of a fall arrest safety system and hand railings (Hatch-Acres) \$75,425.
- 2007: Fall Arrest System and new hand railings installed as per DSR (Machining Centre) \$18,924
- 2011: 12 new stop logs to replace the recycled logs from 1996 (\$6,780)
- 2012: Concrete Apron Pad on north side of dam installed.
- 2015: Concrete Apron Pad on south side of dam.
- 2018-2019: Updated Dam Safety Review DSR Study completed by DM Wills. Project also included Public Safety Risk Assessment (PSRA) and Emergency Preparedness Plan (EPP) and updated inundation mapping from the dam all the way to the mouth of Percy Creek at the Trent River. The Timmins event mapping was adopted as the floodplain mapping (\$102,795). Funding was provided 50/50 from provincial Water and Erosion Control Infrastructure (WECl) program and Municipality of Trent Hills. (WECl Project Number: S.18.003). Recommendations from DSR and PSRA were prioritized and will be assessed each year.
- 2019-2020: Erosion assessment completed and new overhead gantry log-lifting system installed. Erosion Assessment of the Earthen Berm by Cambium for \$10,509 Total (\$9,300 plus HST). Little Welding and Machine Systems L.W.M.S. was the contractor selected to fabricate and install the new overhead gantry log lifting system. This work included removal of the old system as well and cost \$40,000 plus HST. Funding for both these projects was 50/50 from WECl and Trent Hills. (WECl Projects: R.20.042 – Log Lifting System Replacement; S.20.027 – Earth Embankment Erosion Study)
- 2022-2023: 22 new stop logs were purchased from Goodfellow and replaced the existing logs (\$27,000). Funding was 50/50 through WECl and Trent Hills (WECl Project Number: R.22.001). An updated Operation Maintenance, Safety and Surveillance (OMSS) Manual for the Warkworth Dam was provided by DM Wills (\$8,000). Funding was 50/50 through the WECl program and Municipality of Trent Hills for \$8,000 (WECl Project Number: S.22.001).

Please note that the Warkworth Dam OMSS Manual is under separate cover (DM Wills 2023) and should be referred to for any operation, maintenance and surveillance information for the Warkworth Dam. This property is not included further in this report.

### 2.3.5 Ongoing Concerns

Prior to the LTC ownership of the Mill Property lands, the ponds had been used by the residents of Warkworth as a swimming and recreation area. There was great interest in having swimming access to the new excavated pond area. Poor water quality in the pond stopped this use. The poor water quality was monitored by the public health unit and ministry and surface runoff, erosion caused by continual access for swimming and dead animals in the creek upstream (documented in 1975) contributed to this poor water quality.

The construction of the new dam included a low flow pipe through the structure to be able to provide some flow to Burnley Creek downstream of the dam during low flow conditions for the health of the downstream fisheries and benthic organism. Of note, the Warkworth Dam reservoir was not considered to be large enough to provide a sufficient source of water for formal flow augmentation in Burnley Creek (possibly for downstream assimilative capacity of the lagoon system). Flow augmentation (if necessary) was recommended to be provided by either the Bowen Dam (where Banta Road crosses Burnley Creek) or the Skinkles Dam (located where Gummow Road now crosses Burnley Creek) as both of these dams had much larger reservoir areas. Both of these dams have now failed and do not exist anymore.

The valve on the low-flow pipe was removed at one time and is now no longer operational. As early as 1982 the valve was noted not to function and the valve handle was missing.

There have been various petitions over the years to have the water levels maintained in the pond over the winter season for recreational skating. This has been discouraged throughout time as an unsafe use of the dam reservoir. Eventually discussions regarding leaving some logs in over winter to provide back-up water supply for fire-fighting was agreed to and typically 5 or 6 logs are left in the dam over the winter to provide this back-up supply and a dry hydrant was installed on the Old Hastings Road bridge in 2008. Timing of log operations has also been of concern to the citizens of Warkworth – mostly for aesthetic reasons.

In the mid 1990's LTC entered into an agreement with the Township of Percy to allow them to operate the dam. The Township did not follow the Operations Protocols provided through the province and LTC resumed operations.

## 2.4 Warkworth Flood Control Channel – Warkworth, Municipality of Trent Hills

### 2.4.1 Background

After the March 1980 flood, the area that was most damaged by the ice and flooding was the section of Burnley Creek from the dam downstream to just below the Church Street Bridge. Although the total rainfall was in the order of a 5-year event, the compounded impacts of rain on frozen ground and the upstream dam breaks/breaches from the Skinkles Dam and the Bowen dam resulted in flows exceeding the 100-year event below the dam and water levels were approaching the underside of the deck and breaching the earthen berm. Note that 6 stoplogs had remained in the bays and thus reduced the capacity of the spillway.

The 1983 Engineering Report recommended modifications to the channel including a flood wall and deepening of the channel. The dredging was not undertaken but the concrete flood wall was constructed. This flood wall extended upstream from the concrete retaining wall that was originally constructed with the new bridge work done in 1972. Of note, this wall protected over 50 homes from

the 100-year flood hazard but does not provide protection from the regional Timmins event (LTC's regulatory flood event).

The majority of the background files for this project have been lost but the contract documents for the "Mill Creek Floodwall" can be found with the other reports on the Warkworth Dam and associated floodplain mapping projects. Cumming-Cockburn & Associates had prepared the design and contract documents in October 1982. The contractor was R.T. Grills and the work was completed within 4 weeks of awarding the contract.

#### 2.4.2 Costs & Funding (1982 \$CA)

- Contractor \$ 48,061.00
- Engineering \$ 13,924.00

The total cost of the project was \$ **61,985.00**

#### 2.4.3 Ownership and Easement Considerations

The flood wall is located on a separate parcel of land that is now owned by LTC. There were no details on the severance and/or conveyance of this property to LTC. The parcel fabric identifies this parcel as separate from the LTC dam property. Both parcels are shown in the figure below.

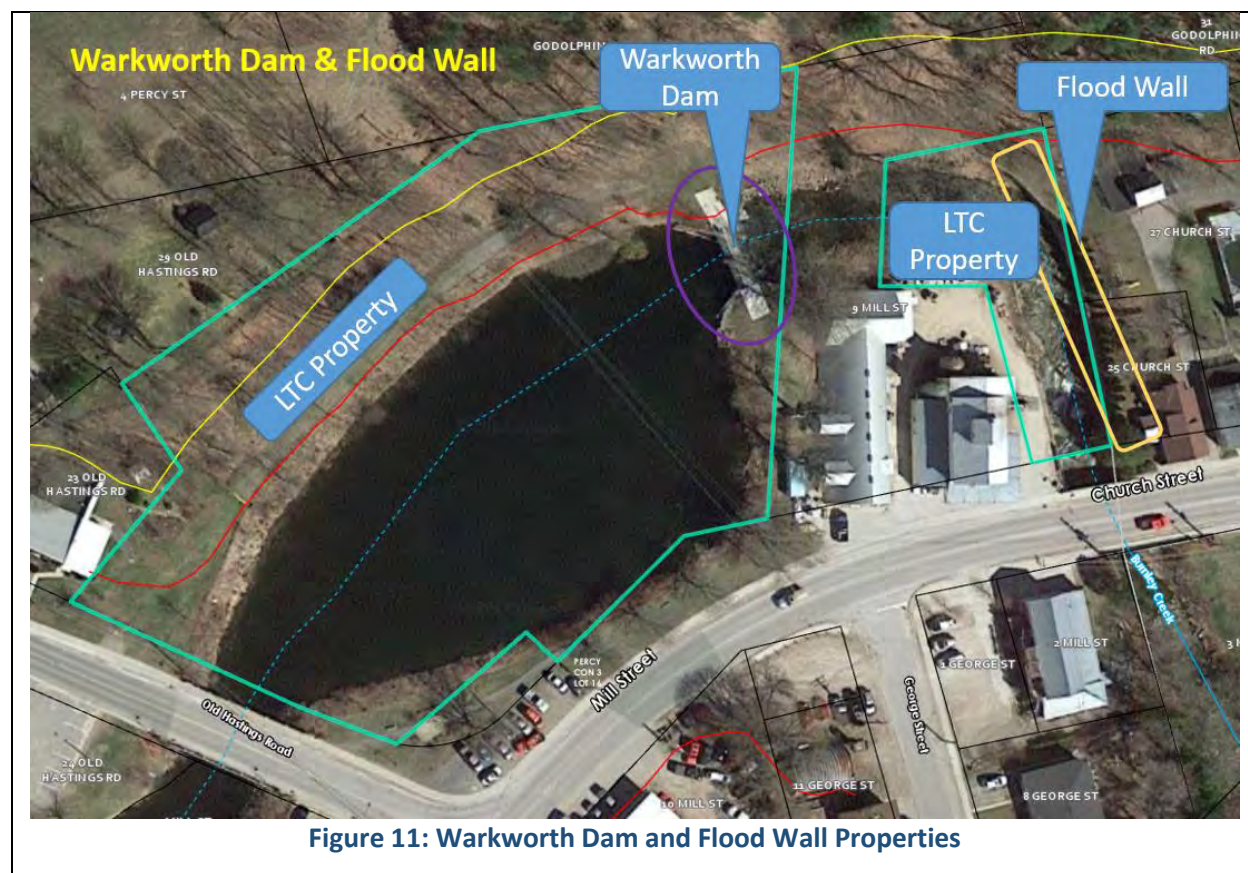


Figure 11: Warkworth Dam and Flood Wall Properties

## 2.5 Barry Heights Flood Channel – Trenton, City of Quinte West

### 2.5.1 Background

The Barry Heights Flood Reduction Project was undertaken by the Lower Trent Region Conservation Authority (LTC) due to flooding by insufficient drainage in the Barry Heights Subdivision. Details about this project can be found in the W.1.15 folders in LTC's archives. The flooding was causing damage to residential properties, inundating septic systems and contaminating ground water wells. Early discussions about drainage issues here began in 1972 with discussions of completing work under the Drainage Act by 1975. Project was put on hold and started up again in 1979 when it was approved by the province in 1981. There were issues with gaining easements and access to the lands for the project and an extension was granted. Easement issues were eventually sorted out and the work was completed in early 1983.

The proposal from the Ministry of Natural Resources (MNR) was to excavate a drainage channel 335 metres (1100 feet) in length to connect into an existing Mayhew Creek tributary stream at the CN Railway property boundary at the eastern end. A culvert was also to be installed to allow access to the Mansfield lands to the southeast. Conveyance of storm events from annual to 50 year is expected. Prior to this work there was no outlet for the water. The project was engineered by the Regional Engineering Office of the Ministry in Kemptville.

The benefit of this project was the reduction of flooding in the Barry Heights Subdivision, which resulted in an annual flood damage savings of \$ 1,000 per home. The number of residences protected in this area at the time was greater than 15. The project was designed to protect against a 1:50 year flood event.

Drainage issues on the private properties within the Barry Heights Subdivision between Harcourt and Byrne Roads was discussed and surveyed in 1985 but no further works were completed.

### 2.5.2 Costs & Funding (1983 \$CA)

• Construction	\$ 16,266.20
• Hydro Pole Relocation	\$ 1,400.00
• Land Acquisition	\$ 15,000.00
• Culvert Replacement	\$ 3,150.00
• Legal Fees	\$ 2,500.00
• Contingency	\$ 2,500.00

The total cost of the project was **\$ 40,816.20**

• Provincial Grant @ 55 %	\$ 22,448.91
• Authority Share @ 45 %	\$ 18,367.29
• (Note Township of Murray levied 95% of LTC's portion)	

### 2.5.3 Easement Considerations

The original plan was to acquire access across two properties (Scott and Mansfield) and drainage easement through Mansfield lands. Project was delayed in 1981 due to issues with access and ownership and eventually LTC acquired lands for the drainage works rather than easements for the work. Easement across Mansfield lands was obtained while providing Mansfield easement access through LTC lands to his property to the east. Easements and deeds are filed with LTC land information.

In 2013 LTC was circulated on a letter from Raymond Kaufmann, Lawyer for the Estates of Hubert & Cecely Mansfield, concerning the easements over lands owned by the Mansfield Estate in favour of LTC and over lands owned by LTC in favour of the Mansfields. In the 1980's as part of the Barry Heights flood reduction channel works these instruments/easements were registered on title to allow either party to ingress/egress over the others lands. It appears that in 2005 when a new system of electronic land registration was implemented by the Province these old instruments/easements were not transferred due to a change in the way the parties would need to be described in the easement (Dominant vs Servient). Status of these easements should be further investigated if access issues arise.

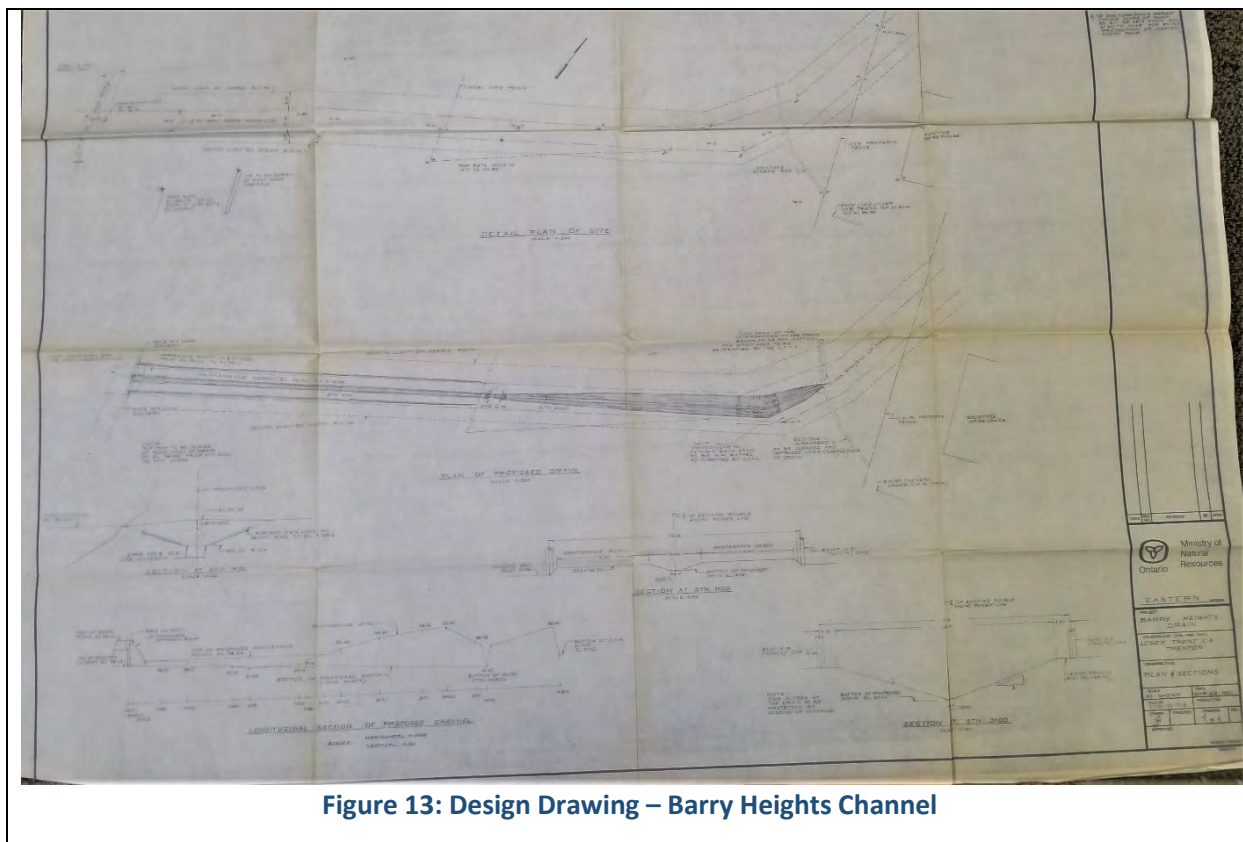


**Figure 12: Barry Heights Flood Channel Property**

#### 2.5.4 Ongoing Issues and Maintenance

Typical maintenance access is gained through the gate off of Byrnes Avenue. This gate is locked with a key, which is in the possession of the LTC Conservation Lands Supervisor. Complaints are common that the channel is not conveying flow and in the past there have been issues with beaver dams in the North Channel of Mayhew Creek, into which this diversion channel discharges. Typically the City of Quinte West staff has been notified of the beaver dams and they will remove them. In 1997 local residents removed the downstream beaver dam and in 2001, the City staff removed a beaver dam as well. There have not been any further documentation of beaver dams causing issues in this channel since this time.

Because of the very shallow slope of this channel, the velocities of water are low and over time sediment deposition and vegetation growth will hinder flow in the channel and it needs to be cleaned out. The first documented clean out was in 2002 and the channel was again cleaned out in 2015. There is a note in the 2002 documentation that says it has been about 10 years since the last cleanout but no documentation of a cleanout circa 1992.



**Figure 13: Design Drawing – Barry Heights Channel**

## 2.6 Cold Creek Pipe – Frankford, City of Quinte West

### 2.6.1 Background

The detailed background discussions on floodplain mapping and flood control reports can be found in Section 3.7 of this manual. As part of the flood control measures proposed in the 1981 report, removal of the old dam was recommended. The original Tender documents for the works included removal of ALL parts of the dam including the steel flume pipe and concrete intake chamber. As part of the work, easements from the landowners were required – typically temporary easements for the construction and permanent easements for continuing inspections and maintenance requirements.

The former owners of the dam, Irvine and Isobel Twiddy, owned not only the mill building at 17 Mill Street in Frankford but they also owned the flume, the dam and property on the south bank of the creek. In discussions about easements, the only option the Twiddys were interested in was the sale of the entire property, which included Part Block F and Part Block D in Plan 137 and Part Lot 3, Concession 5, Carding and Woollen Mill Site. There had been a discussion of LTC purchasing the Twiddy property

back in 1974 but the sale of the property was not completed at that time as the Village of Frankford would have had to pay the LTC portion of the costs at that time (35% of the cost).

An appraisal of the property was undertaken in March 1982 with a resulting market value estimate of \$27K. There is a note stating that this was updated to \$30K to include the gravel rights on the land adjacent to the water tower. It is not clear what this reference to “gravel rights” entails. Negotiations resulted in LTC purchasing the entire property for \$32K on June 30, 1982. The lands purchased are also highlighted in yellow as Schedule B of the sale, as shown in the figure below.

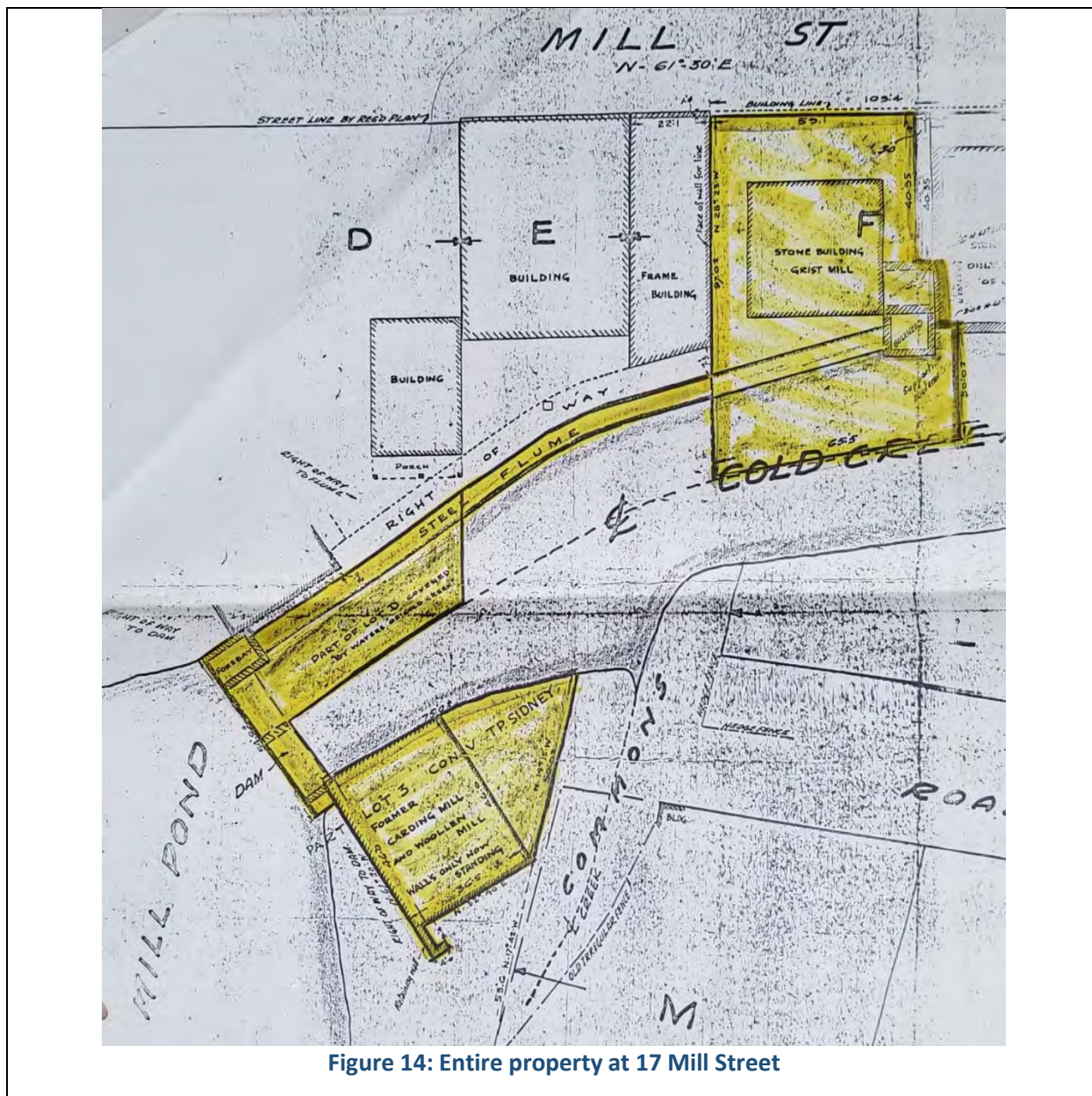


Figure 14: Entire property at 17 Mill Street

Plans for the property beyond the required demolition of the dam included various options including demolition of the building and selling the property to the Village of Frankford. In December 1982, the

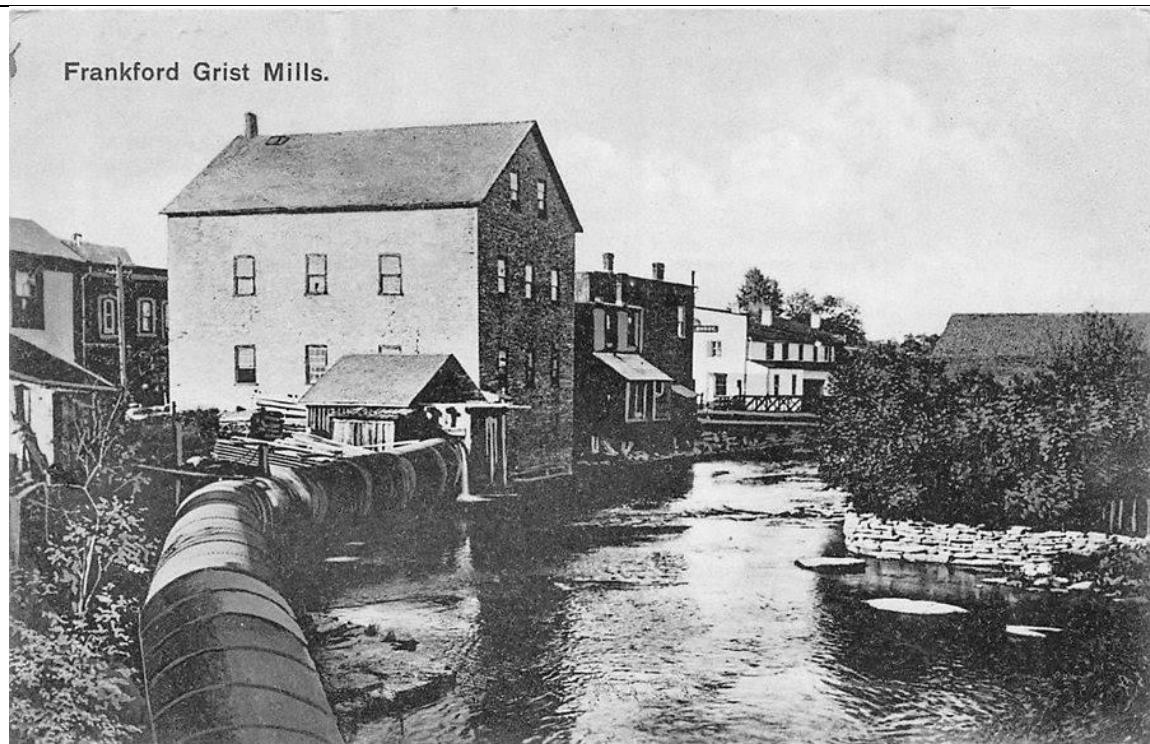


LTC Board voted to put the property on the market to sell and had an appraisal of just the mill warehouse property assessed at \$12.5K. Only offers below market value were proposed so LTC was required to apply to the province for an Order-in-Council (OIC) to sell the property below market value. Eventually the property was sold to Yu Fu (Chuck) Chu and Wai Fong Chu in December 1983 for \$7.5K, with the OIC dated March 8, 1984. The remainder of the property with the flume, footprint for the old dam and the property where the old carding mill was located are still owned by LTC.

### 2.6.2 Steel Pipe Flume – Erosion Control

During the flood control works, it was determined that the old steel flume pipe with the concrete intake chamber would remain in place to provide erosion control along this final bend of Cold Creek in Frankford. It is not clear when the pipe was determined to provide this function but it was before the dam demolition.

The pipe is described as being 58 metres in length and 2 metres in diameter. In 1992 proposals were sought from various engineering consultants to assess the condition of the pipe and make recommendations for any required remedial works along with drawings, tender documents and construction supervision. In the proposal request letter noted that decay and shifting of the concrete pipe support were noted along with erosion behind the pipe. A response from the Village of Frankford noted that they did not have the funds to support this remedial works project and there are no further notes in the file.



**Figure 15: View of the Old Mill with Flume Pipe in the Foreground**

### 2.6.3 Ongoing Issues and Maintenance

In 1997, Greer Galloway had been contracted by the Village of Frankford to undertake Bridge Rehabilitation of the bridge on South Trent Street that crosses Cold Creek. As a small part of this project, some rehabilitation of the flume pipe was included. Minutes from a meeting in October 1997 note LTC's requirements for the riprap stone (18" to 24") to be individually placed on the outside edge while smaller stone could be used inside. In an inspection report from later in 1997, it is noted that rip rap had been placed underneath the pipe and the pipe was loaded with more stone to prevent movement during high flows. There were a number of holes that were cut into the top of the pipe to allow the stone to be added for ballast. Steel plates were welded on both end of the pipe as well.

The total cost of the flume rehabilitation/repair was \$10,366.16. Of this \$4,989.33 was paid by each of the Village of Frankford and the province.

Since that time, no other works or assessments have been completed on the flume pipe. Over time the landward side of the pipe has eventually been filled so that the land adjacent to the pipe is typically flush with the top of the pipe.

In 2021 LTC undertook removal of a number of trees (mostly Manitoba Maple/Box Elder Trees) that were growing on the landward side of the pipe. Although these trees were providing shade for the adjacent landowners, portions of the trees were close enough to cause damage to the buildings and were determined to be hazard trees. There was also concern about the tree roots causing shifting of the pipe.

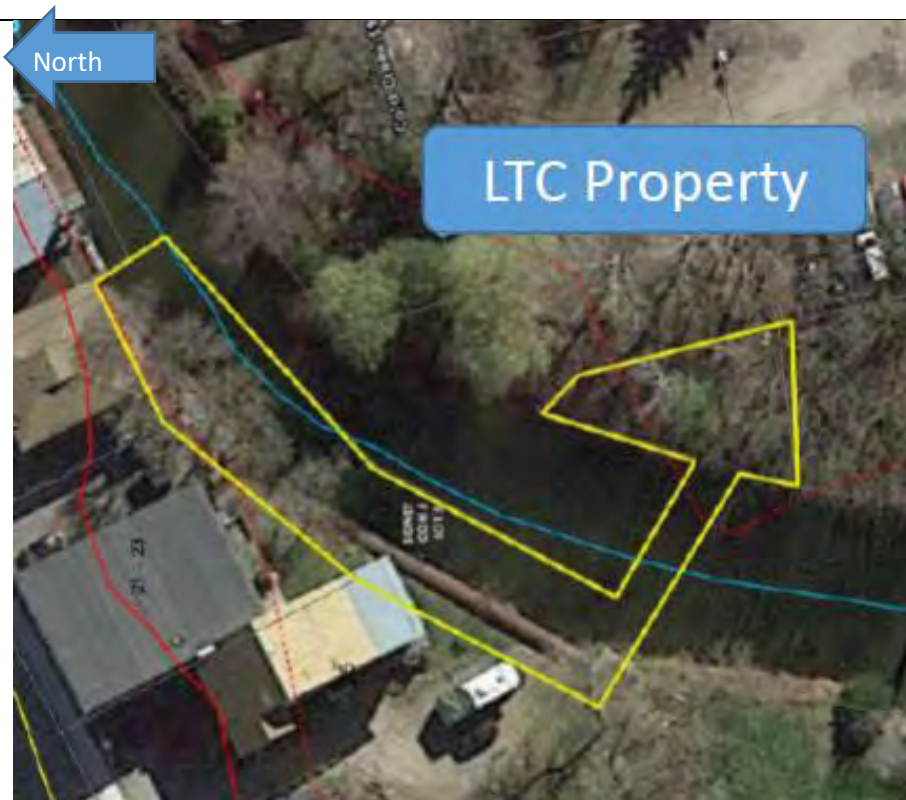


Figure 16: LTC Property with Pipe for Erosion Control

### 3 FECS OWNED BY OTHERS – DESCRIPTIONS AND HISTORY

As noted above, Lower Trent Region Conservation Authority (LTC) has been involved in a number of flood and erosion control works throughout the watershed. These structures were originally recommended in floodplain mapping and flood damage studies and then followed up through cost benefit analyses and were typically constructed through partial funding from the provincial Water and Related Land Management (W&RLM) Program, which was a pre-cursor to today's WECl program. These flood and erosion control structures (FECS) were typically designed by consulting engineers and the design was reviewed by the engineers employed at the Ministry of Natural Resources (MNR). Funding for these structures typically came through grants from the province with the expectation that the Conservation Authority would provide the balance of the funding. The benefitting municipality usually paid 95% of the LTC portion of the works with the remaining 5% of the LTC portion funded through the general levy monies.

In many cases, the properties where the FECS were constructed were NOT owned by LTC but were owned by the municipality or private landowners. For properties not publicly owned, temporary construction easements were obtained to be able to construct the designed structures. In some cases, when a structure would remain permanently and would require inspections and occasional maintenance, permanent easements were obtained for the structure to occupy the lands and to allow LTC staff, municipal staff or their agents to access the property for inspections and maintenance services.

Below is a summary of the FECS that are not owned by LTC but there are capital works files on these structures and permanent easements on the properties as well. LTC is currently in process of obtaining agreements from the municipalities to continue with the ongoing maintenance and surveillance of these structures.

#### 3.1 Killoran Creek Flood Channel – Hastings, Municipality of Trent Hills

##### 3.1.1 Background

The hydrology report for the Killoran Creek Flood Reduction Study was completed in February of 1985 and the hydraulic portion was completed in June 1985 and both are under separate cover in the Capital Works File W.1.3. The studies identified that there are three structures that control the flow in the downstream end of Killoran Creek before it discharges into the Trent River. These structures are the concrete culvert at Bay Street, csp pipe culvert at Water Street and the concrete pipe at the CNR crossing. Note that the rail line was in place adjacent to Water Street during this study and each crossing was separate. It was also noted that the channel between Bay Street and Water Street could not even convey the 5-year event (11.5 m<sup>3</sup>/s) without overtopping all three structures.

Three channel design alternatives were proposed, all of which involved enlargement of the channel and combinations of upgrading of the three water crossing structures. Overall a larger capacity box culvert at Bay Street and a double barrel box culvert under Water Street and the CNR Rail line was recommended along with channel improvements.

During the preliminary results of the Killoran Creek Flood Reduction project, early in 1985, there were inquiries into the Ministry of Transportation and Communication (MTC) – precursor to Ministry of Transportation of Ontario (MTO), about potential funding for the upgraded crossings within the Village

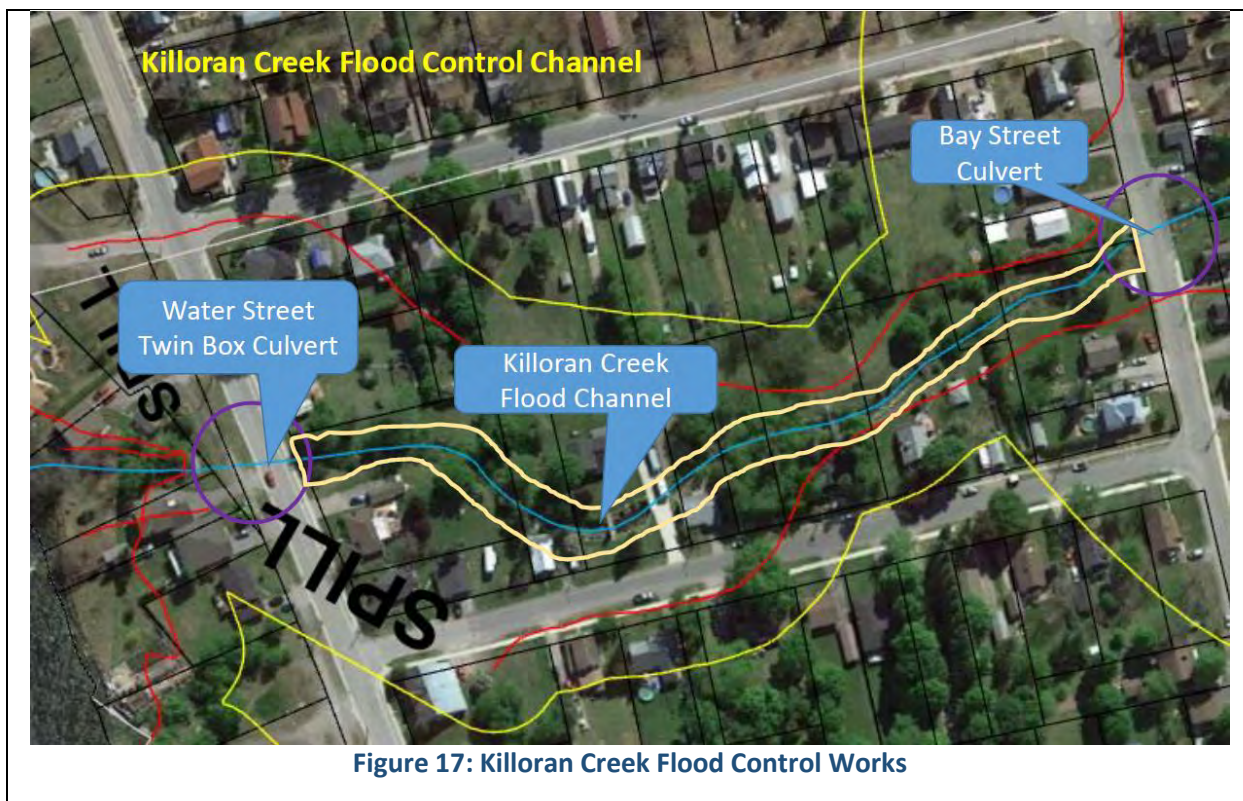
of Hastings. It was determined that MTC will subsidize the Village's portion of the culvert replacements only (not the provincial or Conservation Authority share).

Support for the flood reduction project (Alternative 1) was approved by the Village Council in May 1985 and a public meeting was held in July 1985 to explain the project. Also in July 1985, CN Rail announced that they would be abandoning the rail line in this area shortly. TSH was selected to complete the detailed engineering design of the flood control works and the contract supervision for \$50,000. The estimated costs for the entire project were \$400,000 as detailed in the project summary in September 1985. The estimated provincial grant rate was 55% with the Conservation Authority share the remaining 45%. Authorization of the project from the province was issued in December 1985.

In February 1986, the project team began meeting with individual landowners whose land would be impacted by the proposed flood reduction works. Required easements were also discussed at these meetings and a number of properties required foot bridges to be constructed to access portions of the properties on the other side of the enlarged channel. In the end a total of six foot bridges were designed and installed as part of the project.

Tenders were received on July 9, 1986, and Looby Builders was the selected contractor with a bid of \$511,154. Engineering supervision was proposed from TSH to cost \$27,000. As an extra to this project 6 footbridges were designed and installed in properties along the work area. These were constructed and installed by LTC personnel.

MTC approved the Bay Street Culvert in May 1986 and the Water Street Culverts in July 1986. Meetings with CN Rail confirmed that pre-cast concrete box culverts would be required to support the replaced rail line. CN rail will undertake the removal and replacement of the ties and rail. The Water Street / CN rail culvert was constructed in September of 1986 and the majority of the channelization work was completed by November 1986. The Bay Street Culvert replacement was started in late 1986 and was finished the following year in 1987.



**Figure 17: Killoran Creek Flood Control Works**

The Dart property at 154 Park Street is the only property with the driveway crossing the creek. The culvert for the driveway was not completed with the project design as there were no flood control advantages for a redesign since the floodwaters would flow over the driveway. During the easement discussions and construction there were various reviews of an improved driveway culvert but in the end this was not part of the contract. The driveway was later updated with a concrete slab crossing.

In 1993 there was erosion downstream of the driveway crossing at 154 Park Street that exposed the municipal water supply line that was under the creek bed. LTRCA applied to the province for a work permit to encase the waterline in concrete and also pour concrete apron upstream and downstream to prevent further erosion and undermining.

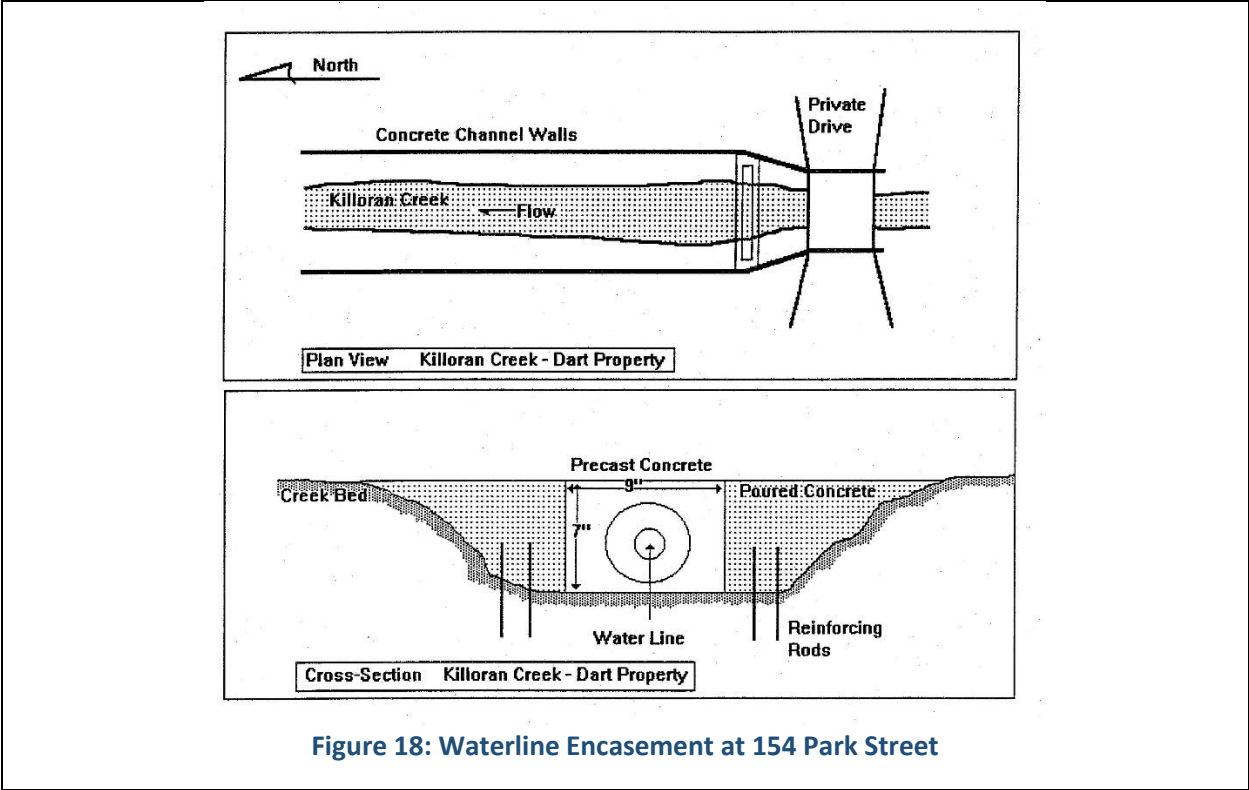


Figure 18: Waterline Encasement at 154 Park Street

3.1.2 Double Box Culvert – Water Street

As shown in the figures below, the Water Street and CNR Rail Crossings were combined and consisted of a twin pre-cast concrete culvert. There were 17 sections of twinned pre-cast sections of 3000 mm x 1800 mm approximately 2130 mm in length for a total length of 36.21 metres. The figures below illustrate the structure.

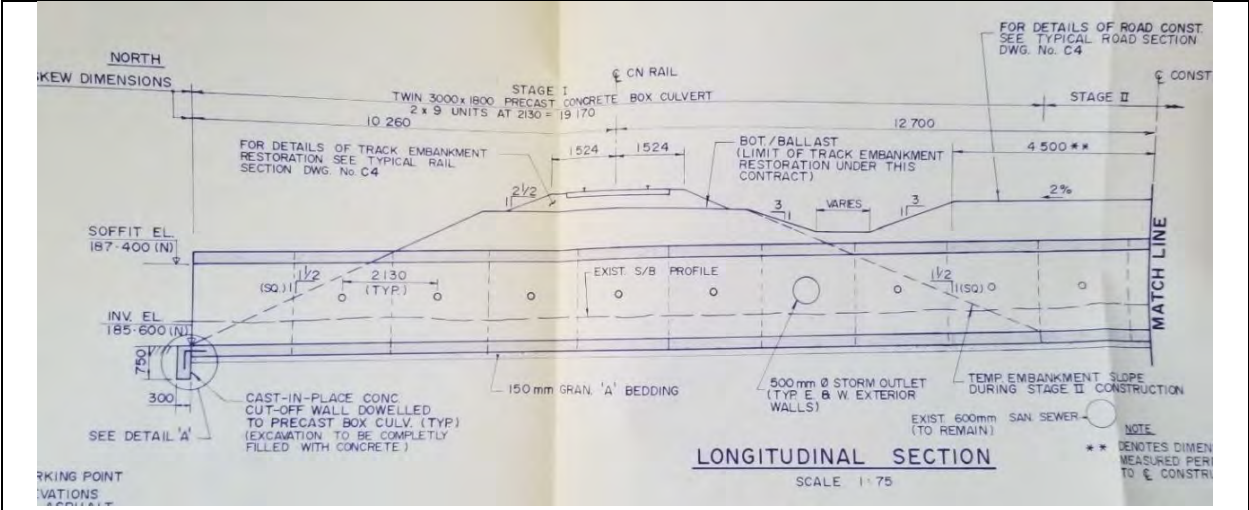


Figure 19: Railway Portion of the Longitudinal Section of the Twin Culvert

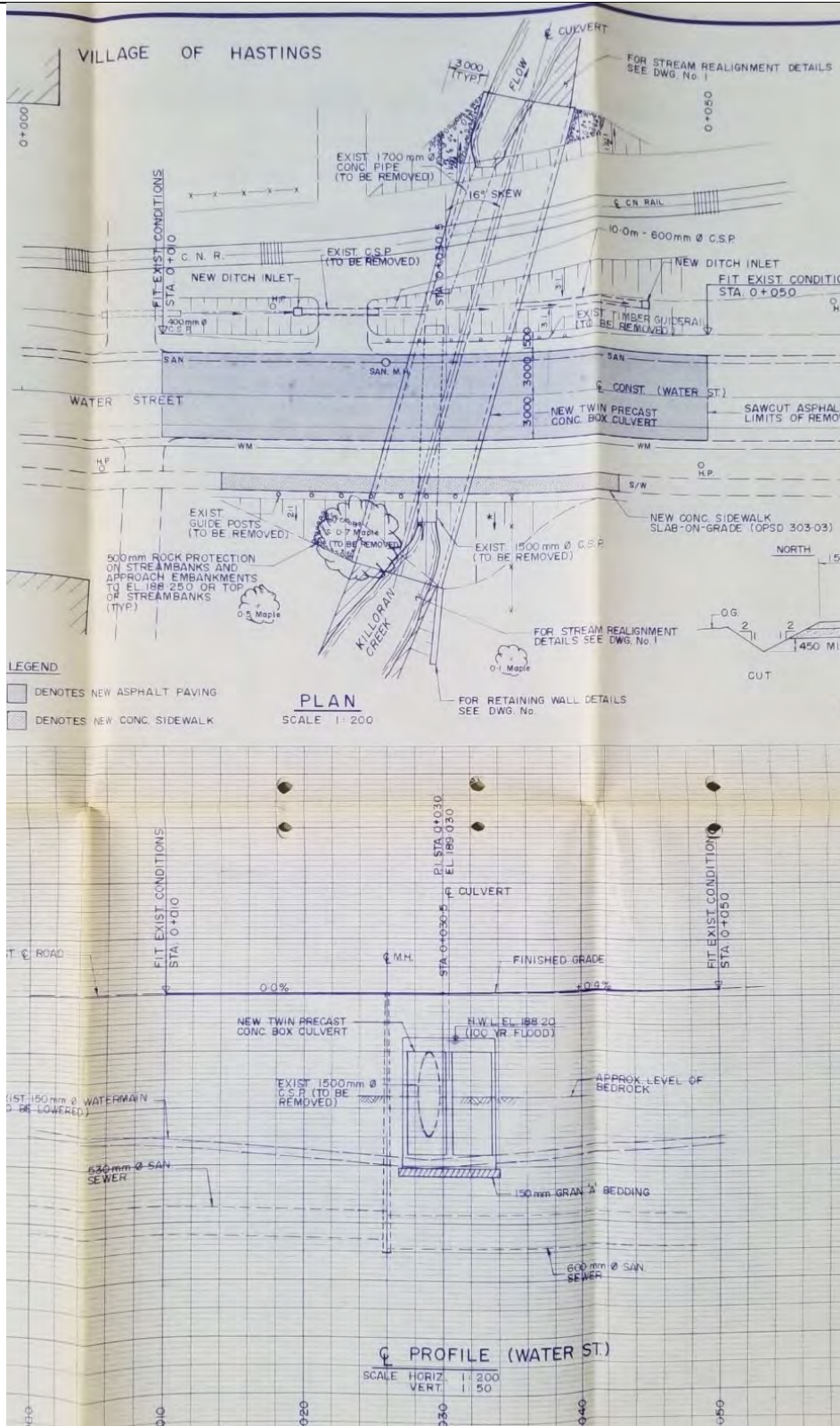
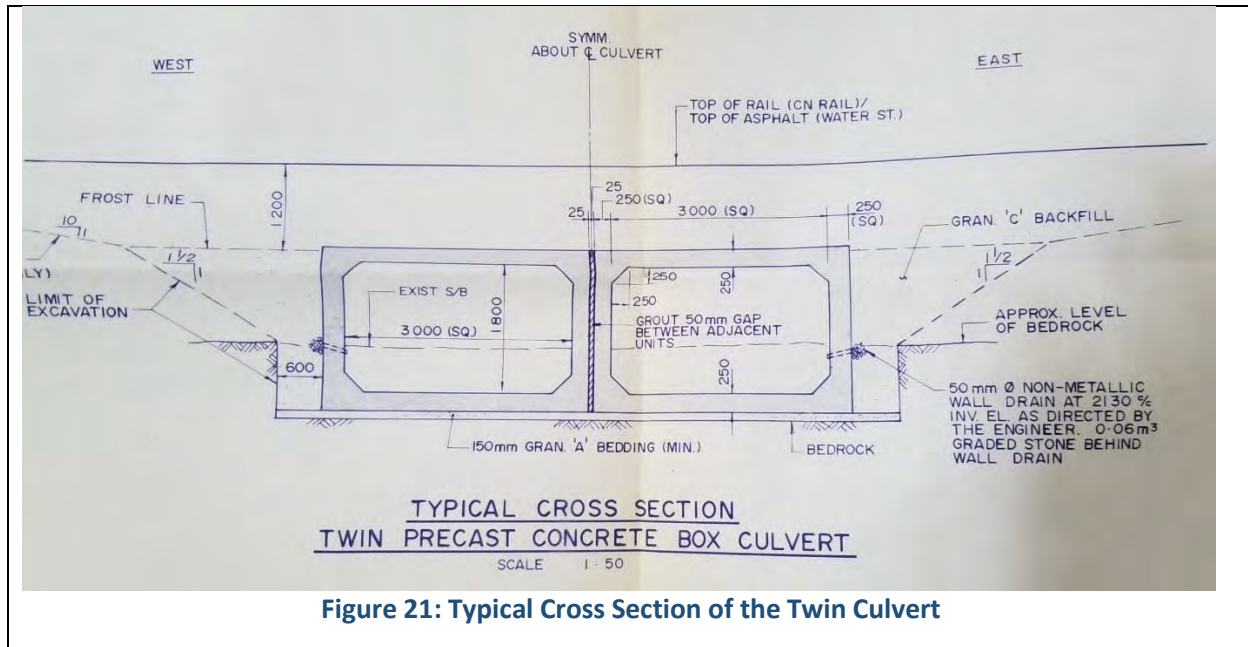


Figure 20: Drawing of Twin Culvert Crossing



### 3.1.3 Costs & Funding (1986 \$CA)

- Construction \$ 542,711.70
- Engineering Design and Supervision \$ 50,000.00

The total cost of the project was **\$ 592,711.70**. Note the engineering fees are from the proposal and not confirmed at the end of the project.

- Provincial Grant @ 55 % \$ 325,991.44
- Authority Share @ 45 % \$ 266,720.27
- (Note Village of Hastings was levied LTC's portion) but there is a note in the Village of Hastings acceptance that they approved the project based on contributing 16%. It's not clear of the funding from the information in the Capital Works folders.

### 3.1.4 Easement Considerations

Temporary Construction Easements and Permanent Easements were obtained on the properties along Killoran Creek to allow for construction access and inspection and maintenance access. There were two registered plans for the permanent easements and they are Plan 38R-3110 for the properties along Bay Street and the south section of Park Street (and one property on Clyde Street) and Plan 38R-3081 for the properties along the north part of Park Street and along Water Street. Plots of the Plans are shown in the figure below.

Each signed easement is included in the Easements folder along with the agreement with CNR Rail for the works as well.



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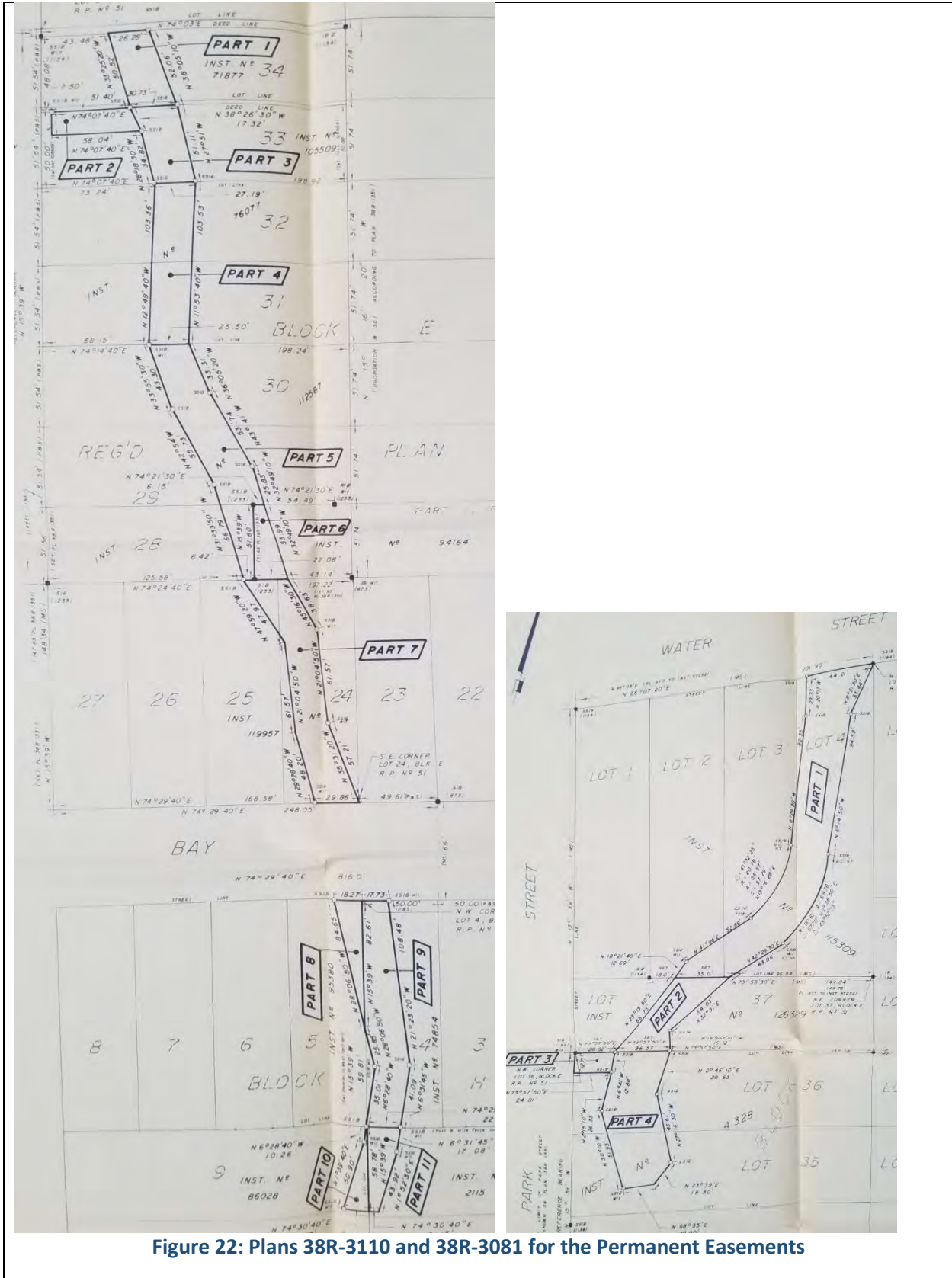


Figure 22: Plans 38R-3110 and 38R-3081 for the Permanent Easements

## 3.2 Rawdon Creek FECS – Stirling, Township of Stirling-Rawdon

### 3.2.1 Background (1975-1979)

In 1975 the first floodplain mapping study for Rawdon Creek was completed by Kilborn Engineering in a report for two separate floodplain mapping projects entitled *“Report on Mayhew Creek Flood Plain Mapping in Trenton and Rawdon Creek Flood Plain Mapping and Channelization in Stirling”* and is dated January 1975. Recommendations from this report included channelization of the creek through the Village of Stirling using gabion baskets from the James Street dam to the concrete retaining walls just upstream of the footbridge. The report also recommended a gabion wall from the footbridge to the Highway 14 Bridge (now Front Street Bridge) and gabion walls from the Front Street Bridge to Henry Street Bridge and grass lined channels downstream of Henry Street.

In 1979 LTC applied to MNR for upgrades to the James Street Bridge on behalf of the Village of Stirling. This work was approved with some funding from the federal government and the dam upgrades including stop log storage and lifting mechanism under the bridge was completed by the winter of 1980. The consultant doing the design work was Crysler and Lathem (CCL Consultants).

In 1980 the Stirling Rotary Club undertook a project within Rawdon Creek to rebuild and expand an existing weir on the north side of the creek between the foot bridge and the Highway 14 Bridge (now Front Street Bridge) for aesthetic purposes. Apparently the location for a proposed removable structure was approved by the Ministry in 1979 but the structure was not approved as the drawings were pending but a permanent weir was constructed without permission. In December 1980, at the request of the Conservation Authorities Engineer with the Ministry of Natural Resources, Totten Sims Hubicki (TSH) submitted a quote to complete an assessment of the hydraulic impacts of the Rotary Weir (as they were already completing work for the Village for North Street – see below). The \$1500 proposal was approved and the report was provided in February 1981 that reviewed the impact of the weir on water levels from James Street to Henry Street for a number of storm events. The study identified that the weir reduced the hydraulic capacity and thus increased water levels for all flows and up to 0.9 metres in depth just upstream of the weir. The report recommended removal of the entire weir but later discussions with MNR confirmed that only the “new” portion of the weir need be removed. The newly constructed south portion of the weir was subsequently removed.

Also in 1980, TSH had been contracted by the Village of Stirling for engineering services for the reconstruction of North Street from Highway 14 (now Front Street) to the north edge of the village. The engineering report for North Street recommended diversion of North Creek (tributary to Rawdon Creek) to a new storm sewer that would run down North Street to discharge under the Highway 14 (now Front Street) bridge. The existing storm sewer drains were to remain in place to collect runoff from Gore Street southward. The final report from TSH was dated September 8, 1981. The work was undertaken shortly after the report.

### 3.2.2 Gabion Erosion Control Channel (1980-1981)

After the 1980 flood, there was significant erosion damage along the creek through the Village and LTC Board supported the construction of erosion control works along both the north and south banks of the creek for erosion control and to contain the 100-year storm as well. Phase 1 of this project was the north gabion wall and Phase 2 was the south gabion wall. Totten Sims Hubicki (TSH) was the selected consultant for the design and construction supervision for this project. Phase 1 was completed in 1980 but due to high costs only erosion control measures were designed for and not the flood protection.

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Work was completed by the end of 1980 but there were legal issues with the contractor, Ivan Hubbert, declaring insolvency so the remainder of the Phase 1 file deals with these legal issues. Drawings showing the erosion control works for Phases 1 and 2 are in the figures below.

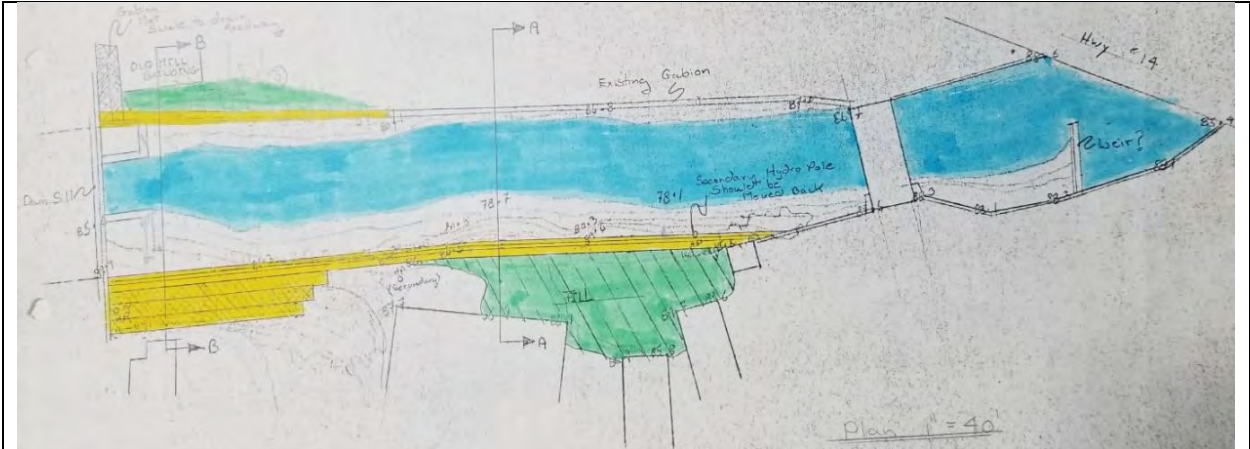


Figure 23: Plan Drawing of Channelization Works in Stirling

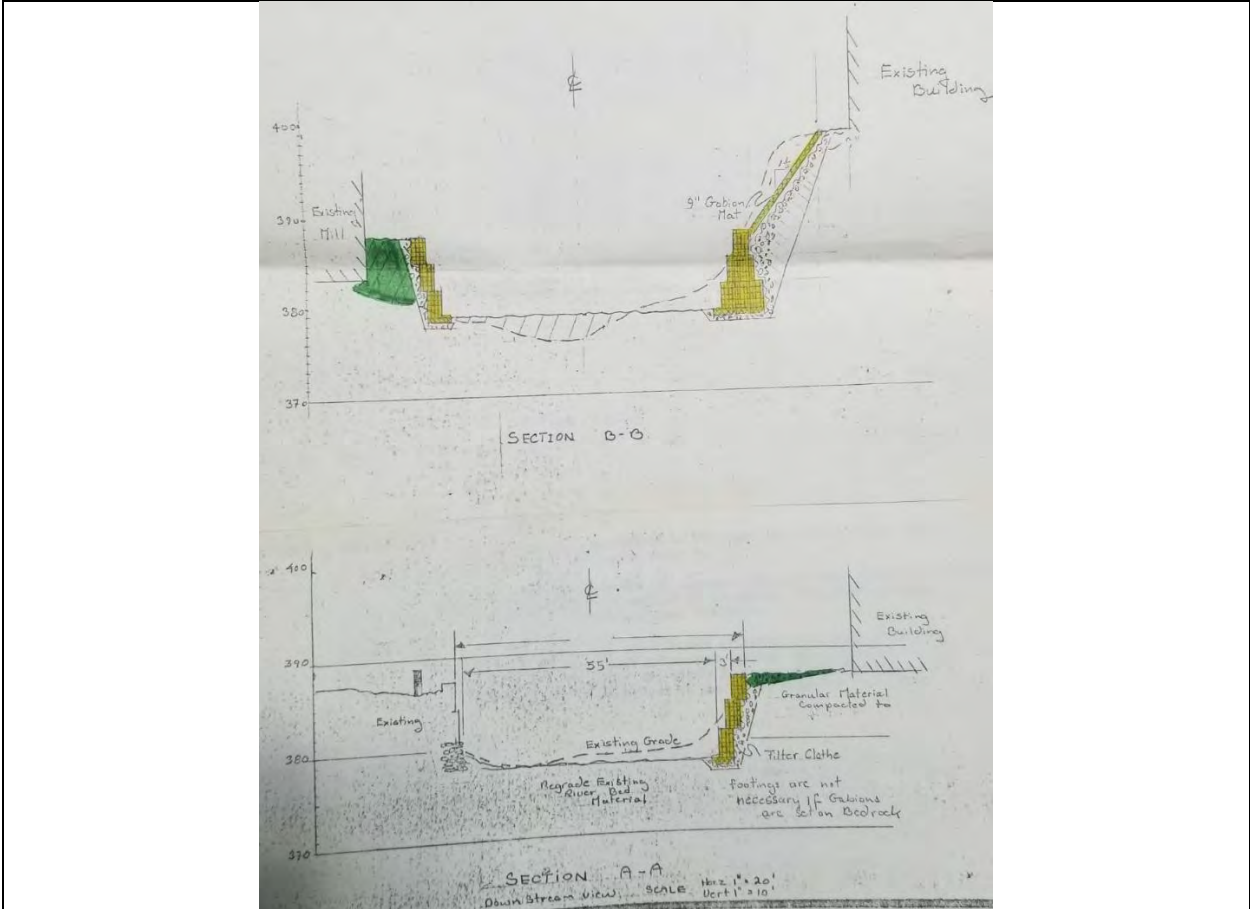


Figure 24: Cross-Section Drawings of Erosion Control Works in Stirling

In 1981 the work on Phase 2 – south gabion wall was completed as well as finishing up some incomplete tasks on the north side. TSH remained the design engineer and oversaw construction but the new contractor was Ira Carr Contractors. Work was complete by the end of 1981.

#### 3.2.2.1 *Costs & Funding (1981 \$CA)*

- Contractor (Phase 1) \$ 56,503.79
- Contractor (Phase 2) \$ 65,411.37
- Engineering (Phase 1) unknown
- Engineering (Phase 2) \$ 5,892.68

Total cost for this project was \$ **127,807.84** based on the known numbers above. There is no documentation in the capital works files about grants or apportionment of the costs between the province, the Village and the Conservation Authority.

#### 3.2.2.2 *Ownership and Easement Considerations*

An agreement was signed by all landowners along the banks of Rawdon Creek as part of the Phase 1 work. This agreement is for temporary access for construction purposes and extends to one year beyond the completion of the gabion wall. It is signed and dated on October 24, 1980. There do not appear to be any permanent easements as a result of this work.

#### 3.2.3 *Dam Rehabilitation and Flood Wall (1987-1988)*

In May 1985, Kilborn Engineering completed the Flood Damage Reduction Study for Rawdon Creek. A number of recommendations were provided to reduce flooding damages in the Village of Stirling and it also recommended that the Village designate a Special Flood Policy area from James Street to Henry Street. In May 1985 both the Village of Stirling and the LTC Board resolved to endorse Scheme 2C as the preferred flood control program, supported dam rehabilitation and construction of an earthen floodwall above the dam and support a geotechnical investigation for the proposed works. The Village Council requested that their Planning Consultants, Ainley and Associates, to prepare the Official Plan Amendment to include the Special Policy Area (SPA).

The geotechnical investigation was undertaken by Terraprobe Limited and the report is dated 1986 with the cover letter dated in August 1986. Garatech was the overseeing Engineering firm on the geotechnical study and also provided design and tendering services. The conclusions from the geotechnical study and dam rehabilitation review confirmed that the dam is stable but in poor condition and some rehabilitation may be required and recommended a flood wall upstream of the dam be investigated (sheet pile, earthen berm, concrete wall). LTC staff presented the findings to the LTC Board and the Village Council and both supported moving forward with the proposed flood control works. The proposed engineering costs were \$36,000 and construction costs (including the dam rehabilitation) were originally \$819,000 but later revised to \$583,866.

Phase 1 of the project was the dam rehabilitation which involved removing logs and wing walls and extending weir to the bridge abutments. Phase 2 of the project included the dredging of the Mill Pond and construction of a concrete floodwall and earthen berm/dyke along the north bank. Tenders were sent out for bidding in April 1987 and six bids were received ranging from \$526K to \$658K for the entire construction portion of the project. The abutment lining for the dam rehabilitation portion was entered as a separate line item as this portion of the project was partially funded through Hasting County Roads Department – estimated County portion was \$38,730. Support to move forward with Phase I of this

project (Dam Rehabilitation) was received from the Village Council in May 1987. RT Grills Construction was the successful bid on the project (\$526,077.00) and the project began on June 1, 1987. Support for Phase 2 of the project was given in August 1987 at the end of the Phase 1 work. The majority of the project was completed by December 1987, with minor deficiencies and final works occurring in 1988.

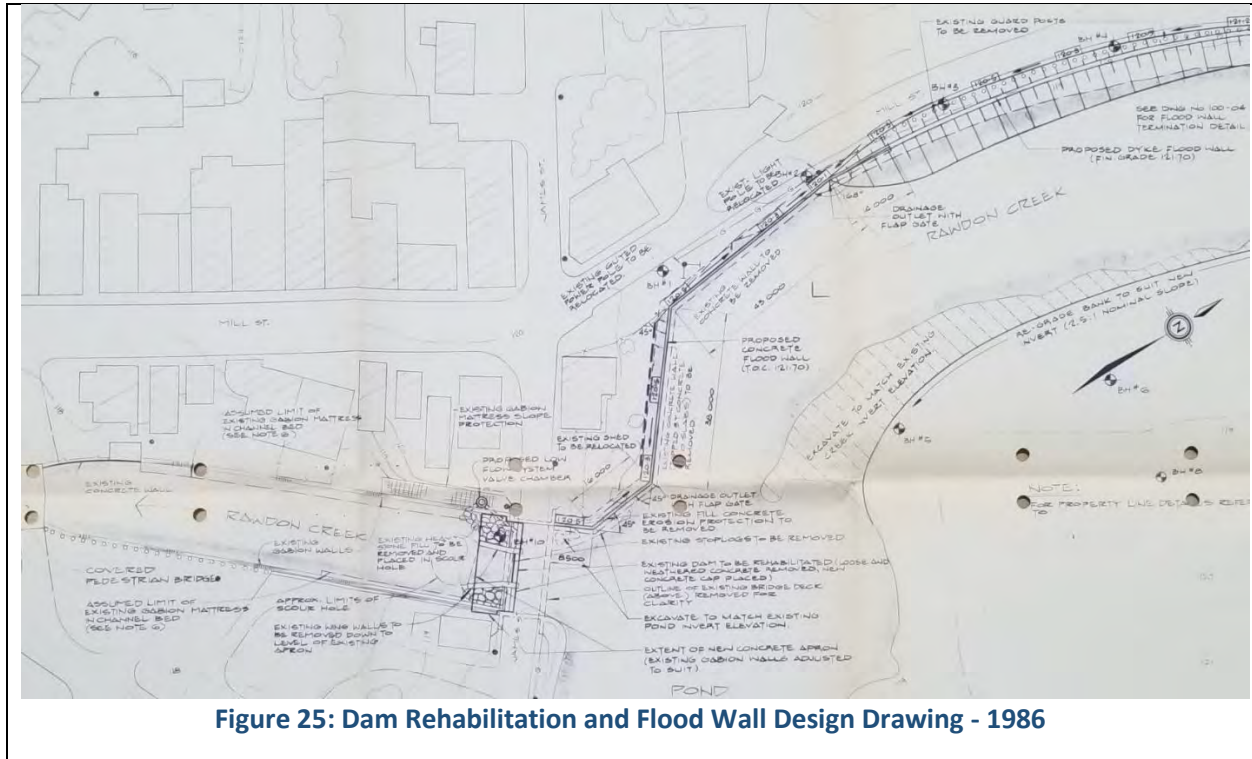


Figure 25: Dam Rehabilitation and Flood Wall Design Drawing - 1986

### 3.2.3.1 Dam Rehabilitation (Phase 1) - James Street Bridge

As part of the Phase 1 Dam Rehabilitation, the James Street Bridge abutments were lined and additional footing work on the north abutment was completed as well. The existing dam, wingwalls, logs and log lifting equipment removed and the existing armourstone behind the wingwalls was removed and the space filled with layers of concrete. A low flow pipe was installed along the north side of the newly expanded apron and then a new concrete top was placed on the apron and new weir. The drawing showing the Dam Rehabilitation work in Phase 1 is shown below.

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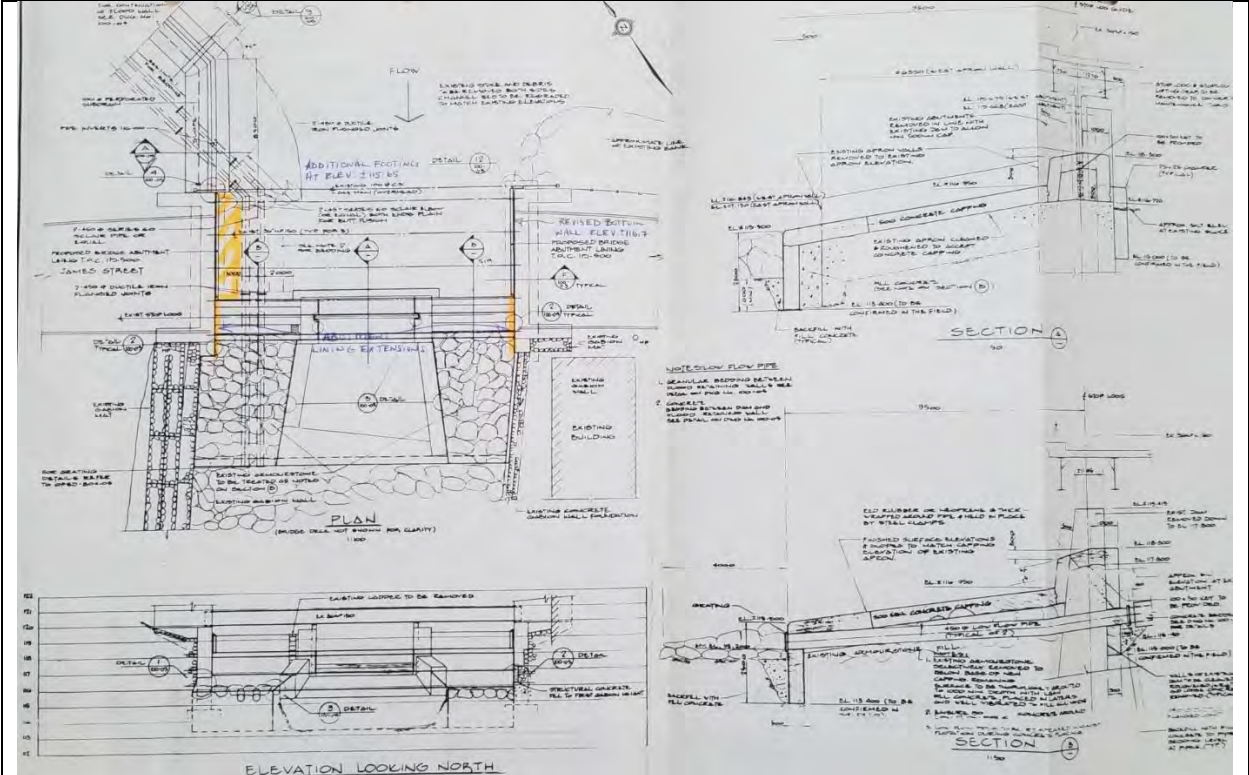
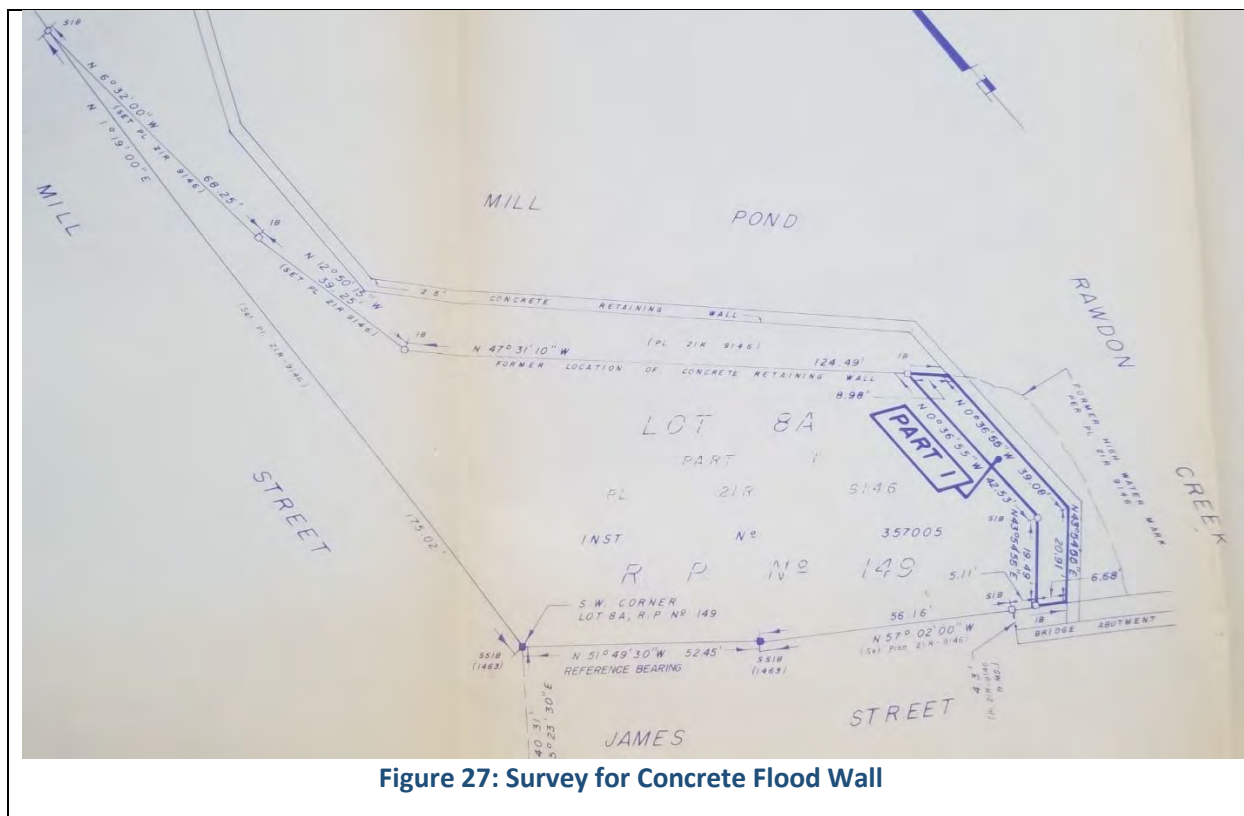


Figure 26: Dam Rehabilitation Drawing – June 1987

3.2.3.2 Concrete Flood Wall (Phase 2) – James and Mill Streets

The constructed flood wall along the north bank of Rawdon Creek upstream of the dam included the excavation and construction of a new concrete flood wall adjacent to the James Street Bridge and then a new concrete flood was constructed further into the water than an old existing concrete flood wall. This flood wall was extended further upstream with an earthen dyke. The pond and south bank areas were also excavated as shown in the design drawing above. The constructed flood wall location can be seen in the survey below.



### 3.2.3.3 Costs & Funding (1987 \$CA)

- Contractor \$ 523,950.80
- Engineering \$ 87,312.00

Total cost for this project was **\$ 611,262.80**

Contractor Costs for Phase 1 (\$261,366.10) and Phase 2 (\$ 262,584.70). Engineering Costs including Geotechnical and contract supervision for Phase 1 (\$44,212) and Phase 2 (\$43,100).

Applications to the province for funding support were submitted for 1987 for the dam rehabilitation with the floodwall and berm to be funded in 1988. Estimated 1987 costs were \$162,025 so the provincial portion (85%) applied for in 1987 was \$137,721. The Village of Stirling “front-ended” the funding to be reimbursed once the funding from the province came through. The capital works files do not explicitly document the provincial grant portioning so this ratio was used below to estimate the portioning of the funding support.

Note that during this project the engineering firm changed names from Garatech Inc. (GTI) to Ecos Garatech Associates (EGA). Engineering costs were taken from a letter from EGA dated November 11, 1987, outlining the engineering costs to date and estimated so this total was included above. Portioning of costs below is based on the above information and documentation of support from Hastings County for the bridge abutment lining.

- Hastings County (Roads) \$ 33,776.18
- Provincial Grant (85 %) \$ 490,863.63

- Village of Stirling (15%) \$ 86,622.99

#### 3.2.3.4 Ownership and Easement Considerations

The work for the dam rehabilitation and the flood wall impacted four properties:

- Lot 8 Plan 21R1123 Parts 1 & 2 (Dennis & Donna Armstrong property – 51 Mill Street) – temporary work easement that expired December 31, 1988.
- Lot 9 Plan 21R5015 Parts 1, 2 & 3 (Denis, Donna, Terrance & Barbara Armstrong property – 20 James Street) – temporary work easement that expired December 31, 1988.
- Part Lot 10, Concession 1 in former Rawdon Township (Sheridan property – 88 Front Street East) – temporary access easement that expired December 31, 1988.
- Lot 8A Plan 21R9146 Part 1 (Reid property – 35-59 James Street) – a temporary access easement was negotiated and finally signed on May 28, 1987, with 10 conditions specified in Schedule A. The last condition states “The owners agree to execute a permanent easement agreement consistent with the draft submitted to the owners lawyer.” There is only a draft of the permanent easement in the file but no signed version.

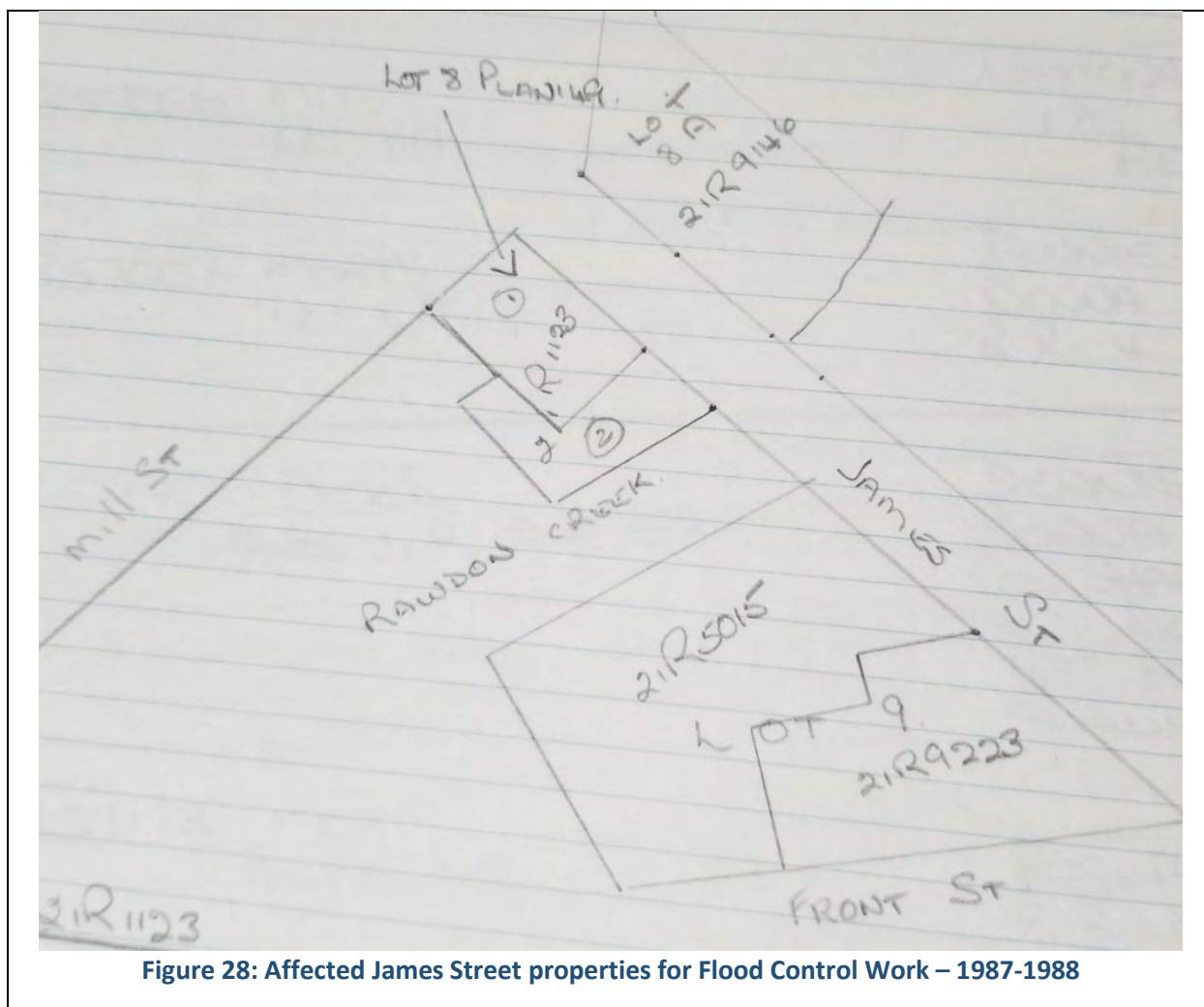
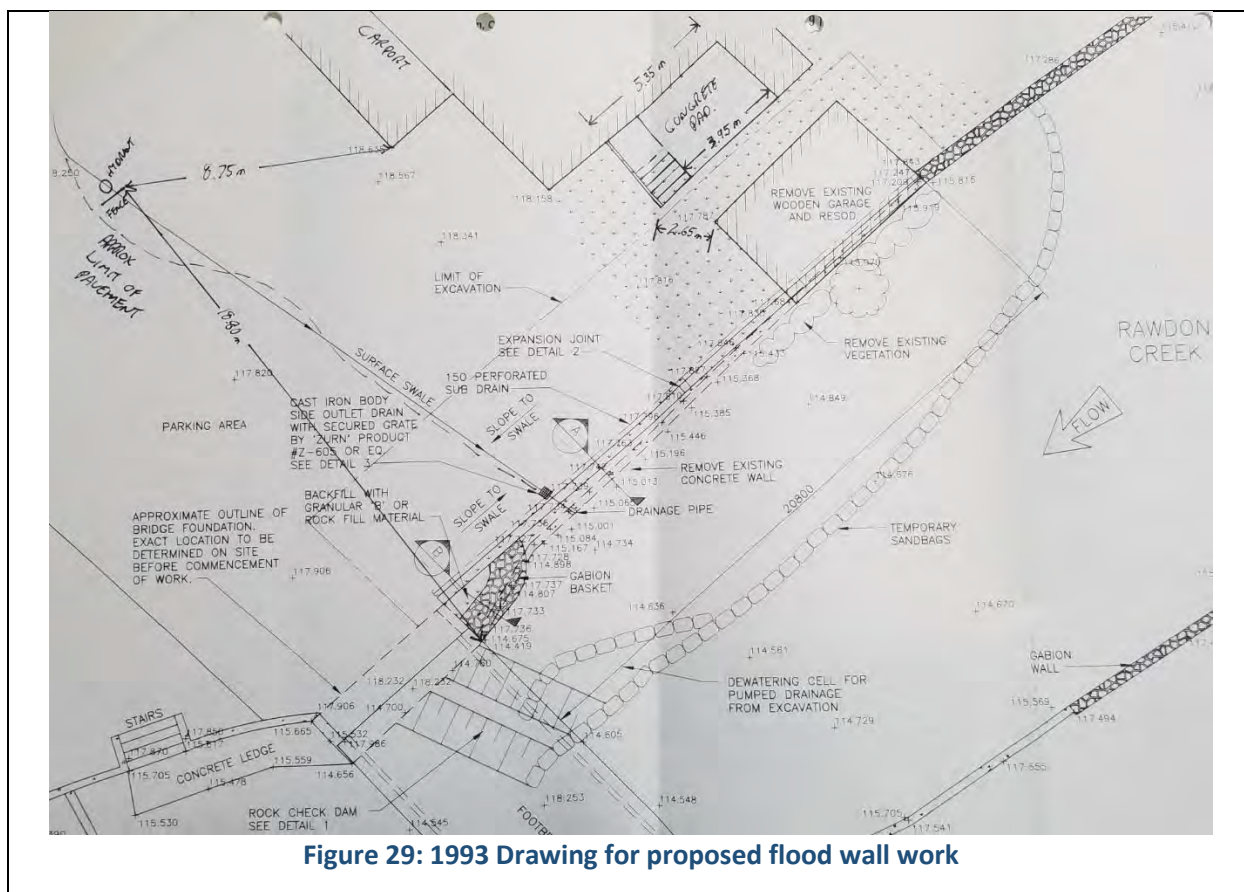


Figure 28: Affected James Street properties for Flood Control Work – 1987-1988



### 3.2.4 Rawdon Creek Flood Wall (1995)

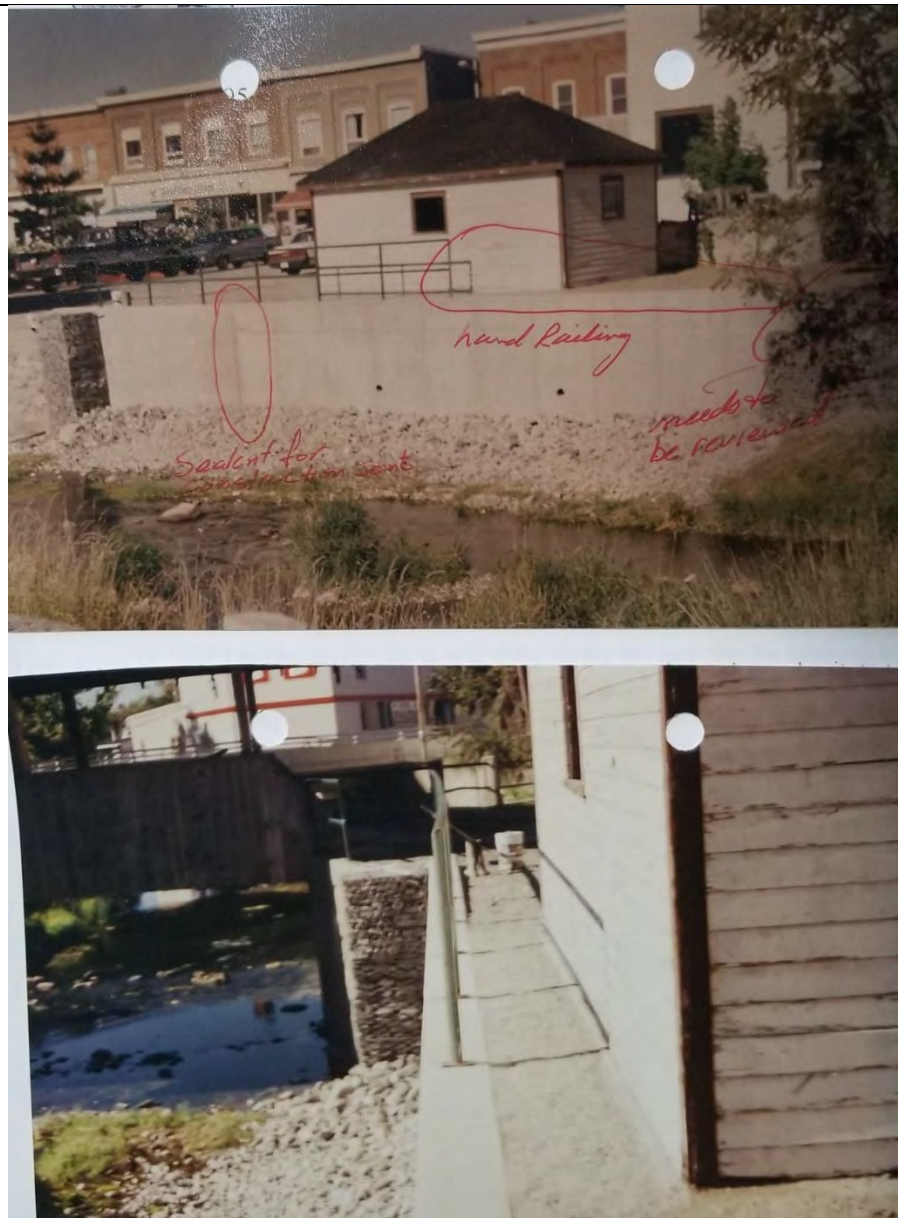
In 1992, it came to the attention of LTC and Stirling staff that the existing concrete retaining wall on the north bank of Rawdon Creek upstream of the covered pedestrian bridge was in very poor shape. Initial estimates of \$35,000 were prepared for the replacement of this wall with either gabion or concrete. The proximity of the garage was also a consideration and potential relocation of the garage was to be considered for the landowner, Gary Newman of Newman Oliver Insurance. There was an expectation of 50% funding through the province at that time. In July 1993, EGA was asked to provide an estimate of the capital and engineering costs. This was originally provided as \$29,083 capital and \$11,556 engineering. The estimate was reduced to support the original estimate to \$26,659 capital and \$7,685 engineering and the project was provided a new reference number W.1.5.1.



The tender notice was issued in September 1993 and a work permit obtained from the MNR for the required in-water work. Bids were received from four contractors ranging from \$76K to \$110K. Because of the significant discrepancy between the estimate and the bids, the project did not proceed at this time. In 1994 the Village of Stirling applied for and received support for the replacement wall project through the Canada-Ontario Infrastructure Works Program (\$36,655). EGA was asked to provide updated drawings and estimates for construction in 1995 (\$55K) and a request to delay project to 1995 was made to the COIWP. Bid Tenders were requested in August 1995 and three were received with Southfork Excavating being the low bid and was awarded the contract. Bids included options for gabion

vs concrete retaining wall and moving the garage on the Newman property. Southfork bids ranged from \$29K to \$45K.

In the end a concrete retaining wall was selected and the garage was moved westward from its original position. In EGA's letter (October 3, 1995), the following points were noted: concrete wall was 1 metre short on east end so gabion extension was constructed to fill the void; concrete wall was higher than designed so small retaining wall may be required at east end and property was infilled more than expected; because of the movement of the garage, the hand railing did not extend easterly enough and needed to be extended.; and an as-built survey was recommended. Photos of the finished wall are shown below with areas noted above circled in red.



**Figure 30: Finished Concrete Retaining Wall – 1995**

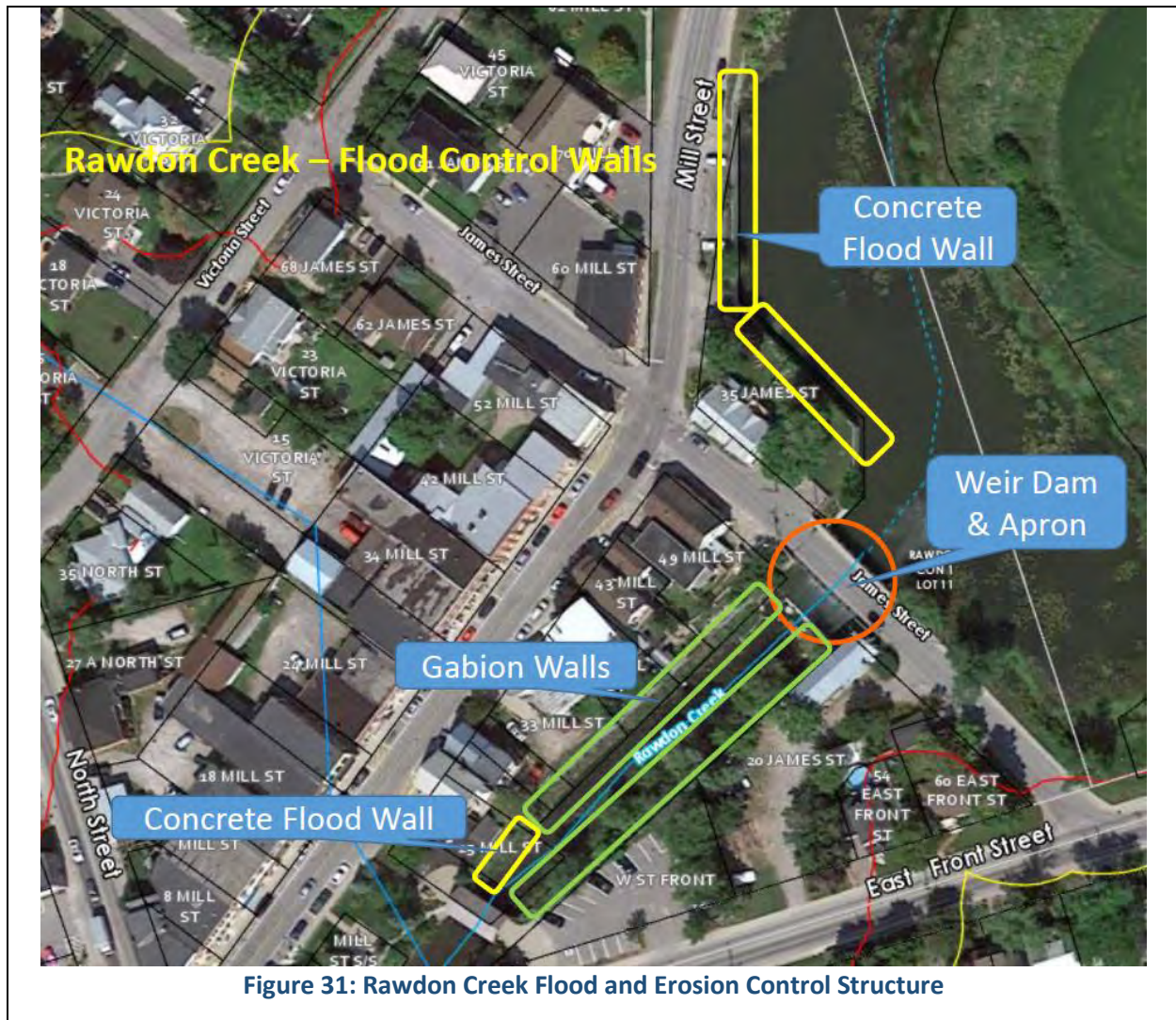
### 3.2.4.1 Costs & Funding (1995 \$CA)

There is very little costing or funding information in the capital works files for this project so the costs below reflect the proposed costs from the bid and from an invoice paid to EGA for the design and engineering work:

- |               |              |
|---------------|--------------|
| • Contractor  | \$ 44,421.48 |
| • Engineering | \$2,700.86   |
| • LTC Costs   | \$2,646.80   |

Total Project Cost was **\$ 49,769.14**.

As noted above, this was a project by the Village of Stirling with funding support through the Canada-Ontario Infrastructure Works Program. The remainder of the project (including engineering fees and LTC incurred costs) was paid by the Village. It does not appear that any funding was provided through the typical provincial flood and erosion control structure funding.



### 3.2.5 Ongoing Concerns and Maintenance

In the spring of 2000, the Village of Stirling contracted Heartland Landscaping to provide design and drawing for the parking areas and landscaping upgrades around the Covered Pedestrian Bridge crossing Rawdon Creek. As part of this project (and a proposed parking lot on Henry Street), an LTC permit was sought by the Village. During the permit application review for the proposed work, it was identified that there were structural issues with the retaining wall on the south bank between the covered bridge and the Front Street Bridge. At this point the project became a maintenance project for the flood and erosion control structures.

In July 2000, the LTC Board supported providing 50% of the funding for the proposed work to an upset limit of \$22,000. LTC staff consulted with Department of Fisheries and Oceans (DFO) and obtained a Permit from DFO (PE-00-01560) for the in-water and adjacent work. Overall this project included structural repairs to the concrete and gabion walls in the vicinity of the covered bridge and removal of the remnants of the Rotary Weir located between the covered bridge and the Front Street Bridge. Other landscaping and upgrading of parking lots on both sides of the creek was included as well. A drawing showing the proposed work including storm sewers and infiltration gallery is shown in the figure below. Heartland Design completed the design work and construction supervision.

Overall the project costs were \$20,782.21 plus \$5,562.00 for the weir removal, which totalled \$22,000 (the maximum amount committed by LTC).

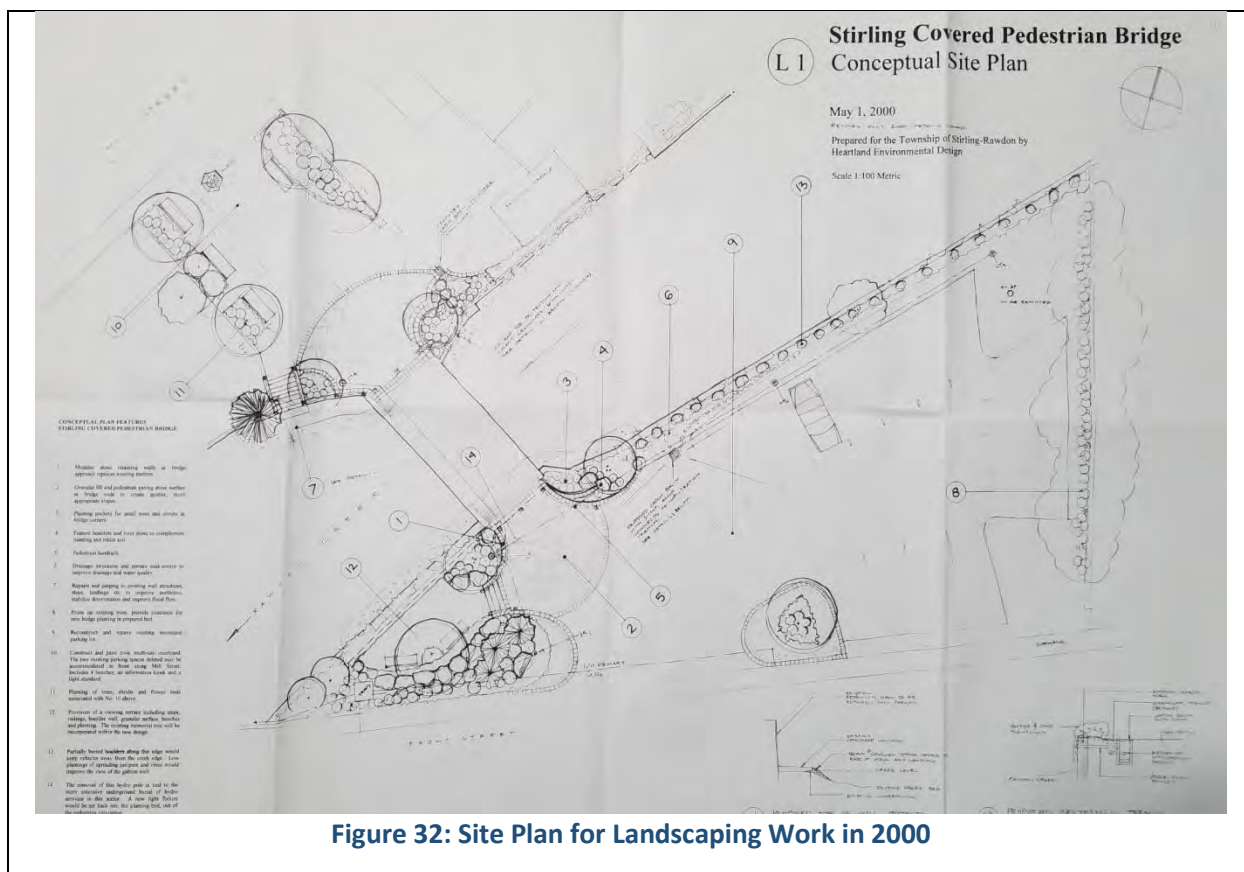


Figure 32: Site Plan for Landscaping Work in 2000

In 2005, BDS was contracted to complete concrete work on gabion wall to repair a hole in the gabion basket on the south bank downstream of the dam apron. Total cost was \$1,628 and it was funded 50%-50% by LTC/Stirling-Rawdon.

In 2007 the Gabion baskets on the downstream side of both the south and north banks were failing and being undermined. BDS was again contracted to complete the repairs by concreting - where the failing gabions were located. Total cost was \$6,523 and again, 50%-50% funding by LTC/Stirling-Rawdon.

Similarly in 2012, additional concrete work was required on the south gabion wall due to additional gabion failure. O'Shea Masonry was contracted to do the work for a total cost of \$2,486.00. Again, 50%-50% funding by LTC/Stirling-Rawdon.

In August 2020, concrete work was undertaken again in four separate locations of the flood and erosion control structures including:

1. the footing for the southern abutment of the covered footbridge;
2. the southeast wingwall of the covered footbridge
3. the southern gabion wall downstream of the latest concrete work
4. concrete work on spalling adjacent to a joint on the floodwall along Mill Street.

LTC Permit and MNRF Work Permit were obtained prior to the work being completed by Eastern Restoration & Masonry Belleville Ltd. The cost of \$17,051.70 was shared 50/50 between the Township and LTC.



Figure 33: Concrete work for failing gabions in 2007

### 3.3 Trent River Berm – Trenton, City of Quinte West

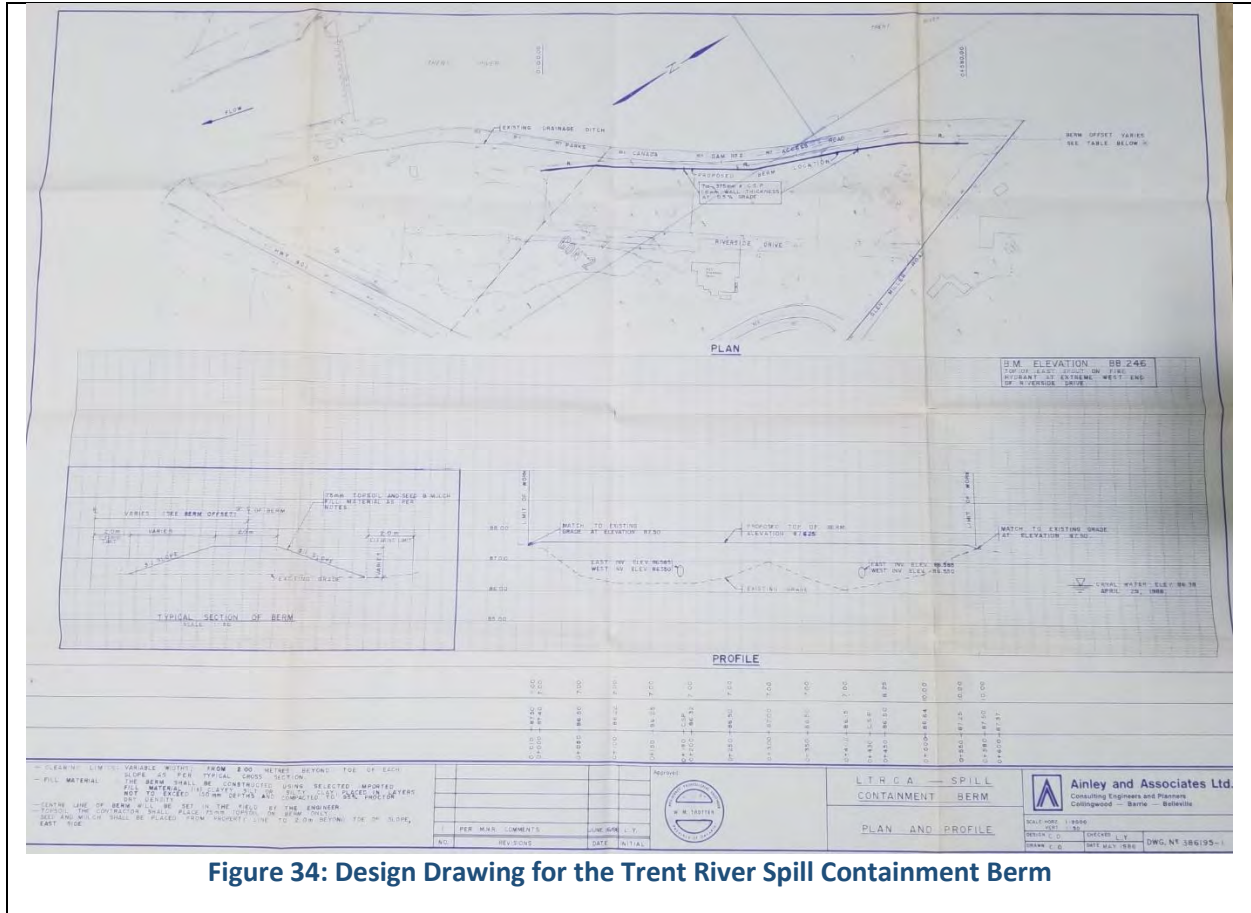
#### 3.3.1 Background

In March 1980 flood waters from the Trent River above Dam 2 spilled into the Riverside Industrial Park lands owned by the City of Trenton. These floodwaters combined with the flood waters from Glen Miller Creek and flowed over Highway 401. Highway 401 was flooded to a depth of 1 metre and was closed for a period of 8 hours. Significant property damage occurred in the industrial park and the highway closure caused significant disruption to local and regional traffic.

A study by Cumming Cockburn Consulting Engineers, dated August 25, 1983, reviewed the spill from the Trent River and provided an analysis and proposed five flood mitigation measures. The recommended measure involved the construction of an earthen berm approximately 450 metres long located just east of the access road to Dam 2-Lock 2 on the Trent Severn Waterway. Discussions with the City of Trenton began in 1984 to undertake this project and in January 1986, Trenton Council supported this project and offered to finance the cost up-front and be reimbursed when provincial funding became available.

Ainley Consultants were contracted to provide the engineered design and supervise the construction work. The lands east of the access road were located within the City of Trenton's industrial park lands and positioning the berm slightly east of the access road allowed the berm to be constructed on slightly higher land and thus reducing the amount of fill required for the berm. To provide the necessary protection the berm elevation was to be 87.5 metres CGVD1928 and was 460 metres long. This would result in full protection of the industrial park lands and allow other lots within the industrial park to be developed. Bid Tenders were due in July 1986 and the selected contractor was Trenton Gravel Products with a bid of \$47,243. Work began on August 5, 1986, and was substantially complete on August 29, 1986.

The hard copy files are archived under Capital Works Project W.1.6. Of note the drawings indicate two drainage culverts with flap gates but only one has been located during recent LTC inspections.



3.3.2 Costs & Funding (1986 \$CA)

- Contractor \$ 47,583.01
- Engineering \$ 6,349.94
- Advertising Tenders 189.38

Total cost for this project was **\$54,122.33**

Documentation of the provincial grant portioning was not explicitly included in the Capital Works file since the provincial grant funding occurred after the project was completed. But there is mention in the project report that the Approved Grant Rate in 1986 for Water and Related Land Management (W&RLM) was 55% + 29% estimated Supplementary Grant (i.e. total grant of 84%). The grant rate increased to 85% for the small amount of grant funding provided in 1987 for this project.

- Provincial Grant (84 %) \$ 45,462.76
- City of Trenton \$ 8,659.57



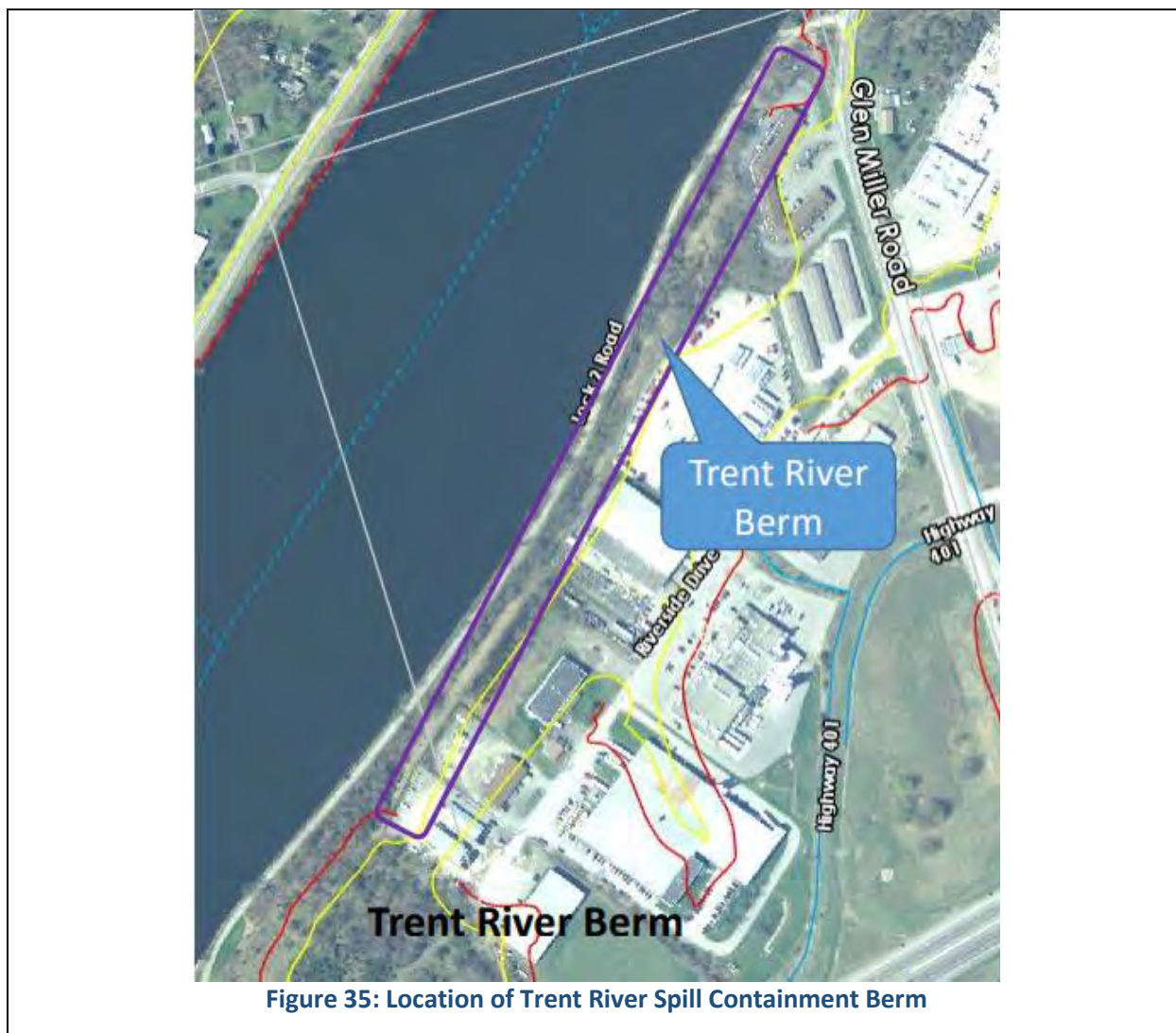


Figure 35: Location of Trent River Spill Containment Berm

### 3.3.3 Ongoing Maintenance

The best location to access the north side of the berm is from the back parking area of the Riverside Plaza. In 2004 the entire berm was brush-hogged by LTC staff to remove the woody vegetation growing along the top and sides of the berm. This is the last documented clearing of vegetation on the berm and it is noted that the central portion of the berm has significant sumac growth, which should be removed.

There are two culverts through the berm fitted with trash racks and flap gates. Only the northern one has been inspected in the last ten years.

## 3.4 Trout Creek Flood Channel – Campbellford, Municipality of Trent Hills

### 3.4.1 Background

After the March 1980 flood, the new Canada-Ontario Flood Damage Reduction Program (FDRP) was highly sought after to provide funding for floodplain mapping services. Early in 1981, LTC staff made presentations to Town of Campbellford and Township of Seymour councils proposing a Trout Creek floodplain mapping project. It was noted that this project could qualify for 90% grant funding (50%

federal and 40% provincial) with the remaining 10% covered by the Conservation Authority. This remaining 10% is funded through the benefitting municipalities (95%) and the Conservation Authority (5%).

MacLaren Plansearch was the selected consultant for the floodplain mapping project. During this project, recommendations were made for some flood control measures to be undertaken due to the damages that occurred as a result of the 1980 flood. Two basic options of flood channel improvements or flood reservoir constructed upstream of the Town.

In October 1982, Campbellford Town Council voted to authorize LTC to undertake a detailed engineering study for the two proposed flood reduction measures proposed for Trout Creek. This came as a result of a presentation to council on the preliminary results of the floodplain mapping that had been undertaken during 1981-1982. Terms of Reference for this study were developed and approved in March 1984. After reviewing submitted Letters of Interest, the firm of Totten Sims Hubicki (TSH) was selected for the detailed engineering review and design. The letter from TSH dated May 30, 1984, outlines the background information, review of options and recommendation for channelization of Trout Creek from Simpson Street Bridge to the Balaclava Street Bridge. This recommendation was supported by the MNR and the Town of Campbellford.

By October 1984, TSH had completed preliminary design for the channelization and provided two alternatives: gabion baskets or armour stone lined channel. The Town supported the less expensive gabion basket retaining wall (estimated cost of \$123,000) but requested that the installation of a sewer line along the north bank of Trout Creek was to be considered along with the channel improvements. Discussions about this sewer line were ongoing through the fall of 1984.

In March 1985, the subject of using DuraHold Blocks instead of the gabion baskets was raised. The cost of \$145,000 for the DuraHold walls was only slightly more than the estimated \$141,000 for the gabion baskets. The sanitary sewer line considerations were not supported by the province and were removed from the project. The DuraHold wall was supported by Council but Provincial funding support for this project was not obtained in 1984 or 1985. A brief was prepared in June 1985 providing an updated estimate of \$170,000 for the project and a request to have the Town "front-end" the cost and to be reimbursed when the provincial funding does come through.

In June 1985 the orientation of the existing sanitary sewer lines along Inkerman Street would require realignment with the proposed channel improvements and would include an inverted siphon in the sanitary line. Eventually it was determined that the siphon would not work and a pumping station would be required. This pumping station was eventually to be placed in the southwest corner of the intersection of Pellissier and Inkerman Streets.

By the end of September 1985, the project description was revised to include the sanitary sewer line realignment and installation of the pump station. Total costs were now estimated to be \$250,000.

In November 1985 a survey of residents in the area of ice jamming and impacts of ice jam floods was undertaken and documented in the file to support questions posed by MNR.

The Certificate of Approval (CofA) for the sewage works as part of the flood reduction works was issued by the Ministry of the Environment in August 1986. With this in place and design complete, the project was tendered. The TSH estimate for the project totalled \$356,000 but all bids came in significantly

higher. Funding through the province was applied for again in 1986 and 1987 and although the project received technical approval it did not rank high enough to receive funding support.

Eventually funding from the province was approved early in 1988 (\$283,315.00). In March 1988 easements began to be secured. Tender specifications and drawings were undertaken by TSH and bids provided in May 1988. The construction contract was awarded to James A. Hennekam Construction for \$265,364.91. Once easements to access the properties was obtained, construction began in August 1988 and was completed by the fall of 1988.

Of note the Simpson and Pellissier Street bridges are not part of the flood channel works but during construction, it was determined that extra protection for the Pellissier Street Bridge abutments was required as the excavations undertaken as part of the channel works exposed the abutments further than they were designed for. Also back in 1975 when the bridge was constructed the footings did not extend into the bedrock as the drawings indicated. No as-built drawings had been prepared to identify this modification.

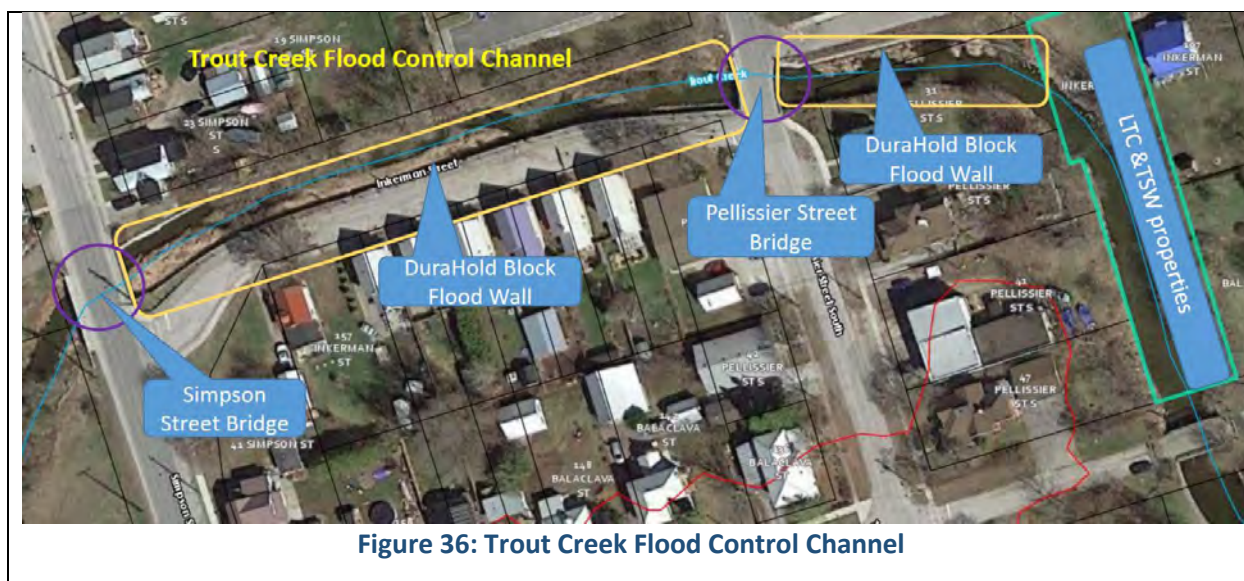


Figure 36: Trout Creek Flood Control Channel

### 3.4.2 Costs & Funding (1988 \$CA)

From 1986 to 1988 the costs for the entire project are as follows:

- Engineering \$ 46,117.41
- Construction \$ 418,075.31
- LTC Staff Costs \$ 4,100.94
- Advertising \$ 429.49
- Property and Legal \$ 8,299.98

For a total documented cost of **\$ 477,023.13**.

The Water and Related Land Management (W&RLM) funding was originally 84% from the province and increased to 85% in 1987. Not all costs were funded by the province however.

- Provincial Share \$ 397,0963.48
- Town of Campbellford Share \$ 79,926.65

### 3.4.3 Ownership and Easement Considerations

In 1985 Easement Surveys were completed for areas that required work and/or access for the works for the flood control project. Blocks VIII and XI of Registered Plan 112 in the Town of Campbellford were surveyed for the easements and a number of copies of each surveyed Block is included in Easement file in the archives. Signed copies of the easements are also found in this folder.

In 1988, prior to the construction works, Temporary Easements for the construction work were sought from the landowners and these temporary easements were to be terminated on December 31, 1988. In some cases the Temporary Easements were changed into Permanent Easements to allow for access for the construction project but to also allow the Conservation Authority and its' agents access to the described Part of the property for purposes of inspecting and maintaining the works.

There were four affected properties north of Inkerman Street between Simpson and Pellissier Streets in Block VIII of Registered Plan 112 in the Town of Campbellford. These four Parts received Temporary Easements (which are now terminated) but there is a Permanent Easement for the property on the northwest corner of Pellissier and Inkerman (Instrument Number 80308). A figure illustrating the four affected parcels, with the easement areas shown as Parts 1 to 4, is below.

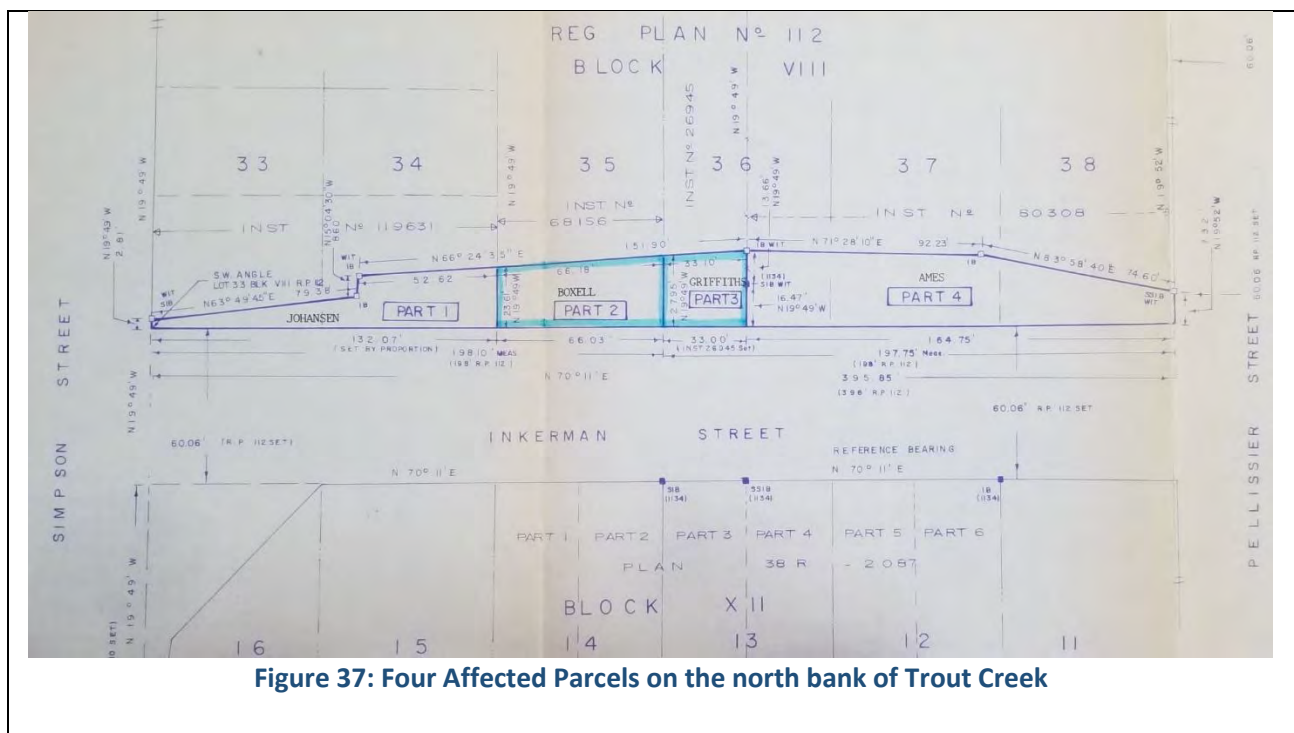
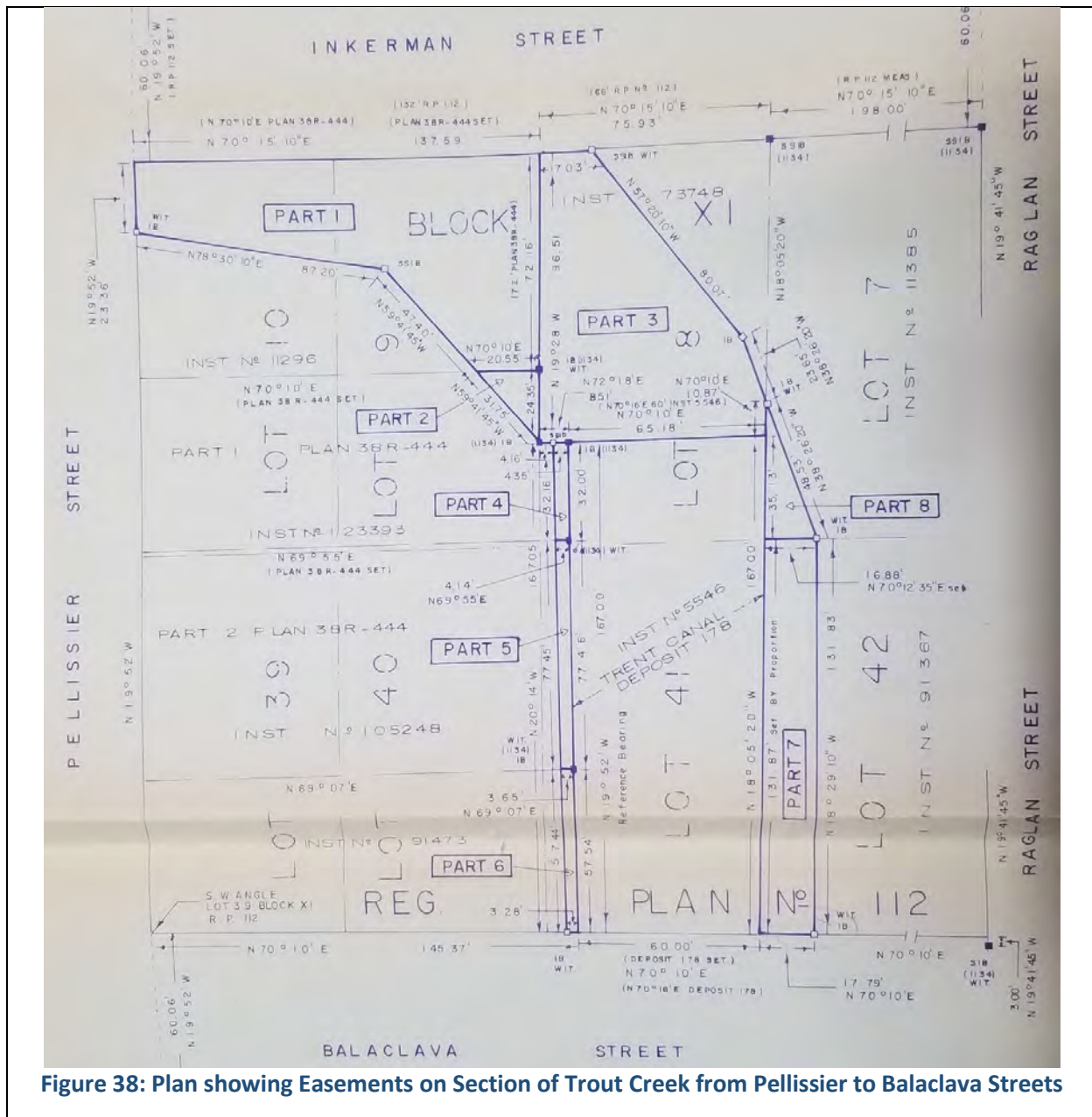


Figure 37: Four Affected Parcels on the north bank of Trout Creek

There were a number of affected properties south of Inkerman Street between Pellissier and Raglan Streets since Trout Creek turned south in this Block XI of Registered Plan 112 of the Town of Campbellford. There were nine defined Parts that required easements for the construction of the flood channel works with five of the parcels having permanent easements on them. The properties with

permanent easements are listed below and can be seen in the Figure below. The Instrument number for each property and the landowner name (in 1988) are included in the list below:

- Part 1 on Instrument Number 11296 has a permanent easement (HARDY);
- Part 2 on Instrument Number 123393 has a permanent easement (W. SEGUIRE);
- Part 3 on Instrument Number 73748 is the property owned by LTRCA;
- Part 4 on Instrument Number 123393 has a permanent easement (J. SEGUIRE);
- Part 5 on Instrument Number 105248 – no documented easements;
- Part 6 on Instrument Number 105248 only had a temporary easement but no documented permanent easement (BERTRAND);
- Part 7 on Instrument Number 91367 – no documented easements;
- Part 8 on Instrument Number 11386 has a permanent easement (SMITH); and
- Part 9 on Instrument Number 5546 has a permanent easement (TRENT SEVERN WATERWAY) – note that the permanent easement is not signed by TSW but the temporary one is.



**Figure 38: Plan showing Easements on Section of Trout Creek from Pellissier to Balaclava Streets**

### 3.4.4 Flood Channel – Simpson to Pellissier

The channel improvements began at the Simpson Street Bridge and the entire section between the Simpson Street Bridge and the Pellissier Street Bridge was included in the flood control works, which included the sewer realignment and installation of a sanitary pumping station, stream deepening and realignment, DuraHold retaining wall installation along the entire south bank and on the western-most property along the north bank. The remainder of the north bank was protected by a river rock revetment style erosion protection work. The figure below shows the DuraHold retaining wall portion along the north bank and the transition to the river stone protection. The south bank retaining wall is also evident with the cut-outs in the capstones for roadside drainage.

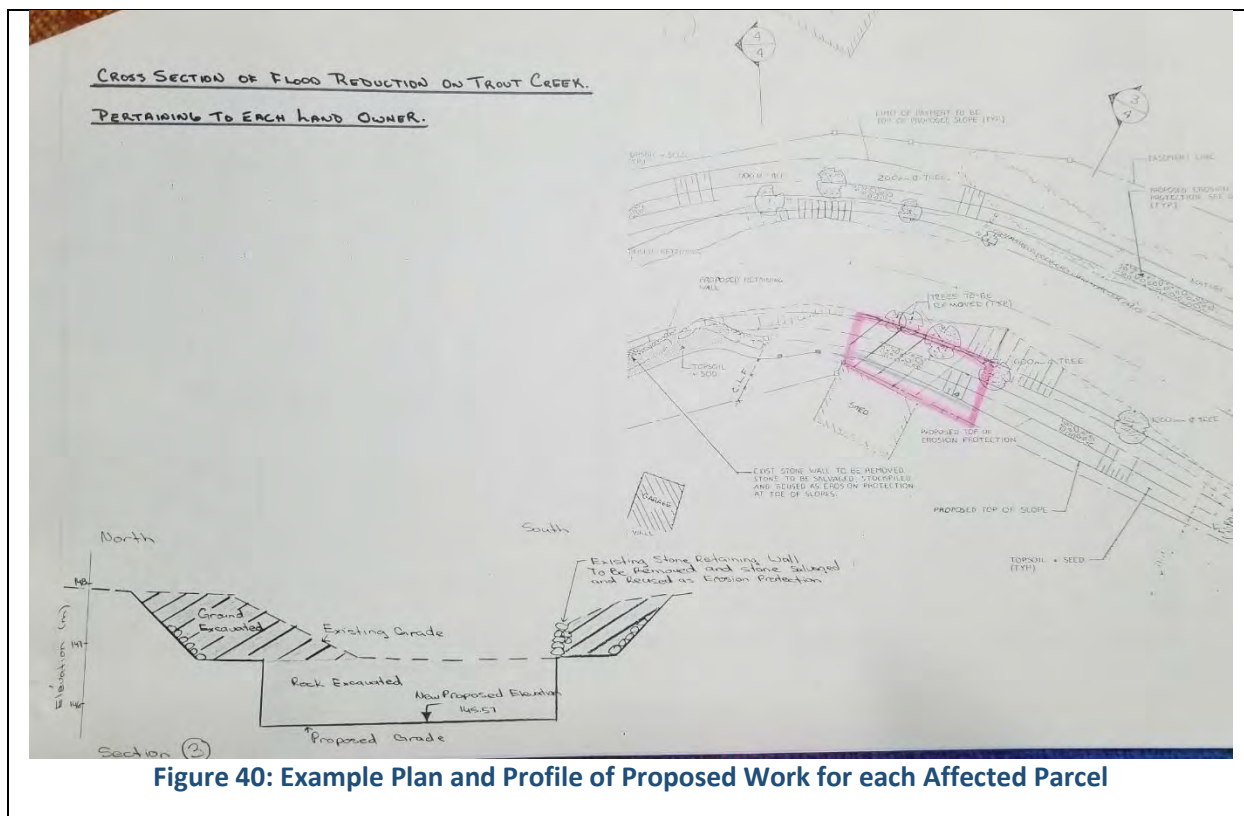


**Figure 39: North Bank DuraHold retaining wall transition to river rock protection**

#### 3.4.5 Flood Channel – Pellissier to Balaclava

The channel excavation continued from the Pellissier Street Bridge to the Balaclava Street Bridge and the channel was widened as well. Trout Creek turns from flowing eastward to flowing southward in this section. The majority of the southward flowing creek is located on the property that was purchased by LTC as well as the Trent-Severn Waterway property directly south.

Temporary easements for the construction work were obtained for each property and then permanent easements for inspection and maintenance were obtained as well, as documented above. An example of the documentation attached with the easements is shown below.



The DuraHold retaining wall was continued from the Pellissier Street Bridge on both the north and south banks of Trout Creek as it flowed eastward but the retaining wall transitions to a rock revetment style protection of the cut-back banks as the creek turns southward. This rock protected bank continues southward to the Balaclava Street Bridge.

The figure below shows the downstream end of the DuraHold retaining wall on both the north and south banks of Trout Creek and the transition to river rock revetment protections as the creek turns southward.





**Figure 41: Trout Creek looking eastward from Pellissier Street Bridge**

### 3.4.6 Ongoing Concerns and Maintenance

Very soon after installation of the DuraHold block wall, there were issues with how quickly the DuraHold blocks eroded especially below the cut-out areas for the roadside drainage along Inkerman Street. It was unclear if these issues were caused by drainage with high salt content, too much air entrainment, freeze-thaw cycle damage or some other issues that eroded the face of the blocks as well as the capstones (coping blocks). Beginning in 1996 (8 years after installation), there were investigations to determine if this erosion was compromising the structural integrity of the retaining walls.

Representatives from UniLock (supplier of the DuraHold Blocks) attended the site with LTC staff and TSH to view the deterioration and all noted concerns. UniLock representative recommended replacement of coping block and would require excavation behind the wall to assess other blocks. LTC began to get quotes for excavation work for wall and for channel clean out as well. Discussions included UniLock providing 50% of the costs for the work and eventually committed to \$7500. UniLock recommended sealing the units after new install and providing a concrete cap as well. Silcrete solution (ISO 110) was the recommended sealant and the walls would have to be power washed and then the sealer applied 3 times.

The work began in August 1997 and in the end the UniLock blocks were provided at no charge. The remaining costs for the work totalled \$20,707.69, of which 50% was paid by the province and 50% was paid by the Town of Campbellford.

By 1999 the spalling was beginning to show up again and there were concerns about the sealant used. LTC consulted engineer (Mike Cook) and UniLock representatives again. UniLock recommended different sealer (TS10). There is a note that this was completed in late 1999 at no cost to LTC.

Spalling continued and by 2003, LTC staff noted that the deterioration of the wall was continuing and recommended that an engineering assessment of the wall be undertaken. GD Jewell Engineering was contracted to undertake an evaluation of the DuraHold wall and recommend remediation measures.

Jewell estimated \$1700 for this work. In LTC's letter to the municipality it is noted that this has been an issue in the past and council has not been able to secure funding for this work. During the investigation Jewell Engineering recommended that concrete cylinder samples be tested for strength for an additional cost of \$670. Eventually the cylinders were subjected to other tests, resulting in lab fees of \$1370. The resulting draft report on rehabilitation options was prepared in November 2004. After some back and forth the final report was dated March 2005. Jewell Engineering then provided a tender package for the repairs to the Trout Creek Flood Wall. Based on the information in the maintenance folder, this work was not undertaken and LTC staff continued with monitoring of the spalling concrete noting that there are no structural failures.

In 2011 a sinkhole appeared behind the concrete retaining wall at the northeast corner of the Simpson Street Bridge. BDS was contracted to excavate behind the wall and provide a larger footing for the retaining wall. The void behind the wall would be filled and the site restored. The work was completed in September 2011 for \$6,741.07.

Soon after the flood protection work was completed complaints about sediment deposition within the flood channel began. Messaging from LTC confirmed that the sedimentation and vegetation growth were positive enhancements and did not affect the conveyance capacity of the channel. Eventually the deposition was significant enough to require a clean out, which was first undertaken in 1997 during the DuraHold wall repairs. The last clean out was done in 2016.

### 3.5 Glen Miller Creek Flood Damage Areas – City of Quinte West

#### 3.5.1 Background

Shortly after the significant flood event of March 1980, LTC developed a Terms of Reference for the Flood and Fill Line Mapping and Preliminary Engineering Study for Glen Miller Creek in July 1980, which was approved by the MNR in September 1980. The purposed of this study was two-fold. First to complete floodplain mapping for Glen Miller Creek from north of Johnstown Road in the Township of Sidney to the mouth of the Creek in the Town of Trenton. The second portion of the study was to address a floodplain management plan, which would include cost-benefit analysis of proposed works for floodplain management and flood protection. Preliminary design and costing for the recommended flood protection measures were to be included. Aerial imagery for the Glen Miller Creek watershed was flown in the spring of 1980 in support of this study.

The Request for Proposals for issued in September 1980 and the firm of Chrysler-Lathem (later referred ask Cumming Cockburn and Associates (CCL)) was selected to complete the study and Northway-Gestalt Survey Corporation would complete the base mapping required to comply with the provinces new mapping standards. The hydrology portion of Phase 1 of the report was completed by July 1981; however the hydraulic portion resulted in major challenges with significant spill areas requiring further mapping be undertaken. The hydraulic analysis identifying five spill areas was submitted to the MNR for review in May 1982 and with quite a bit of back and forth, the MNR approved the hydraulic analysis in November 1982. Spring of 1983 resulted in additional comments on the final mapping and reporting and back and forth between MNR and CCL. The final report and mapping were delivered in July of 1983. There were some final back and forth regarding the updated cost-benefit ratios and the 100-year floodline mapping but all was accepted by the MNR in September of 1984.

Of note, the report states that *“Glen Miller Creek can accommodate a flow in the order of a 50-year storm without causing significant damage to the urbanized areas along its length. Under the 100-year storm event flood damage would be expected in the Industrial Park area. Should the Regional Storm occur, significant damage would occur at each of the three flood prone site identified.”* The report also notes *“Although it appears that the existing channel can accommodate a significant flow, the hydraulic regime of Glen Miller Creek and its feeder systems can be significantly affected by accumulation of ice and debris at the entrances to the hydraulic structure on this system.”*

The Quinte Planning Board (QPB) was the representative of the benefitting municipalities (Town of Trenton and Township of Sidney) and was the municipal contact for this study. The total cost for this study was \$28,965 by the end of 1982 with QPB contributing 95% of the following Conservation Authority portions: 19% (1980); 16% (1981) and 17% (1982).

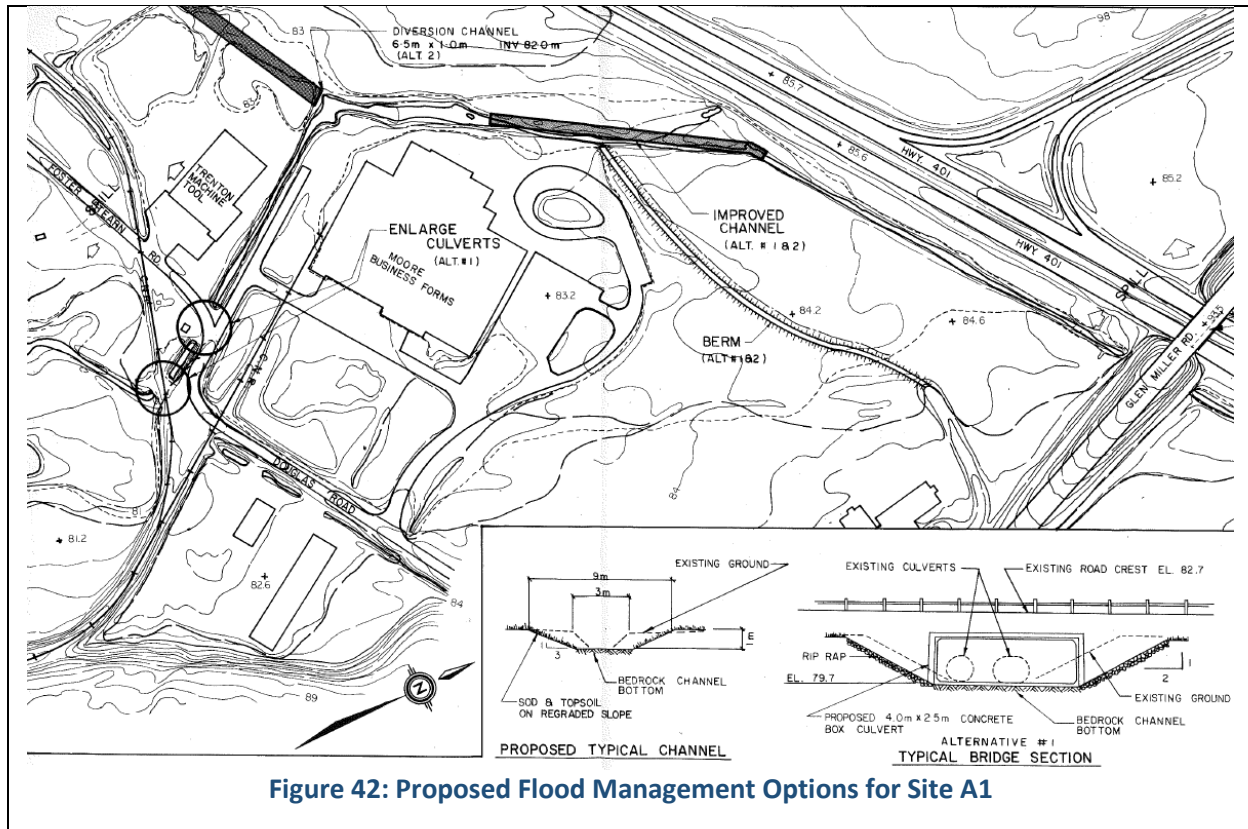
Because there were separate recommended floodplain management options for the different damage areas, they are discussed separately below. Site A1 involves the Trenton Industrial Park along Douglas Road, south of Highway 401, Site A2 involves the Trenton Industrial Park along Riverside Drive north of Highway 401, Site B is the crossing of Glen Miller Creek at Peterson Road and Site C is the Munroe Estates Subdivision and the Johnstown Road area. All the information for the Glen Miller Creek Flood Damage areas is archived at the LTC Office under Project W.1.10, including the Floodplain Mapping and Preliminary Engineering Report.

### 3.5.2 Glen Miller Creek – Trenton Industrial Park – City of Quinte West

#### 3.5.2.1 Trenton Industrial Park South, Douglas Road - Background

The Preliminary Engineering Study (CCL 1983) prioritized flood control works in the area of the Trenton Industrial Park (south of the 401) as second after the Peterson Road flood management options. It was labelled Site A1 and the report recommended two alternative solutions for flood management.

Both alternatives involved improved channelization north of the Moore Business Forms property (8 Douglas Road) and the construction of a berm as shown in the figure below. Alternative 1 required the enlargement of two culvert crossings of Glen Miller Creek: one at Foster Stearns Road and the other culvert at the CN Rail Spur Line crossing. The second alternative involved the construction of a diversion channel to convey flood flows to the Trent River north of Foster Stearns Road and the Trenton Machine Tool property at 10 Douglas Road. The flood management options are shown in the figure below.



**Figure 42: Proposed Flood Management Options for Site A1**

Upon presentation to Trenton Council in early 1983, it was Council's decision to support Alternative 2 with funding of up to \$50,000, which with the Conservation Authority's budgeted \$80,000 would cover the estimated \$130,000 estimated project cost. This project would also include an assessment of the spill area in the north section of the Trenton Industrial Park (Site A2).

As CCL was familiar with the modelling, they were asked to submit a proposal for the Terms of Reference for the entire project that had been reviewed and accepted by the MNR. The entire project with Spill Analysis, Design Engineering, Construction and Contract Supervision was proposed to cost \$147,600.

Design work began and in July of 1983, the businesses along Foster Stearns Road decided that were not supportive of the diversion channel across the north end of their properties and they no longer needed the rail spur line. The removal of the rail line would reduce the costs for Alternative 1 but there were additional engineering costs for the updated design work. Consultation with the Town and MNR resulted in a change of direction for the project but these were supported. Ontario Hydro was also consulted as the proposed berm was to be located on lands owned by Ontario Hydro and an easement would be required for the berm (or dyke as it was sometimes referred as).

The new crossing of Foster Stearns Road was to be a 1.9 m X 6.1 m rigid frame culvert. Final specifications and drawings were approved by MNR in October 1983 and the call for tenders issued. Three bids were received with lowest bid of \$101,680 from R & H Doornekamp. Additions to the contract including additional steel in the culvert and installation of a culvert with flapgate through the

berm, among other items, increased the construction cost to \$113,473.98. A significant part of the work was done in late 1983 and project was completed by November 1984.

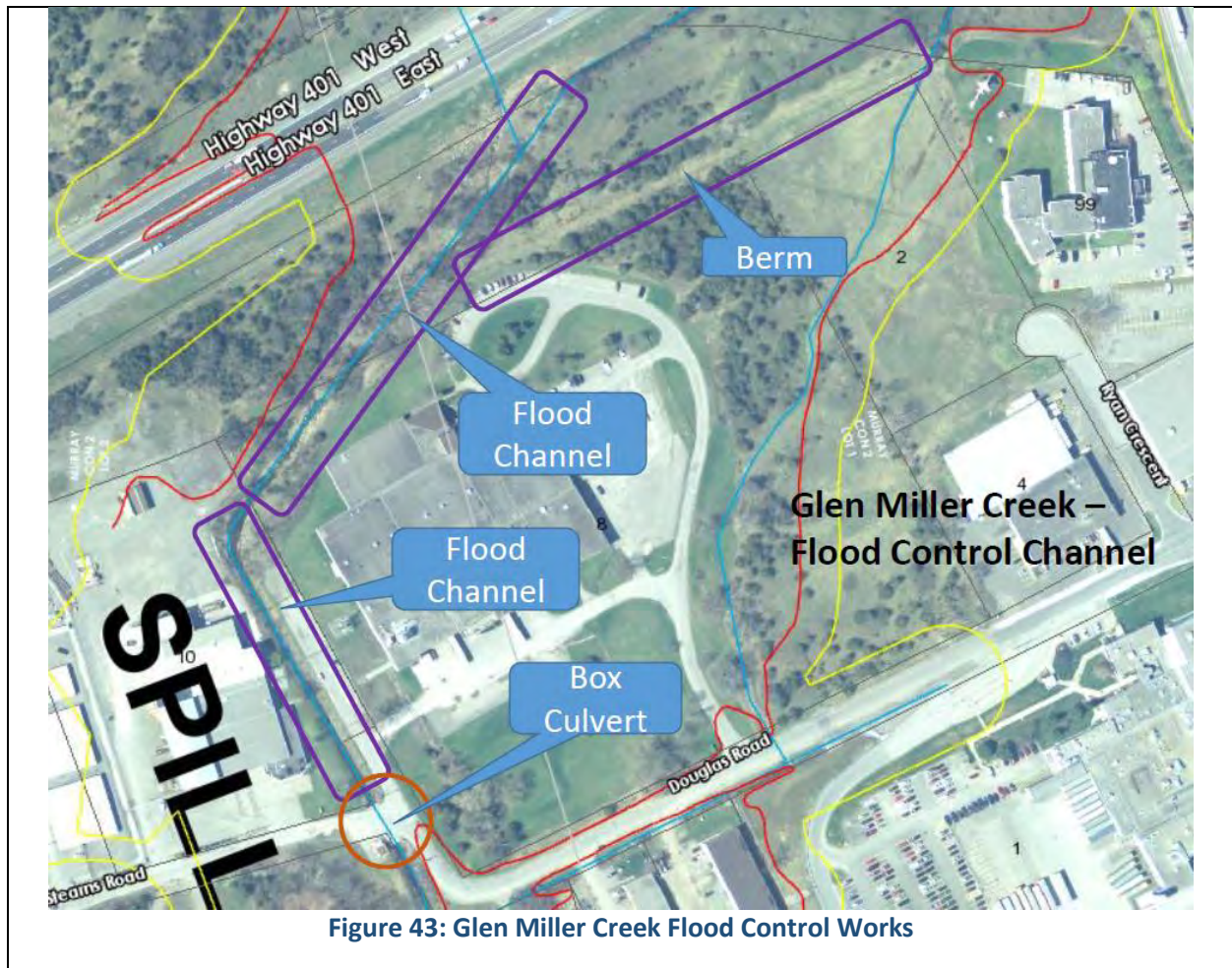


Figure 43: Glen Miller Creek Flood Control Works

### 3.5.2.2 Trenton Industrial Park North, Riverside Drive – Background

The preliminary engineering report identified two major spill areas in the vicinity of Site A1 – the northern Trenton Industrial Park located along Riverside Drive (formerly known as Creamery Road). One spill was from Glen Miller Creek over Glen Miller Road and the second spill was from the Trent River. On March 22, 1983, LTC requested a more detailed assessment of these spills and Cumming-Cockburn & Associates provided a proposal for this additional work.

The Trent River Spill assessment was addressed in CCL's report dated August 25, 1983 and is discussed further in Chapter 3.4 of this report. The objective of the Glen Miller Spill Analysis report was to complete a more detailed topographic survey of the area, develop additional models for the spill area, assess both the Glen Miller Creek and Trent River Spills and assess the feasibility of utilizing a drainage ditch along the north side of Highway 401 as a diversion channel.

The modelling and report were undertaken and documented in a report called *Spill Analysis of Glen Miller Creek* and dated April 1984. The report concluded that the diversion channel was not feasible given the amount of rock that would have to be removed. The report also assessed the option of

constructing a berm on the east side of Glen Miller Road to prevent the spill across the roadway. This option would extend upstream flooding to include additional properties including the lumber/hardare store and would disrupt the local drainage scheme. Neither option was pursued further and therefore there are no flood control structures constructed in this area that LTC has been involved with.

Of note, there have been significant changes to the Glen Miller Road and Highway 401 interchange since this report was completed. It is LTC's understanding that the Ministry of Transportation (MTO) has completed a number of analyses on the Glen Miller Creek floodplain with these changes including removing the cloverleaf in the northwest quadrant of the interchange and adding access ramps in the northeast quadrant. The City of Quinte West had been involved in raising Glen Miller Road and MTO has enlarged the box culvert under Glen Miller Road and completed additional channelling for local drainage in the northwest quadrant. In 2016-2017 MTO also excavated a diversion channel along the north side of Highway 401 (similar to the diversion channel proposed in this report). At this time MTO provided preliminary updated floodplain mapping for this area but noted that further works for the interchange are planned and the floodplain mapping should only be considered preliminary at this stage.

Overall, there are NO flood control structures in this Industrial Park (north side along Riverside Drive) that LTC have been involved with or that LTC staff inspect or maintain. It is also worth noting that there have been numerous discussions between MTO and the City without LTC input regarding drainage concerns in this area.

#### 3.5.2.3 *Costs & Funding (1983 \$CA)*

As noted above the construction cost estimates varied over the project but based on the information available in the capital works files the following costs are attributed to the Trenton Industrial Park (north and south). The engineering costs are taken from the proposal.

- |                |               |
|----------------|---------------|
| • Construction | \$ 113,473.98 |
| • Engineering  | \$ 17,600.00  |

Total Cost for this project: \$ 131,073.98

#### 3.5.2.4 *Ownership and Easement Considerations*

Temporary Easements were obtained for the construction work of the flood control measures as well as Permanent Easements for the berm structure to be placed on the lands and access for LTC staff to inspect and maintain the flood control works. These easements are for the following properties:

- Ontario Hydro – Part 3 Plan 21R 7071 in Part Lot 1, Concession 2, former Township of Murray in the City of Trenton – Registered as Instrument Number 351694.
- Moore Corporation Ltd (8 Douglas Road) – Part 2 Plan 21R 7071 in Part Lots 1 & 2, Concession 2, former Township of Murray in the City of Trenton – Registered as Instrument Number 351707.
- Kinwol Enterprises (10 Douglas Road) – Part 1 Plan 21R 7071 in Part of Lot 2, Concession 2, former Township of Murray in the City of Trenton – Registered as Instrument Number 351706.

#### 3.5.2.5 *Ongoing Maintenance*

Inspections by LTC staff in 1997 & 1998 note numerous groundhog holes/dens in the flood berm. These groundhog holes remained in place and are noted in the 2013 inspections as well. Also in 2013 there is significant sumac growth on the west end of the berm. The flapgate on the drainage culvert was sedimented shut and needed to be dug out by LTC staff.

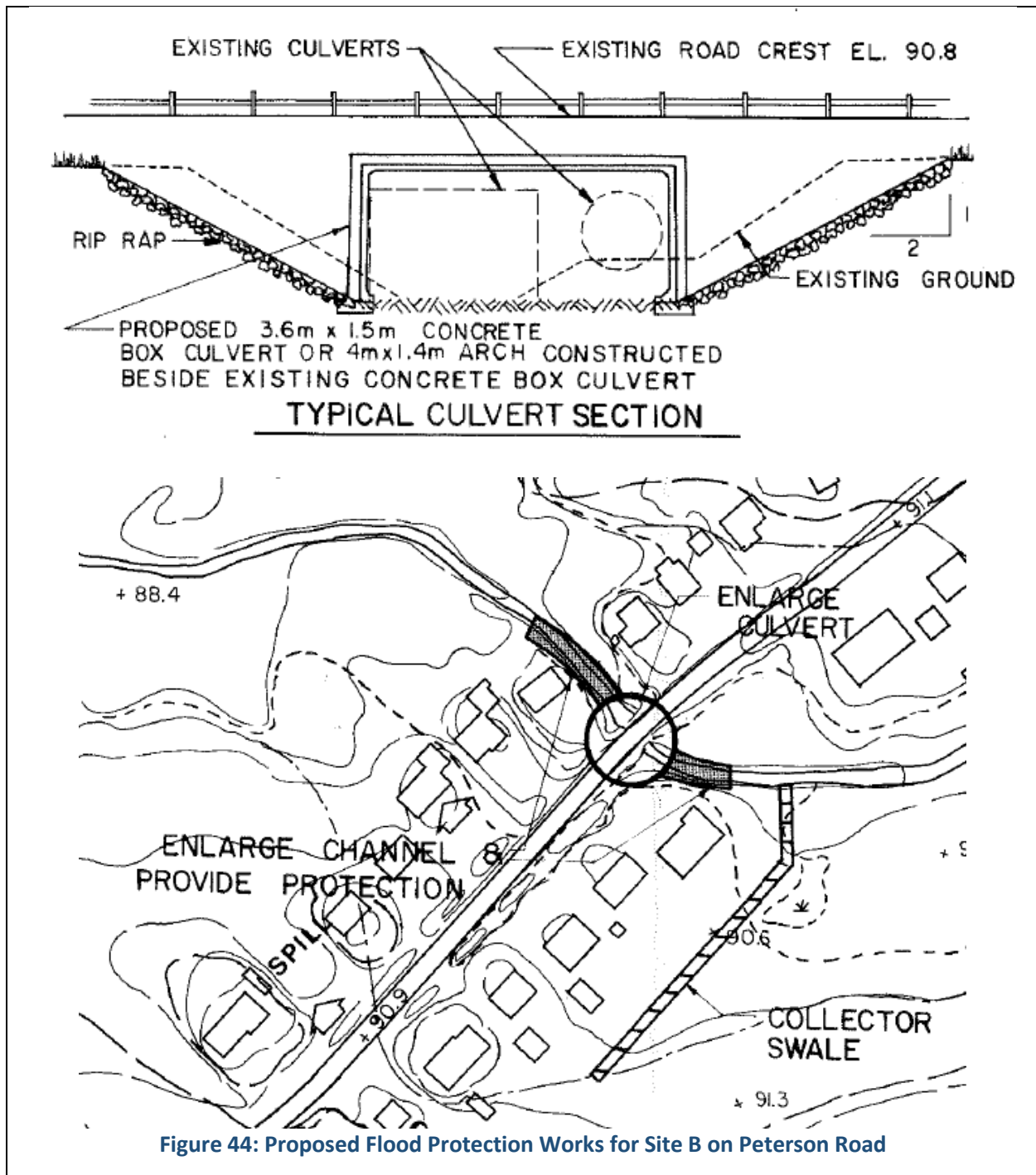
In 2016 there was a watermain break in the waterline that crosses from the northern industrial park under Highway 401 through the southern industrial park. The City of Quinte West excavated this water line on the south side of Highway 401, under Glen Miller Creek and through the flood control berm as part of the emergency work to correct this leak. At the time, there was a Level 3 drought and no flow in Glen Miller Creek. LTC requested that the berm be restored and the channel be reinstated. This was eventually completed after LTC provided documentation of the flood works for this area.

Around 2018 a beaver had constructed a dam in the Trenton FAB section of Glen Miller Creek. LTC staff notified the City of Quinte West and they removed the dam.

### 3.5.3 Glen Miller Creek – Peterson Road – City of Quinte West

#### 3.5.3.1 Background

The Preliminary Engineering Study (CCL 1983) gave the Peterson Road flood management options the first priority to be undertaken. In this report it is summarized *“The first priority in the tentative staging of the Remedial Works Program would be the floodproofing of the residences at the Peterson Street crossing. The most feasible scheme based on the results of the benefit-cost analysis includes the installation of 4.0 x 1.4 m multi-plate pipe arch (adjacent to the existing concrete box culvert) and the construction of a drainage swale north of houses locate to the east of the channel on Peterson Street.”* The proposed works are shown in the figure below.



A Terms of Reference for the Engineering Design and Construction Supervision of the project was developed by LTC and approved by MNR in July 1983. Proposals for the project were received in August 1983 and Totten Sims Hubicki (TSH) was the successful consultant. The resulting design included some channelization of the creek in the vicinity of Peterson Road, upgraded culvert of the crossing and a diversion channel upstream of the crossing to convey excessive flow around the flood-prone properties on the south end of Peterson Road. Consultation with the Ministry of Transportation and



Communication (MTC) on the crossing design as well as with the municipal roads superintendent were undertaken. Design drawings and specifications were provided by the end of September 1983 and tender bids were sought by mid-October 1983. The work involved the removal of two existing culverts and the construction of a new 3.6 m X 1.5 m concrete culvert, channel improvements and a diversion/collector swale, as shown in the previous drawings.

Proposed costs were \$50,000 but bids came in significantly higher with the lowest bid at \$64,350 by S.R. McCrory Construction. McCrory was the selected contractor and Provincial approval was obtained on October 21, 1983. Even with project delays due to high flows in the creek, the majority of the work was completed in 1983 with final paving, sodding and seeding occurring in the spring of 1984 and final sign-off in June 1984.

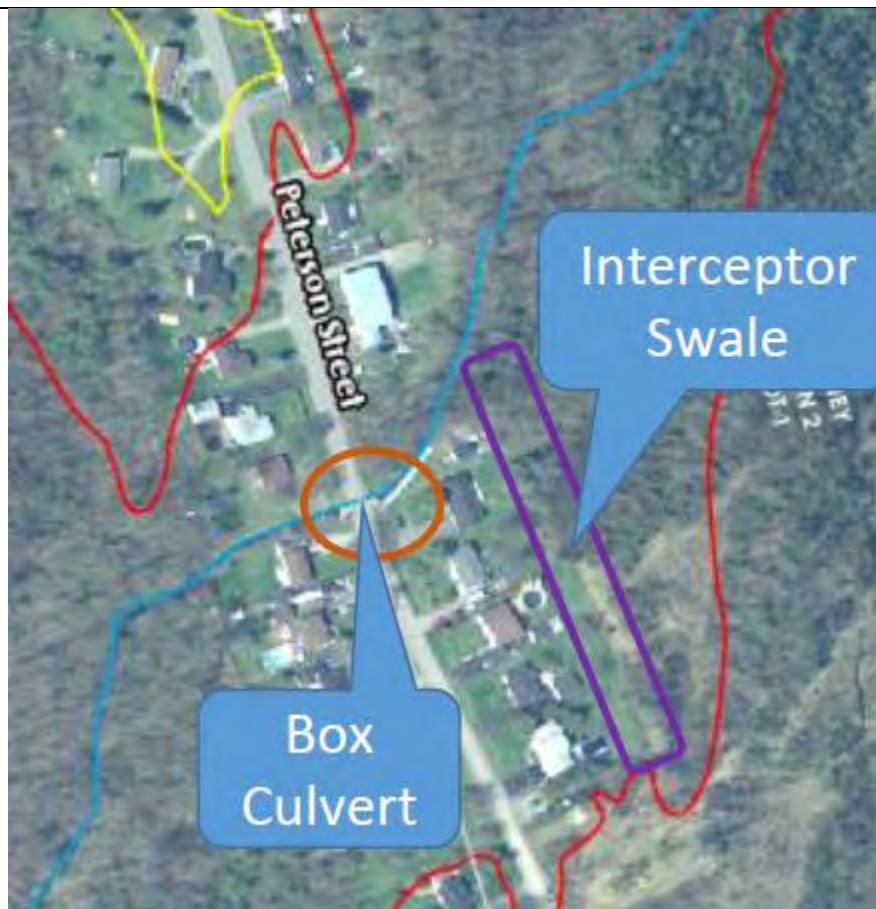


Figure 45: Peterson Street Box Culvert on Glen Miller Creek

#### 3.5.3.2 Costs & Funding (1983 \$CA)

- Engineering (based on proposal)      \$ 8,700.00
- Construction                                      \$ 57,323.37

Total Project Costs were **\$ 66,023.37**. Note that there were no engineering invoices or payment records in the archive files so the engineering costs shown here are from the proposal. There were no detailed

accounting records in the archived files but there was mention of the 55% provincial grant being approved for project projected cost of \$80,000.

- |  |              |
|--|--------------|
| • Provincial Grant (55% of \$80K project estimate) | \$ 44,000.00 |
| • Township of Sidney (95% of remaining)            | \$ 20,922.20 |
| • Lower Trent Region CA                            | \$ 1,101.17  |

### 3.5.3.3 *Ownership and Easement Considerations*

Temporary Easements were obtained for the private properties where the channelization work and diversion swale were to be undertaken. There are no street addresses on these easements and all reference Registered Plan 111 Park Lot 8 in the Township of Sidney (21R-898 and 21R-710) so it isn't clear what the actual addresses were. Property owner names were Parkinson, Deziel, Nicholson and Sandford.

The only permanent easement was registered on the Parkinson Property for access to the constructed collector/diversion swale behind the houses. This property is described as 72 Johnstown Road, Part 1 of Registered Plan 21R 7055 in Part of Lot 1, Concession 2 in the Township of Sidney – Instrument Number 351705.

### 3.5.3.4 *Ongoing Maintenance*

In 1996, LTC staff inspections noted accumulated sediment at the inlet of the new culvert that was directing flow to the southeast corner of the culvert and there were concerns about undermining the culvert. That summer, Sidney Township removed the sediment upstream of the culvert.

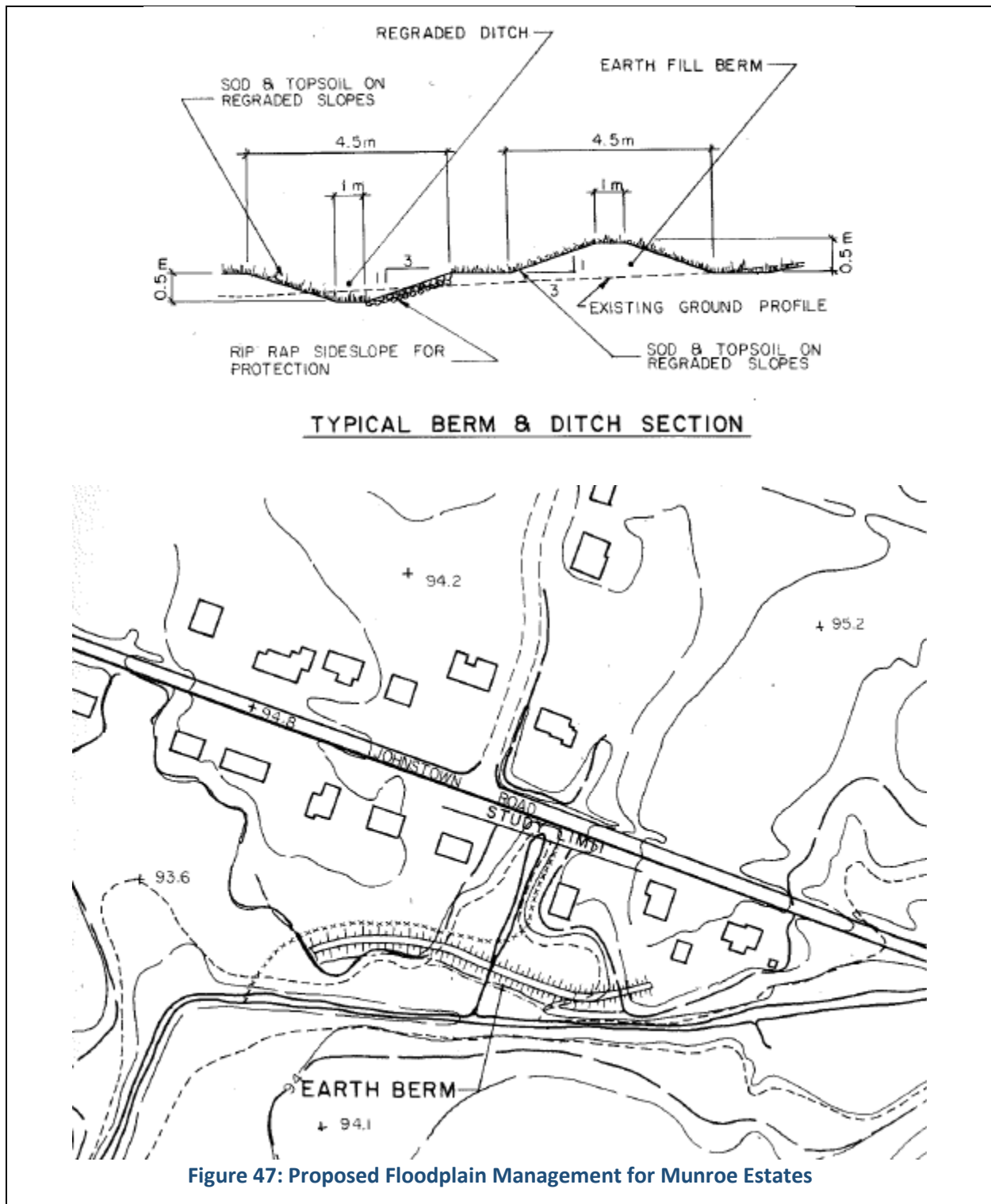
### 3.5.4 *Glen Miller Creek – Munroe Estates, Johnstown Road – City of Quinte West*

The area of the Munroe Estates Subdivision along Johnstown Road is shown below. This area is referenced as Site C in the Preliminary Engineering Study by CCL and it experienced regular poor drainage and flooding during the 1980 flood event.



**Figure 46: Munroe Estates on Johnstown Road**

The conclusion in the 1983 Preliminary Engineering report by CCL explains the situation at the Munroe Estates area: *“Based on the hydraulic analysis, and on the historic records, Monroes’ Estates (Site C) are being subjected to a potential flood hazard. The flooding here is attributed to both the backwater from Glen Miller Creek and from the culverts located within the subdivision. The proposed improvements which include an earth berm and realignment of the Monroe Estates storm drainage outlet would provide Regional Storm protection from the backwater from Glen Miller Creek.”* This flood damage area was prioritized third indicating the other two projects were more urgent. The proposed berm and swale upgrades are shown in the figure below.



LTC undertook a drainage study of the Munroe Estates subdivision in the spring of 1984. After a more detailed review, in response to the proposed flood protection works, this 1984 report states "...the benefits of such works is questionable at this time given its low cost-effectiveness and potential to

worsen local drainage problems. It may be of interest to the Township to further assess the merits of improving the roadside drainage along Johnstown Road.” No further investigation into drainage relief was investigated until 1987 when residents of the area complained to the Township and the Township then requested LTC staff to request funding for further study into solutions for the drainage issues. In the fall of 1987 LTC submitted the proposed project to the province for funding in 1988 with an estimated cost of \$10,000. There is no further information in this file.

### 3.6 Mayhew Creek Flood Control Structures – Trenton, City of Quinte West

#### 3.6.1 Background

At the request of the Trenton Town Council in 1973, the first floodplain mapping completed for Mayhew Creek was done by Kilborn and is documented in the report dated January 1975. This report is entitled “*Report on Mayhew Creek Flood Plain Mapping in Trenton and Rawdon Creek Flood Plain Mapping and Channelization in Stirling*”. This report assessed the culvert under the Wooler Road Subway under the CN Rail line and recommended that the ditches to the entrance of the culvert (7' x 3' wood timber box culvert on bedrock) be regraded to ensure the full capacity of the culvert is utilized. The report also reviewed an option to increase the size (and thus capacity) of this culvert and an estimate cost of \$43K was provided.

Discussions with Lower Trent Conservation (LTC) and the Town of Trenton began in 1978 about a Flood Control Study (FCS), sometimes referred as a water management plan. The original Terms of Reference for this study was provided by the Ministry of Natural Resources (MNR) in 1979. Chrysler & Lathem undertook this Flood Control Study in 1979 which extended from the mouth of Mayhew Creek to the inlet of Tremur Lake. The majority of the report was completed by January 1980 but the flood of March 1980 demonstrated some inaccuracies in the report. After much back and forth between the Consultants, the MNR and LTC, the final report was provided in December 1981. Part of this report also included a structural assessment of the Old Mill Dam noting that it was stable based on C&L assessment. During this time that this report was being undertaken, the company Chrysler & Lathem split up and Lathem joined Cumming-Cockburn to make CCL Consultants, who continued with the work.

During the execution of the Flood Control Study there was a recommendation to undertake a Cost-Benefit Analysis (CBA) to determine if the proposed flood control measures would be cost-effective. A resolution to undertake this study was passed in March 1981 but as the final version of the Flood Control Study was delayed to December 1981, the Terms of Reference for the Cost-Benefit Analysis was not completed until March 1982. Letters of Interest were asked of two consulting firms and Totten Sims Hubicki (TSH) was the successful firm for the Cost-Benefit Analysis. This study was eventually undertaken in two phases with Phase 1 looking at the background information, field surveys, evaluation of the remedial measures in the FCS and costing of the recommended measures. Phase 2 would involve detailed benefit cost assessment of any works deemed to have merit based on the results of Phase 1. Phase 1 costs were estimated to be \$5.8K.

During the work on Phase 1 of the CBA, a number of issues with the previous FCS report came up and a significant amount of additional work was required to update the information. Specifically the higher return level events were significantly underestimated thus having a large impact on the conclusions of the FCS report. The draft CBA report with the re-evaluated flows was provided in August 1983.

In April 1983, with the support of the benefitting municipalities, LTC initiated the Mayhew Creek Floodplain Assessment and Two-Zone Floodway-Flood Fringe Policy Formulation. Recently the provincial government authorized the use of Special Policy Areas and / or Two-Zones for flood hazard areas with development pressures. TSH was selected to complete this report.

Drafts of both the CBA and the Two-Zone report were provided in November 1983. Together these reports represent a full Floodplain Management Plan. In reviewing the options discussed in the CBA, the Township of Murray was insistent that NO additional flooding of County Road 42 (formerly known as Wooler Road and now known as Telephone Road) would be acceptable as there were already issues with the Barry Heights Subdivision. Because of the proposed berms almost all the alternatives indicated increased flood elevations at Telephone Road. Other Alternatives were proposed along with Alternative 5. After reviewing all options, the CBA was re-issued on March 19, 1984, with a new solution proposed. Alternative 1A was recommended.

Of interest, there were two identified flood damage areas: one in the vicinity of the Wooler Road Subway under the CN Rail line and another flood damage area west of 2<sup>nd</sup> Dug Hill Road. There were conflicting interests between the Town and the Township and Northumberland County on the impacts of any of the proposed solutions. Eventually the following flood reduction works were identified in the Project Brief from June 1984 and the additional information in support of the Cost Benefit Analysis in a letter dated July 26, 1984 and was given provincial approval in August 1984.

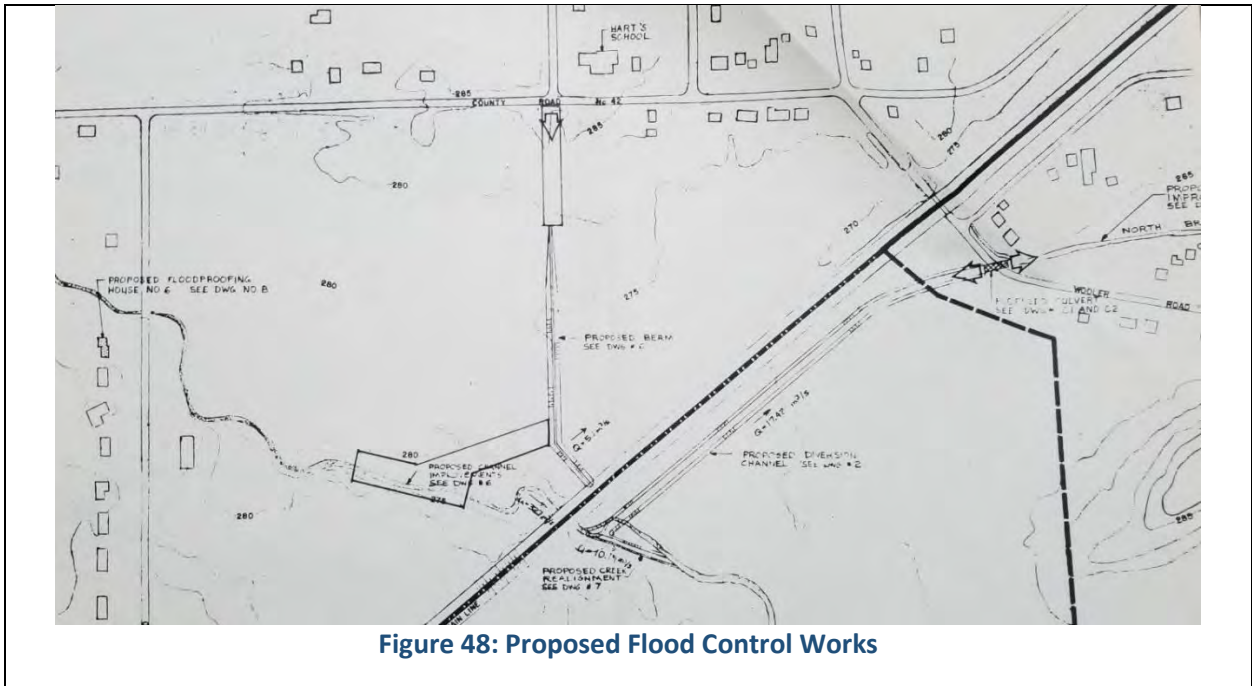
- Creation of a diversion channel and control structure;
- Construction of a new culvert under Wooler Road;
- Dyking to provide capacity for and allow control of flows on Mayhew Creek up to the 1:100 year flood level;
- Further channel improvements of the North Branch to Front Street;
- Several small earth berms and site-specific flood protection measure will protect a number of individual residences as well.

Also of note, the eventual floodplain management plan for flood control did not have floodplain mapping produced and therefore the mapping in the previous reports reviewing impacts to the floodplain as a result of the flood control measures were not representative of the eventual plan. Therefore only “existing conditions” floodplain mapping would be applicable for LTC’s regulatory purposes.

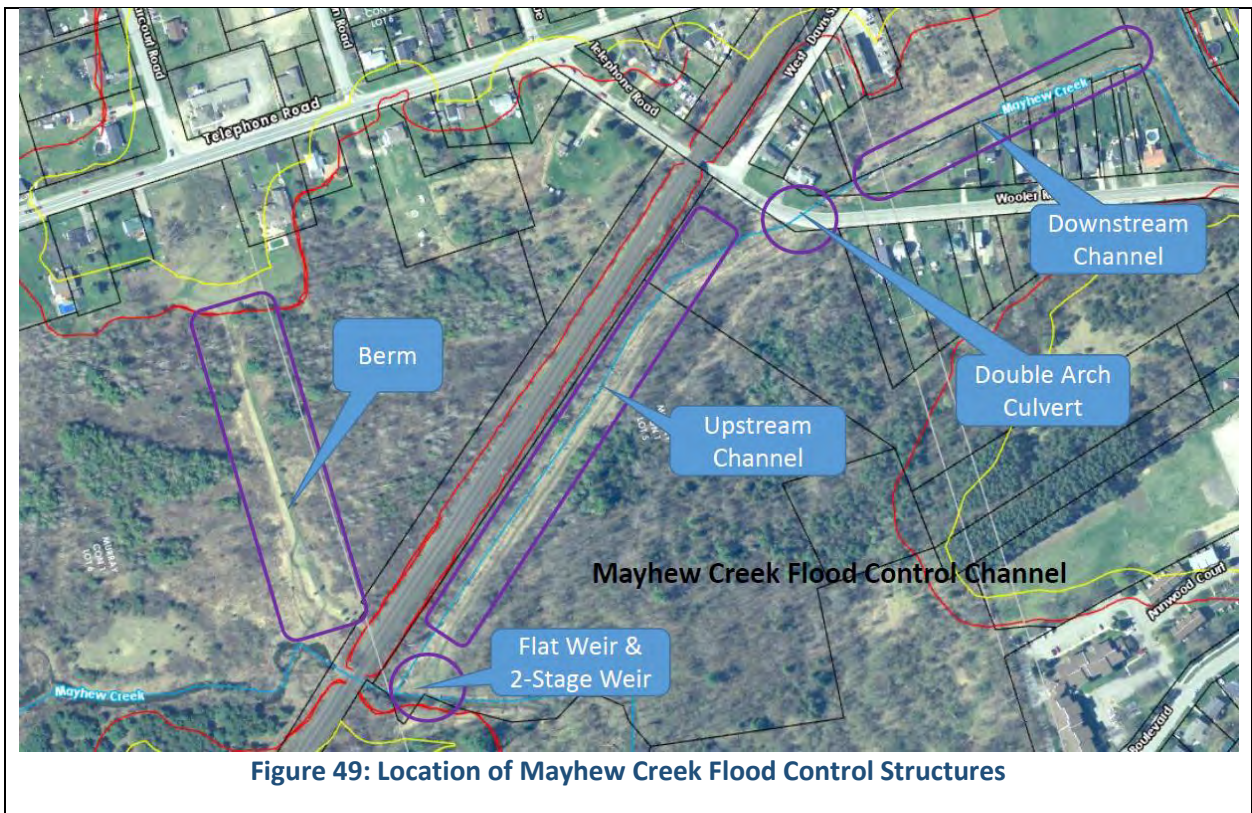
The proposed works were estimated to cost \$280K with 55% funding from the province and the City of Trenton had agreed to assume the Conservation Authority’s share of 45%. The works were to be completed in two Phases with Phase 1 with the Wooler Road Culvert construction and Phase 2 including the diversion channel and structures, dyking and flood proofing. The project was approved by the province in August 1984. The box culvert design was replaced with a double barrel SPCSPs 2.59 m X 1.88 m for a cost reduction in the project in September. The design brief and contract drawings were provided by TSH in September 1984 and then the tender was issued for November 1984.

The successful contractor bid was L.J. Looby Contracting Ltd for \$384,317, which was the low bid. Various modifications in the contract were negotiated to reduce the overall cost including reducing the depth of rip rap and topsoil and removal of riprap lining from the diversion channels.

The drawing for the final Alternative is shown in the figure below:



The locations of the Flood Control Structures are shown in the figure below.



### 3.6.1.1 Double Barrel Culvert – Old Wooler Road

Phase 1 of the contract involved the installation of the double arch structural plate corrugated steel pipe (SPSCP) culvert (2590 mm X 1880 mm) which was completed in December 1984. It is of note that the inverts of the arch pipes were raised 150 mm from the design drawings to allow proper clearance for other underground infrastructure including watermain, sanitary sewer lines and telephone underground cables.

### 3.6.1.2 Flat Weir

The flat weir located just downstream of the inlet of the diversion channel is referred to in the project drawings and descriptions as Control Structure Number 1.

### 3.6.1.3 Two-Level Weir

The two-level weir is located in the main (south) branch of Mayhew Creek and is located a distance from the mouth of the diversion channel. This location was selected to ensure that underground telephone cables in the area would not be disturbed or disrupted during the construction or afterward from increased stream velocities. In the project documentation, this structure is referred to as Control Structure Number 2.

### 3.6.1.4 Flood Channel – US of Old Wooler Road

This channel was constructed as part of the flood control works and provides a conveyance from the main (south) branch of Mayhew Creek to the North Branch. The two control structures are designed to regulate the portion of flow diverted down this channel.

### 3.6.1.5 Flood Channel – DS of Old Wooler Road

This channel is described as the North Branch and conveys flows from the culvert under the Wooler Road Subway along to where it meets up with the rest of the North Branch at the former CN Rail Spur Line near Front Street. Minor channelization was undertaken to improve conveyance of flow including additional flows from the diversion channel and berms were constructed on both sides of the creek towards the downstream end. Note that there are two drainage pipes fitted with flap gates one on each side of the creek through the constructed berms where the stream turns southward.

### 3.6.1.6 North-South Berm

After some significant negotiating with the landowner, the north-south berm or dyke was constructed on the Barry property. This berm has a spillway designed into it so that the majority of flows that flood from the creek are contained in the lands upstream of the CN Rail line. The spillway was designed to allow just enough flow through the berm so that the culvert through the Wooler Road underpass will not be overwhelmed and all the flow will be able to be conveyed without flooding. There is a permanent easement in place for this structure.

## 3.6.2 Costs & Funding (1984 \$CA)

- Engineering (includes survey and legal)                      \$ 40,000.00
- Construction    \$ 324,052.45

Total Project Costs were **\$ 364,052**. Note that there were no engineering invoices or payment records in the archive files so the engineering costs shown here are from the proposal. There were no detailed accounting records in the archived files but there was mention of the 55% provincial grant being approved for project estimated to cost \$95K.

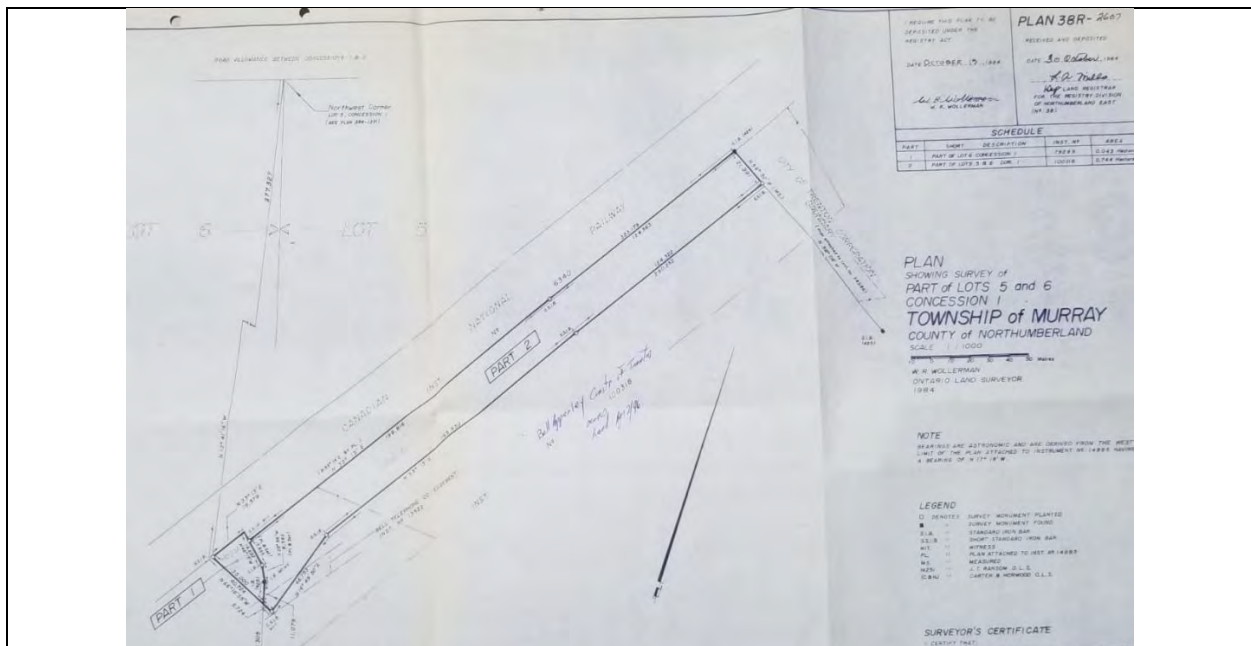






**Figure 51: Plan 21R-7795 for Easement directly west of Old Wooler Road**

Two of the Easements are located within the former Murray Township and they are registered as 38R Plans (38R-2607 and 38R-2608). Easement Plan 38R-2607 shows two parts but permanent agreements on file only list Part 1 (Mott, Henson & Miron). One of the drawings has Linden pencilled in for Part 2 but there does not seem to be paperwork for that Part although it appears to be the western portion of the property adjacent to it in the Town of Trenton owned by Lundin. Easement Plan 38R-2608 is for the area where the berm is located and the temporary easement also covers some channelization work in Mayhew Creek on the same property. This property owner name is Barry. The plans are shown below.



**Figure 52: Plan 38R-2607 for Easements along the south of the CN Rail Line**

Of note, the land owner for accessing this property was Bell Apperley Construction in 1996.

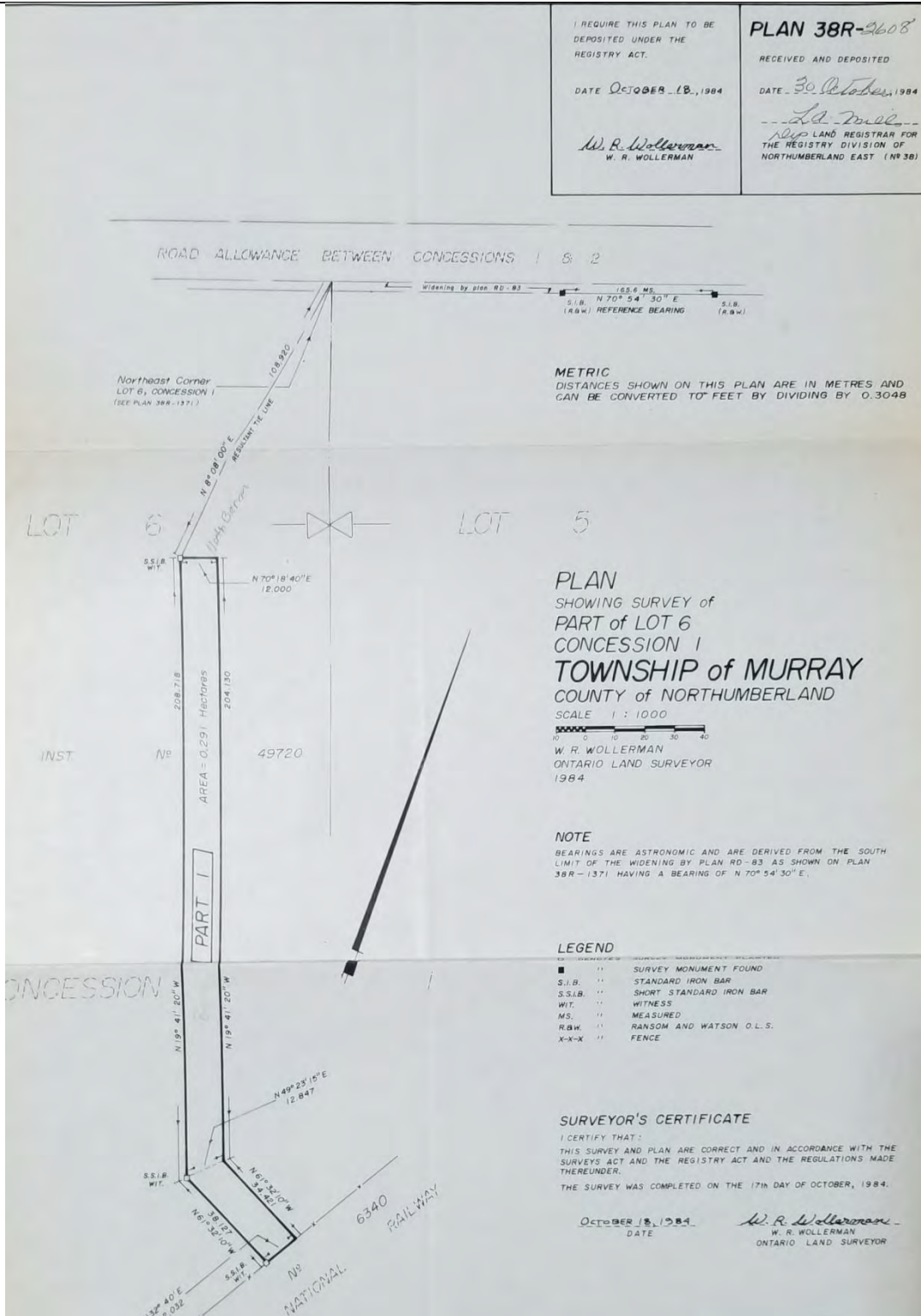


Figure 53: Plan 38R-2608 for Easement for Berm

### 3.6.4 Ongoing Maintenance

In June of 1996 trash racks were installed on the two drainage culverts on private properties on the channel downstream of Old Wooler Road. These culverts have flapgates on the creek side and both ends of each culvert should be monitored.

August 1996 is the first documented “clean-out” of the diversion channel and north branch (upstream and downstream of Old Wooler Road). This clean out focussed on large sediment deposit at the mouth of the diversion channel that blocked the flow to the channel and buried the flat trapezoidal weir. A permit from MNR for the in-water work was obtained as well. Scotts Haulage completed the clean out for \$2500. The channel was brush-hogged and the two-stage weir was parged as part of this remediation work.

In July 1999 there was an erosion control project on the two-stage weir and large concrete blocks were placed upstream to reduce erosion impacts. The lands between the two weirs was graded to reduce overflow in this area as well.

Woody growth along the berms of the diversion channel were removed in 2001.

In July of 2004, the City of Quinte West completed repairs to the Wooler Road double arch culvert crossing of the diversion channel. New headwall and wing walls were installed along with a concrete cap over the culvert and grading between in the culvert inlets and Old Wooler Road. The cost for this work was \$3000 and was paid for 50% by the City and 50% by LTC.

In September 2004 a large sediment deposit at the inlet to the diversion channel and in the main branch of the creek needed to be removed.

A fallen tree was cleared from the diversion channel along with other woody vegetation in 2005.

Trees and shrubs were removed from the diversion channel again in September 2008.

Both channels upstream and downstream of Old Wooler Road were cleaned out in September 2013. As in the past, removed sediment was placed along berm on the side of the channels. Costs were again shared 50/50 by LTC and the City of Quinte West. This work was initiated by the City without notifying LTC about the works. No permits were obtained for the work.

## 3.7 Cold Creek Flood Control Works – Frankford, City of Quinte West

### 3.7.1 Background

In 1977 discussions about floodplain mapping began in the Village of Frankford and support from the Village Council to move forward with the mapping was provided to Lower Trent Region Conservation Authority (LTC) in April 1977. Totten Sims Hubicki (TSH) was the selected consulting firm to undertake the study along with floodplain mapping for Butler Creek in Brighton. The cost for the Frankford Village floodplain mapping project was \$5,887. In the communications there is mention of a Cost-Benefit Analysis Study by Crysler & Lathem (1976) for supporting information. This 1976 report was not available for review.

Contour mapping was first provided in support of the floodplain mapping and the hydrologic analysis was approved by the province in February 1978. The floodplain mapping was provided later on in 1978 with “fill” line mapping as well. The Timmins Regional flow was 470 m<sup>3</sup>/s. During consultation with the

province the topic of areal adjustments for reduction of rainfall distributions was discussed. As a result, areal reductions were applied and the resulting Regional Timmins flow was reduced to 343 m<sup>3</sup>/s. Note that there were a couple of intermediate calculations before this final number was agreed to. This is documented in an Addendum to the 1978 report that is dated January 12, 1981. This reduced flow is used for subsequent studies but the floodlines for the Regional Storm under existing conditions remain as shown in the report with the higher flow.

During the 1978 Floodline Mapping project, there were a number of suggestions by TSH on how the flood hazard areas could be reduced and the representatives from the province suggested that TSH be contracted to undertake a Flood Control Works Assessment. The proposal for this study is divided into two Phases with Phase A reviewing Floodplain Management options (\$5,720) and Phase B undertaking an Assessment of the Spill Area (upstream of the rail bridge), which would cost \$3,600 or \$5,250 with structural assessments of options. The spill assessment would involve support from the Township of Sidney as the spill southward towards Batawa occurs in this jurisdiction. TSH was contracted to do this work in August 1979.

Preliminary results of the Floodplain Management assessment indicate that the existing dam for the Mill Pond causes the majority of the flooding issues within the village. Ice jamming was also a big contributor to flooding and the existing dam exacerbated the ice jam flooding as well. The dam is described as “remnant of the old dam”. In January 1980, the contract with TSH was revised to include the Spill Analysis (Phase B). It is at this point in the project that the lower Timmins flows are discussed as reducing the Spill flows as well.

Note that the three bridges on South Trent Street that allowed for the conveyance of excess flow from Cold Creek to spill to the Trent River, were already in place and are not part of the flood control structures discussed in this report.

The first draft of the Assessment for Flood Control Works was provided in March 1980 but there were significant questions regarding the flow calculations as discussed above. In November 1980 the first draft including the Spill Analysis was provided for review. The final version of the report is dated March 1981. The alternative remedial measures recommended were:

1. Removal of the restriction caused by the existing dam (estimated cost \$18K)
2. Enlargement of the relief weir including additional relief works (three bridges south of the main channel on Trent Street) (estimated cost \$15K)
3. Raising the berm (estimated cost \$30K)

These options were provided with the knowledge of the spill southwards towards Batawa (132 m<sup>3</sup>/s) would remain and were recommended to move forward for the 1981 construction season. Removal of the dam first priority and the relief weir and berm work second priority.

An option for channelization of the stream to prevent the southward spill to Batawa was briefly reviewed but the new bridge work required (Trent Street and Rail line) and channelization works for this option was estimated to be \$3.2M. Another option of constructing a new dam with structures that would support better conveyance was also briefly reviewed with estimated costs of \$50K. Neither of these options was recommended.

The results of the spill analysis indicated that the overflow waters as a result of the backwater effects of the CN Rail bridge spill southwards towards Batawa into another watershed of an unnamed tributary of the Trent River, which eventually discharges into the Trent River downstream of Batawa. Drawings 6 & 7 show the extent of the mapped spill and note that further spills occur near Batawa. General recommendations for channelization for conveyance of the spill in the Frankford area were recommended if development pressures required looking into options for the inundated area.

In 1982 the Village of Frankford supported LTC in moving forward with a Floodplain Assessment Study to determine if the 2-Zone Concept or a Special Policy Area designation would be appropriate for the Village of Frankford. The final report, approved by the province, was provided in July 1983 identifying the 2-Zone for the Village. In October 1983, the Village of Frankford implemented an amendment to the Official Plan and Zoning By-Law to incorporate the Floodplain Management Policy that was recommended through this study.

In November of 1983 an update to Drawing Number 5 from the July 1983 Two-Zone Study was provided to identify a higher regulatory flood elevation for the northern tributary stream area. See Figure below for letter and drawing.

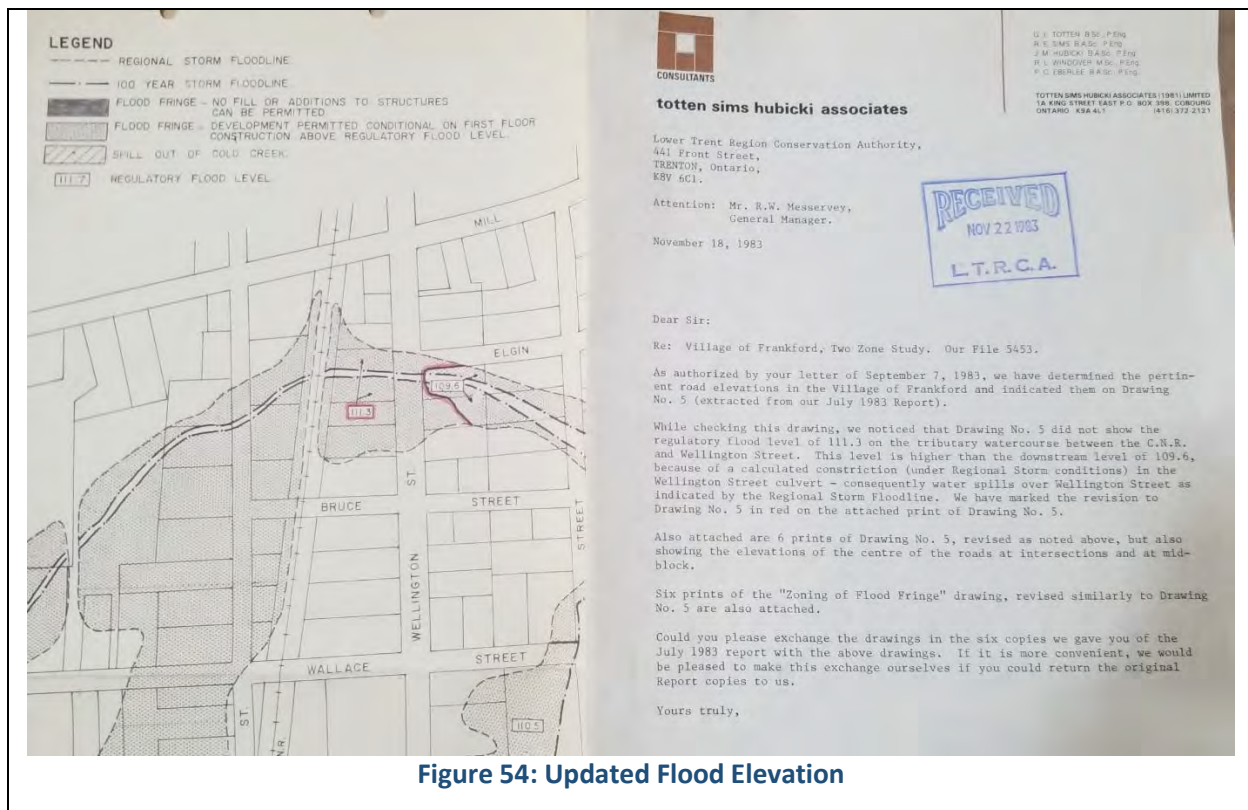


Figure 54: Updated Flood Elevation

### 3.7.2 Flood Berm and Spillway – Frankford Golf Course

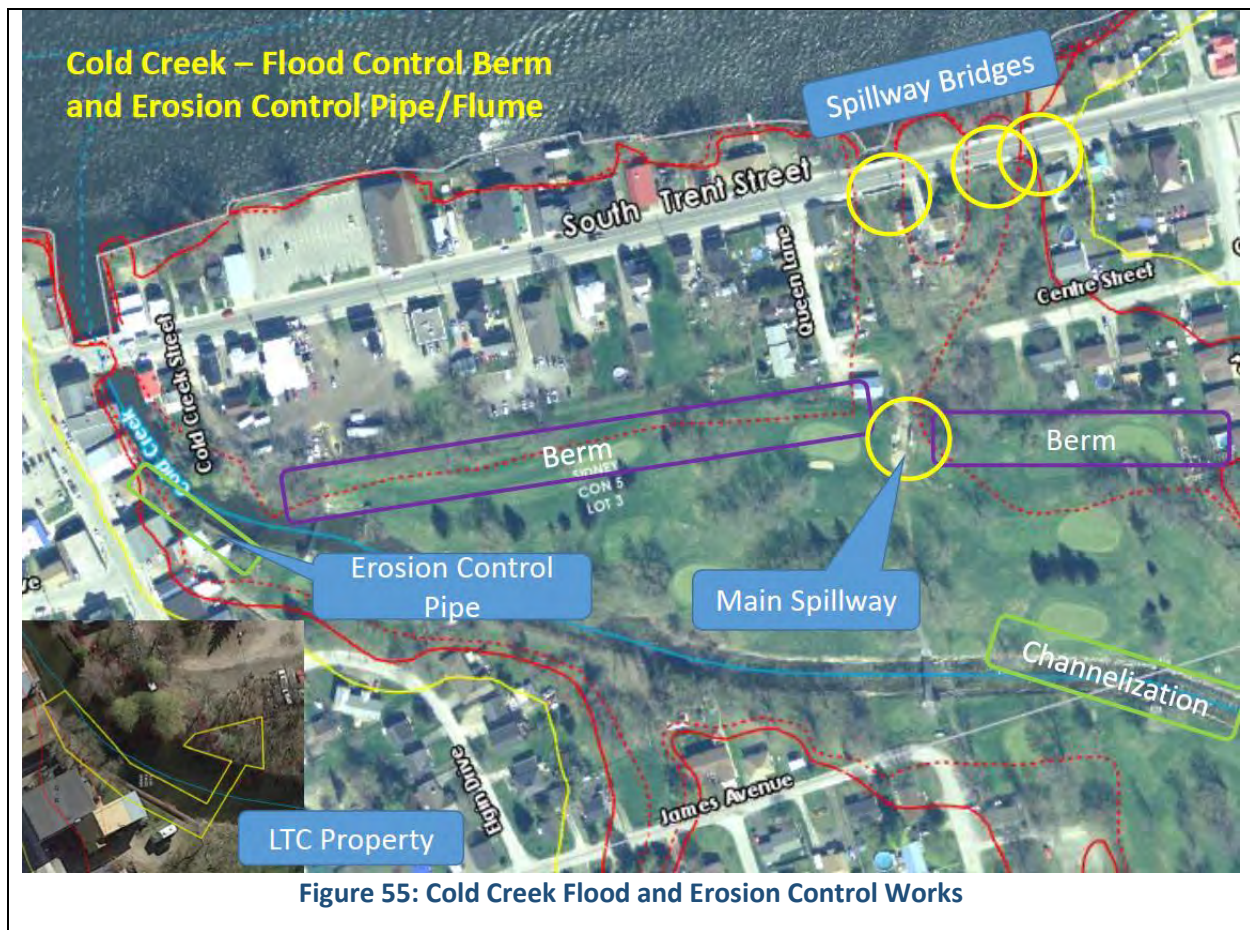
#### 3.7.2.1 Background

On April 30, 1981, TSH was contracted to provide engineering design and construction supervision for the proposed Flood Control Works, which included the three recommended measures identified in their March 1981 report. The proposed costs for the entire project were \$56K, including engineering and

construction services. The provincial portion would be 55% with the Authority share at 45%. As the benefitting municipality, the Village of Frankford would be levied 95% of the Authority share. Due to the issue of not being able to obtain the appropriate easements from landowners, the project did not move forward in 1981. There were discussions about expropriation or outright purchase of the Twiddy property.

Negotiations with the Twiddys confirmed that they would sell the property and LTC undertook a market value assessment. With the understanding that this issue has been resolved, the Flood Control Project could move forward in 1982. New drawings and estimates were prepared and reviewed by the province. The project estimate was now \$95K and a request for provincial funding (55%) was submitted. The additional cost included the cost of the land acquisition. The Tender for the Flood Control Project for Cold Creek in the Village of Frankford was issued in July 1982.

Frontenac Pipeline, Welding and Fabrication was the successful lowest bid at \$47K. Note that the removal of the penstock was excluded from the project as the pipe “was providing some flood protection” to the properties on the north bank of the creek. The project began in August 1982 and was essentially completed by the end of October 1982.

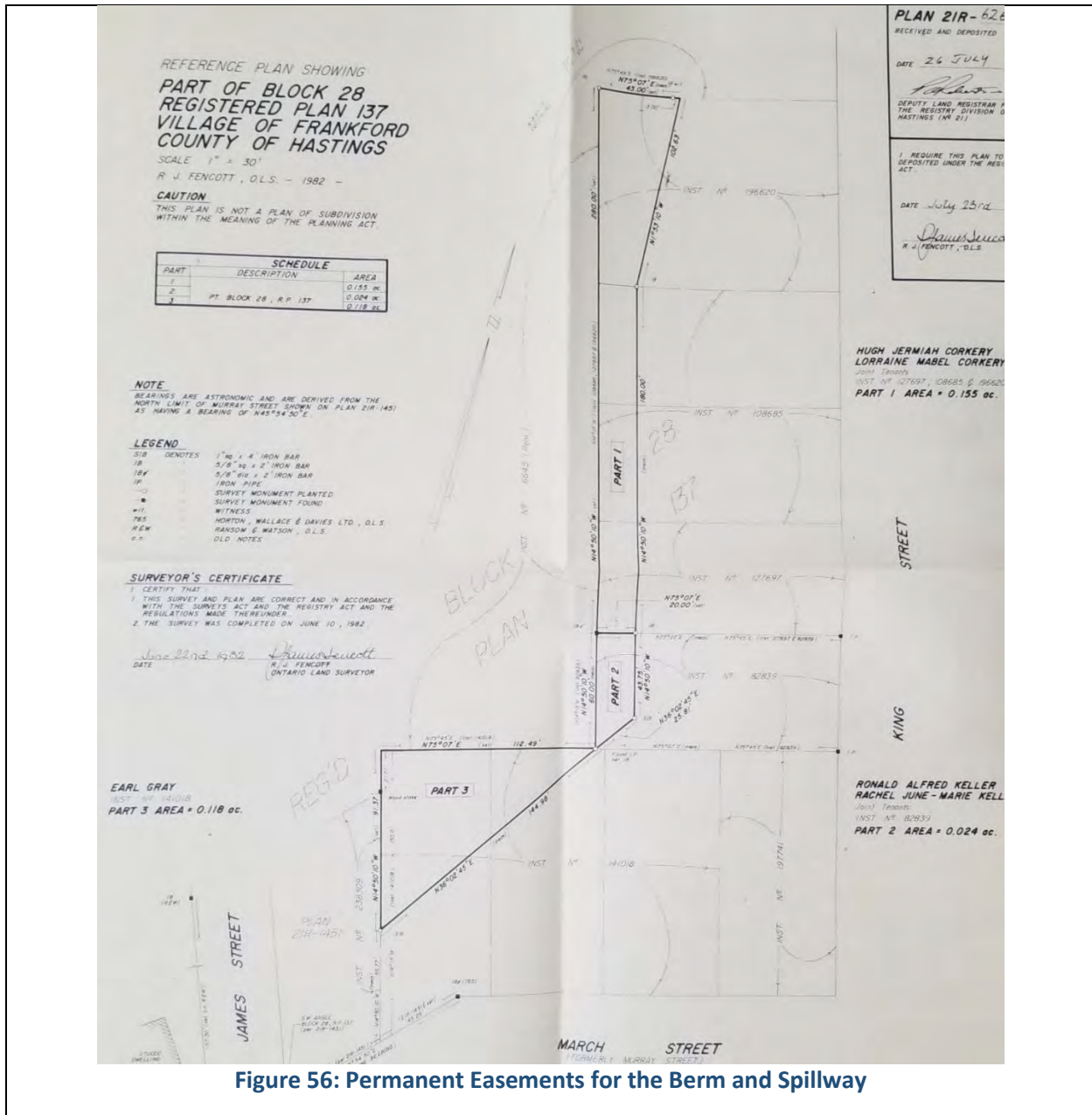


### 3.7.2.2 Costs & Funding (1982 \$CA)

- Engineering (based on proposal) \$ 8,900.00







### 3.7.3 Westerly Berm – Wallace Street

#### 3.7.3.1 Background

In the final report on Floodplain Assessment Policy Formulation for the Village of Frankford, prepared by TSH, there was a recommendation for remedial work to eliminate flooding that occurs near the western boundary of the Village in the vicinity of Wallace, Park, Wellington and James Street areas. In the brief prepared by TSH, it is noted that during high flows on Cold Creek, the spill upstream of the rail bridge not only resulted in a spill southward to Batawa, but the spill also flowed into Frankford through a small watercourse north of Cold Creek, causing further flood damages. This spill was to be prevented by constructing a berm across the watercourse and a small culvert would be installed to maintain normal drainage.

In July of 1984, TSH was contracted to provide engineering design and construction supervision for the construction of the “Westerly Berm”. The proposed costs were \$3,550 for engineering services and \$8K for the construction services. Of note, the material proposed for the berm is from a local borrow pit with sand and gravel which is quite porous. The engineer’s analysis notes that this berm is not meant to permanently retain water and therefore the material is satisfactory.

Drawings were prepared and tenders received on August 9, 1984. The figure below indicates the proposed berm drawing. Note the location of the borrow pit to the northwest of the berm location.

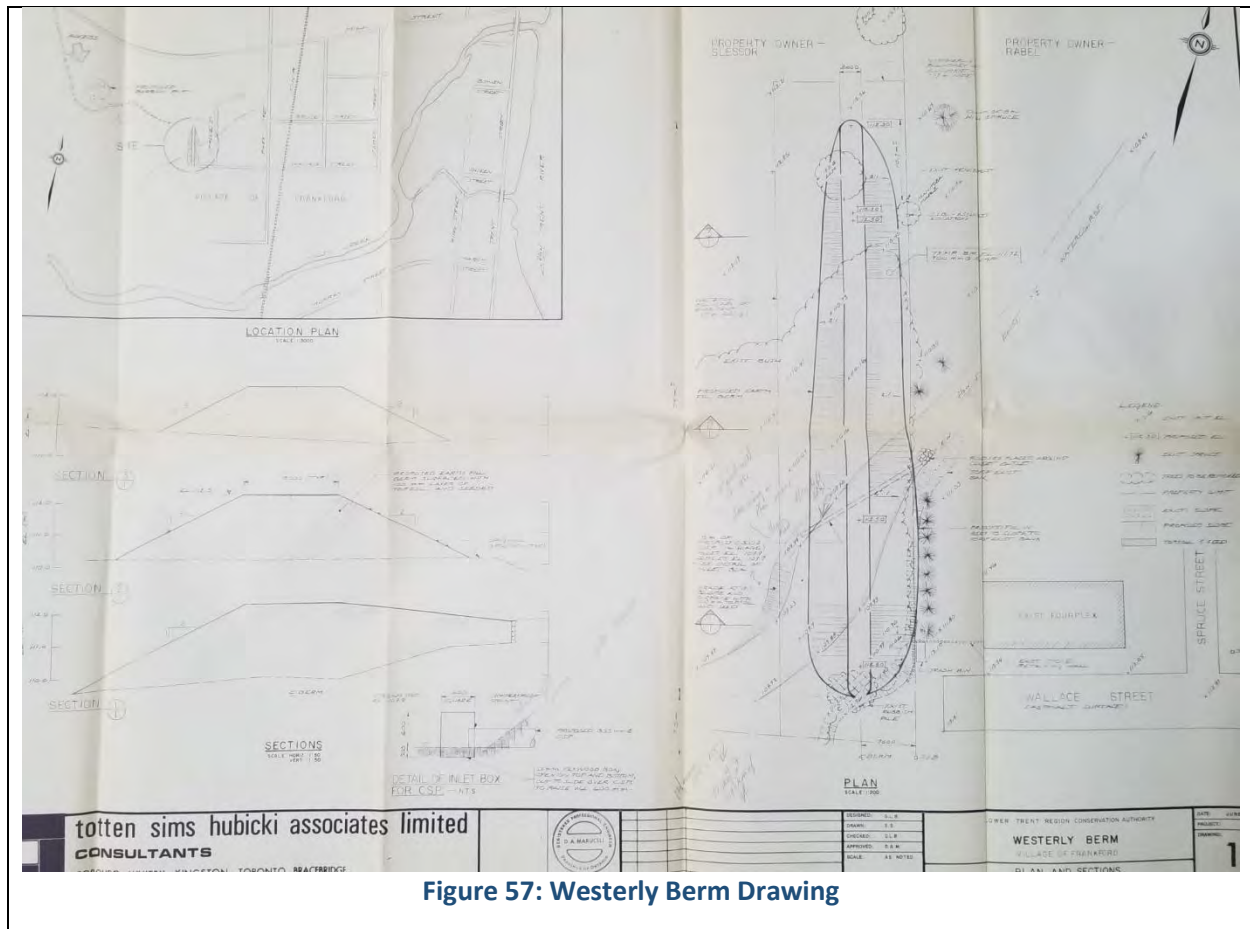


Figure 57: Westerly Berm Drawing

Alexander Drainage was the low successful bid for the berm construction at \$6,500 and the work was completed by the end of 1984.

### 3.7.3.2 Costs & Funding (1984 \$CA)

- Engineering \$ 3,550.00
- Construction \$ 6,500.00

Total Project Costs were \$ 10,050.

- Provincial Grant (55%) \$ 5,527.50
- Lower Trent Region CA (45%) \$ 4,522.50
  - Village of Frankford (100% of CA portion) \$ 4,522.50

3.7.3.3 Ownership and Easement Considerations

A Temporary Working Easement was obtained by LTC for the private property owned by Mrs. Judd Sine for the property described as Part of Lot 1 Concession 5 in the Township of Sidney to provide access for the removal of material from approved area of the borrow pit on site and transporting the borrowed material to the berm site. This agreement terminated in November 1984.

A permanent construction and maintenance easement (Reference Plan 21R-7667) for LTC was obtained for the property owned by David and Sheila Slessor for the construction of the westerly berm. The permanent easement allowed for the flood reduction construction work to be undertaken as well as the right to enter the land for the purpose of inspecting and maintain the works. The Schedule associated with the easement is shown in the figure below.

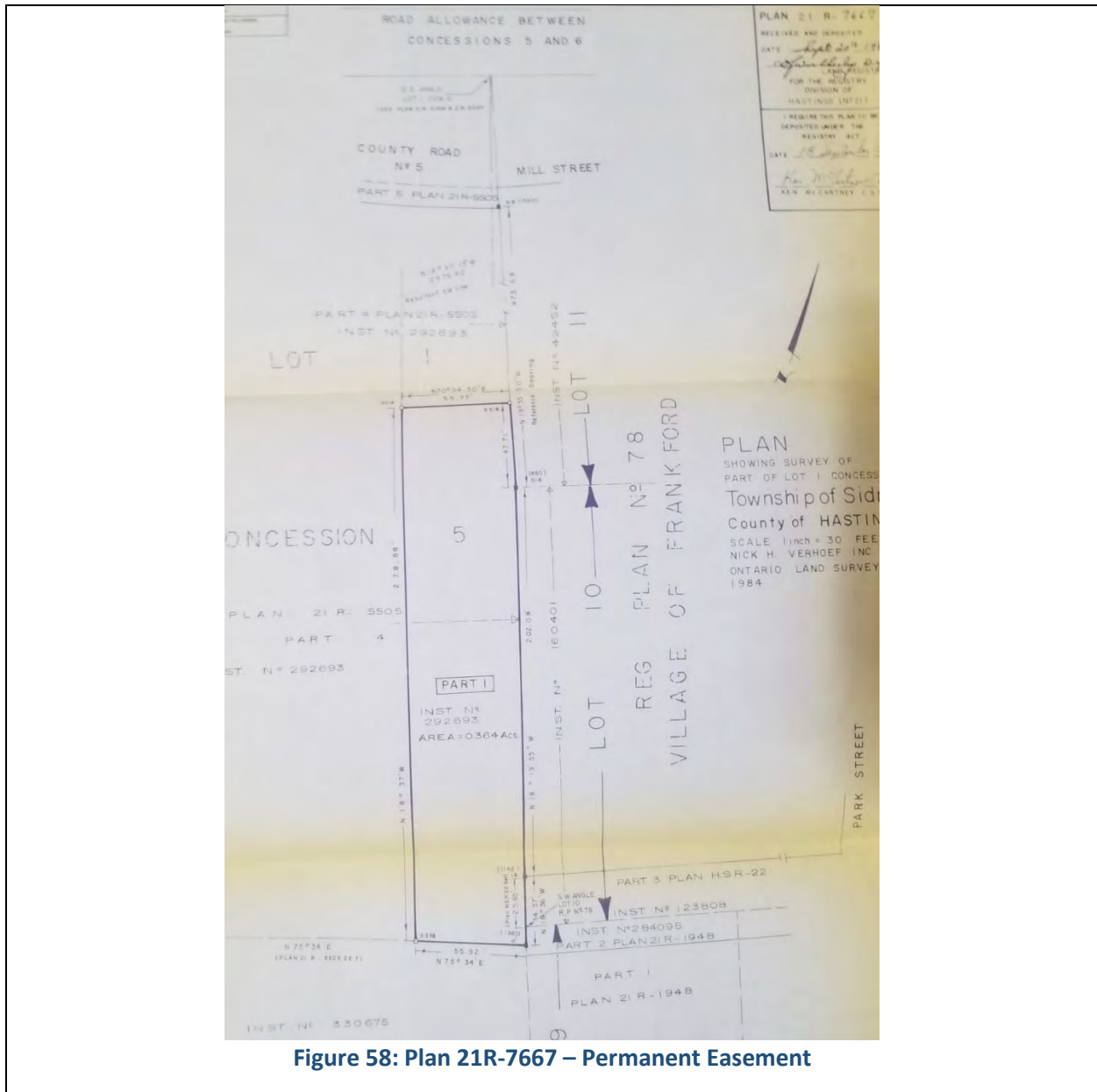
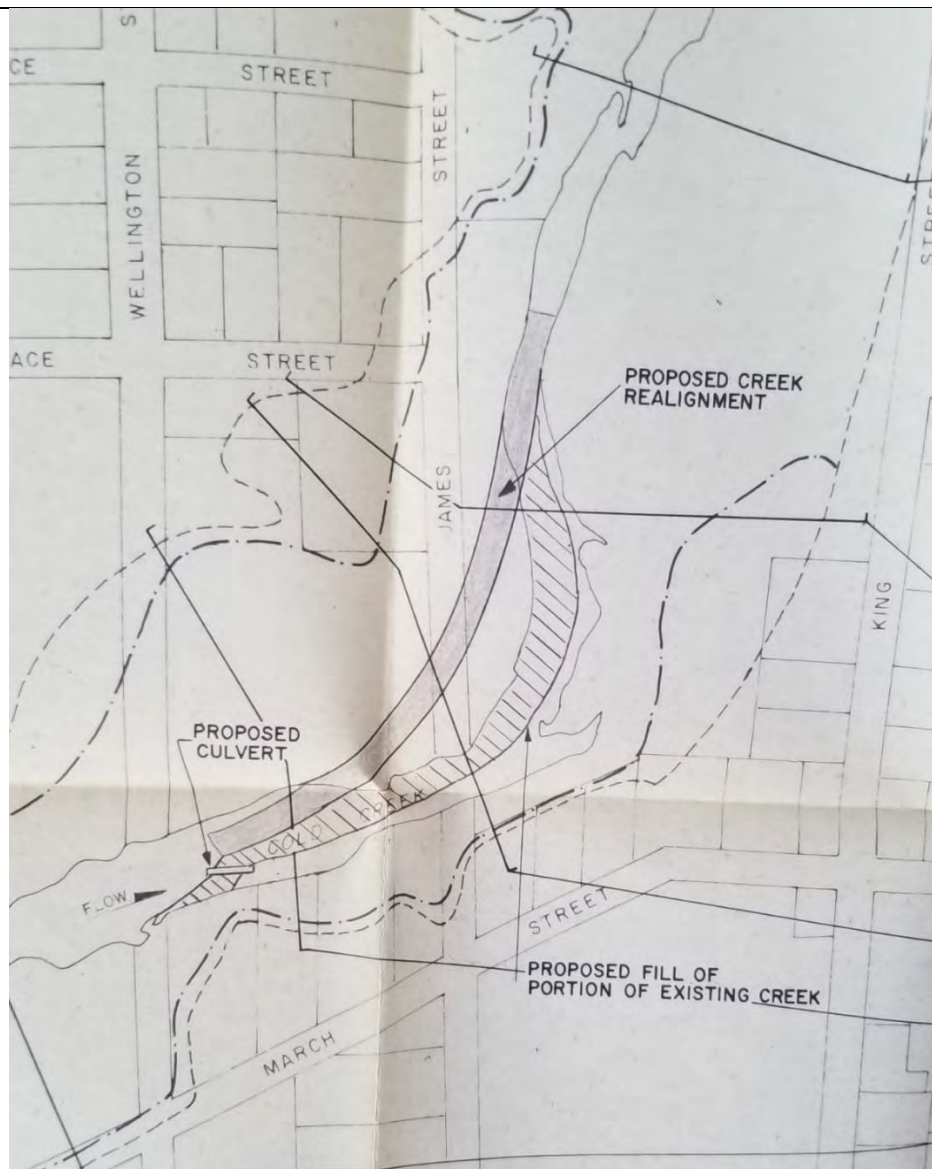


Figure 58: Plan 21R-7667 – Permanent Easement

### 3.7.4 Ice Jam Flood Control Work – Channelization

In 1984 an Ice Jam caused flooding in the March Street area in the Village (not upstream of the railway bridge). As a result of the 1980 and the 1984 flooding, the Village requested that a study for Ice Jam Flood Alleviation be undertaken. Again, TSH was the engineering firm and provided a report dated December 1984 that identified causes of the ice jamming and made recommendations to alleviate the ice jamming. The report noted that ice jamming at the mouth into the Trent River will still occur but the proposed remedial work should alleviate the ice jamming within the areas where the golf course currently is located, referred to as the James Street area in the report. A Creek realignment in the James Street area was proposed on the former Canning Factory property to provide a smoother curve in the creek and more consistent slope to discourage ice formation and subsequent ice jamming. The proposed channelization is shown in the figure below.



**Figure 59: Proposed Realignment for Ice Jam Alleviation**

TSH provided the design drawings and tender package and Alexander Drainage Limited was contracted to complete the work. The project was estimated to cost \$15K with engineering and construction (\$11K).

#### 3.7.4.1 *Costs & Funding (1985 \$CA)*

- |                    |              |
|--------------------|--------------|
| • Engineering      | \$ 2,500.00  |
| • Construction     | \$ 11,000.00 |
| • Legal and Survey | \$ 1,500.00  |

Total Project Costs were **\$ 15,000**.

- |   |             |
|---|-------------|
| • Provincial Grant (55%)                    | \$ 8,250.00 |
| • Lower Trent Region CA (45%)               | \$ 6,750.00 |
| ○ Village of Frankford (100% of CA portion) | \$ 6,750.00 |

#### 3.7.4.2 *Easements*

As a result of the proposed realignment work a permanent easement for a large property within the Village of Frankford was required for the construction and ongoing inspection and maintenance of the remedial work area. This property was owned by Foxboro Developments Ltd, John Richard Alexander and John Raymond Alexander and was known as the former Canning Factory property. This property had a draft plan of subdivision on it that LTC commented on back in 1977 but the status of the subdivision was not clear. The proposed creek realignment cuts through this property. The permanent construction and maintenance easement, date January 7, 1985, is between the Alexander owners and LTC for a channel relocation on the property as part of the flood control works to alleviate the ice jam potential. The permanent easement allows for access to the property for the purposes of inspecting and maintaining the works. The figure below illustrates the property in question outlined in red.



Work Permit issued for bank stabilization works to be completed in the exact same location. It is assumed that this permit was issued “after-the-fact” for work completed the previous year.

There are no other documented work in the channelized portion of Cold Creek but it is noted that a weir has been constructed in the creek just upstream of the bridge closest to the club house. It is expected that this weir was constructed to provide a slight pool area for water taking for irrigation purposes. There is no documentation of this weir in the files and the date of the construction of this weir is unknown.

### 3.8 DND Creek Flood Channel – Trenton, City of Quinte West

#### 3.8.1 Background

In 1978 Chrysler and Lathem issued the Watershed Management Study Report of DND Creek, which identified the area at the DND Creek outlet from the Canadian Pacific Railway (CPR) property at Byron Street as “Area C” with flooding issues. The study provided an estimate of \$20K for a recommended flood wall to be constructed in this area.

In late 1979, discussions between the Town of Trenton and Lower Trent Conservation (LTC) about the proposed flood wall and of erosion issues further downstream in the Connelly Road area. It was noted that these erosion problems would have to be discussed with the Department of National Defence (DND) as the east bank of DND Creek was located on DND property and would require significant earthwork to address the erosion issues. This discussion also notes that the flooding and erosion issues were a result of the stream realignment that occurred during the development of the subdivision. C&L were asked to complete design drawings for the proposed mitigation works in June 1980.

Preliminary drawings were provided for three different flood wall scenarios on Byron Street in August 1980 along with sketch drawings. An application to the province in September 1980 estimates the total cost to be \$65K with 55% provincial funding share. This was approved in November 1980.

A letter of support for the erosion control work on DND property was provided by DND in October 1980. A tender for the erosion work was issued in November 1980. Tender bids received exceeded the expected costs and the project was postponed but recommended to go ahead the following year with the Byron Street work.

C&L provided updated drawings and the tender was reissued in July 1981 for both projects. The project was awarded to Ira Carr Construction Ltd. In August 1981. The original erosion control work resulted in the stream bed being 0.5 metres too high so the contractor had to redo the work. The work was deemed substantially completed at the end of November 1981. The location of the flood control works at Byron and the erosion control works at Connolly are shown in the figure below.

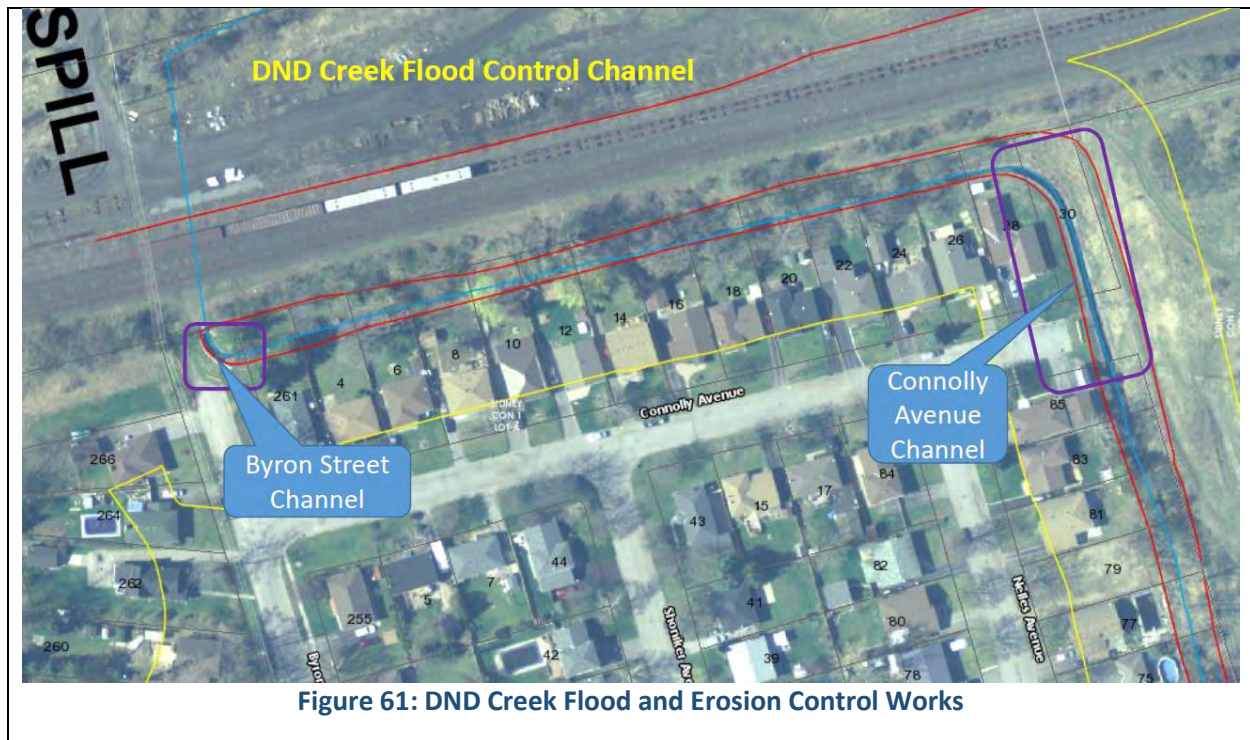


Figure 61: DND Creek Flood and Erosion Control Works

### 3.8.1.1 Byron Street

The Byron Street Floodwall design using a gabion mat and dyke was selected by the Town of Trenton as the preferred construction at a proposed cost of \$15K. Gabion mats lined the stream and south bank of the earthen embankment to provide flood protection. The north bank was left in a natural state. The figure below shows the design drawing. Note that the structure extends to approximately half way through the property at 261 Byron Street. A stepped gabion wall is located directly downstream of the culvert outlet, which eventually changes to a gabion mat.



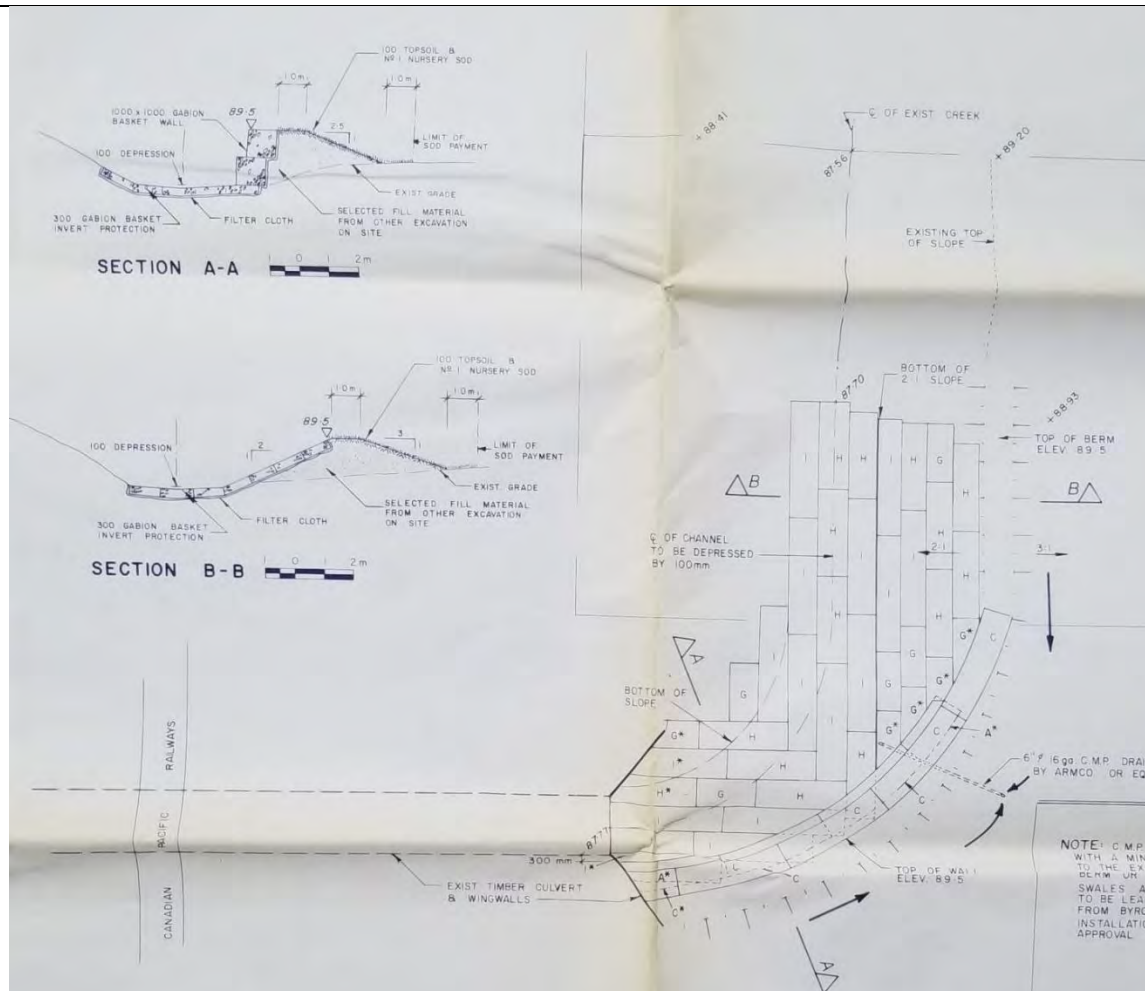


Figure 62: Bryon Street Design Drawing for Flood Control

### 3.8.1.2 Connolly Street

Option "B" was selected for the erosion control works for the Connolly Avenue and Nelles Avenue area, which included additional earth grading to pull back the slope on the east bank of DND Creek. The channel improvements are approximately 140 metres in length and include stepped gabion basket walls to protect the toe of the slope, gabion lined creek invert, earthwork to reduce the slope and vegetation of the slope, gabion lined swales and porous rip rap energy dissipators downstream of the Connolly Avenue intersection.

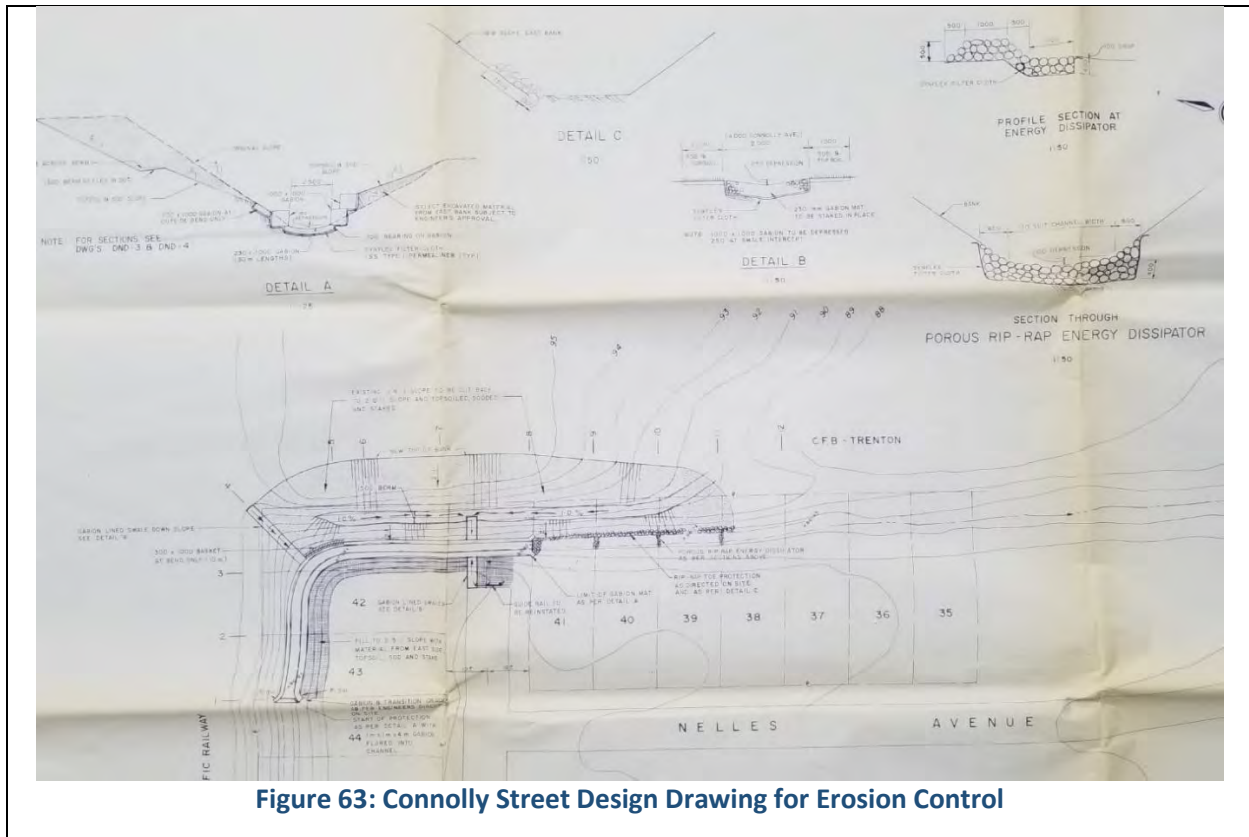


Figure 63: Connolly Street Design Drawing for Erosion Control

### 3.8.2 Costs & Funding (1981 \$CA)

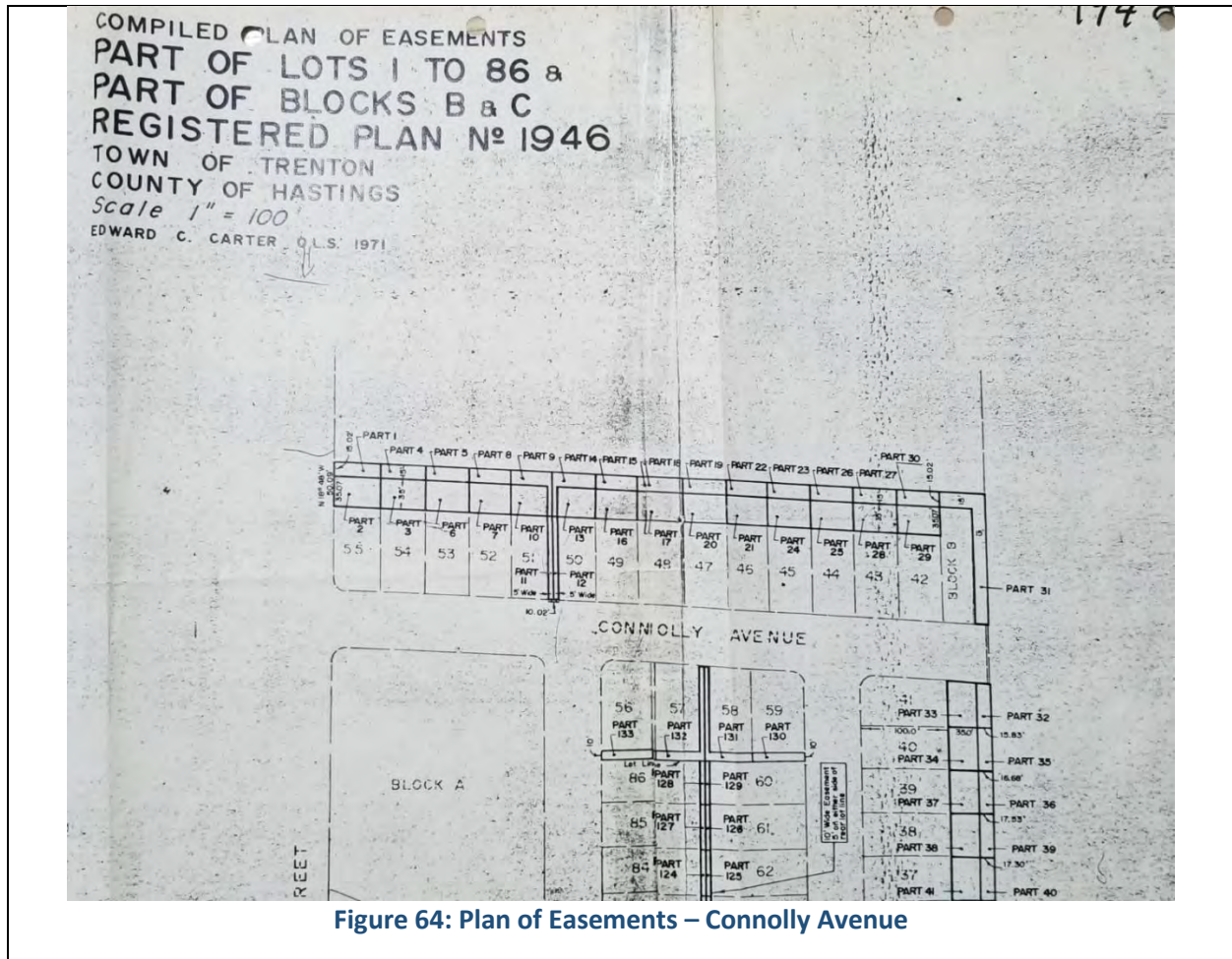
- Engineering \$ 5,500.00
- Construction \$ 44,540.00

Total Project Costs were **\$ 50,040.**

- Provincial Grant (55%) \$ 27,522.00
- Lower Trent Region CA (45%) \$ 22,518.00
  - City of Trenton (100% of CA portion) \$ 22,158.00

### 3.8.3 Easements

There was already a registered plan of easement (Plan 1946) for the subdivision properties. As such, an Indenture of Easement between the landowners and the City of Trenton was undertaken prior to the flood and erosion control works being constructed. These indentures assign easement to the property in perpetuity. These agreements were made with the following landowners: Folland – Lot 55 (Parts 1 & 2); Harron – Lot 44 (Parts 25 & 26) and CFB Trenton. It is assumed that easements with the other land owners (Lots 42, 43 and 41) were signed but there are no copies in the archive files. The figure below shows the registered easement plan.



### 3.8.4 Ongoing Maintenance

In 1996 Lower Trent Conservation observed that the gabion wall had shifted and was leaning into the channel. The problem occurred due to improper sub grade compaction at the time of construction. Also there was an accumulation of sediment found at the outlet of the culvert located under the CN tracks adjacent to Byron St. These problems were rectified shortly thereafter with the support of the City of Trenton, by excavating behind the leaning section of gabion pulling them back into position and placing a drainage layer of gabion stone and filter cloth behind the wall. The work was completed in 2000 for a total cost of \$15,758.96. Funding for this maintenance work was 50% from the City of Trenton and 50% from LTC.

In 2018 significant woody vegetation was noted to be growing in the gabion channel off of Connolly Street. LTC staff removed the vegetation that year.

## 4 Operation, Maintenance and Surveillance

### 4.1 Concrete Structures

#### 4.1.1 Description

Concrete formed structures include floodwalls, wingwalls, weirs and culverts. These can be cast in place or constructed from pre-fabricated concrete elements.

Floodwalls are typically concrete structures but can be constructed of other materials. A floodwall is a freestanding, permanent, engineered structure designed to prevent encroachment of floodwaters. Floodwalls are mainly used on locations where space is scarce, where building levees or dykes would interfere with other interests, such as existing buildings, historical architecture or commercial use of embankments.

Some floodwalls have floodgates which are large openings to provide passage except during periods of flooding, when they are closed. As floodwalls mostly consist of relatively short elements compared to dykes, the connections between the elements are critical to prevent the failure of the floodwall. Typically there are “joints” in the walls that are connected and sealed.

Floodwalls are typically more expensive to construct than other flood protection measures and the substantial costs of floodwalls can be justified by the value of commercial property thus protected from damage caused by flooding.

Floodwalls are known to be challenging for ecosystem management and do not provide an “environmental footprint” or habitat.

#### 4.1.2 Common Issues

Concrete is a composite material made up of three basic components being water, cement and aggregate in the form of sand, rock, stone or gravel. Typically concrete structures are fabricated to withstand the erosive forces that they may be exposed to as part of flood control structures. Due to many uncontrollable factors such as harsh environmental conditions, design constraints, poor construction practices and material limitations, deterioration known as concrete cancer can occur over time.

This can be caused due to moisture entering the pores of the concrete, creating rust of internal steel reinforcement. This results in many structural, functional and aesthetic problems as well as impacting the integrity of surrounding infrastructure.

Concrete structures located near roadways (Trout Creek Flood Wall and various culverts) are susceptible to damage from road salt and this is very evident in the DuraHold blocks used for the Trout Creek flood wall.

Thermal damage from contraction and expansion, especially from ice, is another common issue with the flood and erosion control structures and cracks, spalling and scaling should be closely monitored.

Movement of the concrete structure could be caused by forces undermining the structure or pushing on the structure so any tilting, rotation, shifting or other movement should be monitored as well.

Signs and symptoms of potential issues for concrete structures berms include, but are not limited to;

- Deep widespread cracks due to settlement and movement from the earth

- Tilting or shifting of the structure
- Spalling as a result of rust to steel reinforcement
- Sunken slabs due to poor preparation
- Scaling due to frost or freezing conditions at the time of laying or thereafter
- Deterioration due to chemical attacks
- Abrasion/Erosion
- Thermal cracking as a result of expansion and contraction
- Unsealing of joints

#### 4.1.3 Maintenance

Any long term maintenance will involve basic periodic visual inspections to detect damage or abnormalities. Any damage detected should be reported and advice on repair should be sought to ensure structural failure does not occur.

Small spalls, scaling and cracking can be addressed quickly to ensure that further damage from freeze-thaw cycles does not worsen the issue. Similarly any missing or dislodged joint material should be replaced as soon as possible.

More systemic issues including structural shifting, rotation, excessive spalling or large cracks should be assessed by a structural engineer.

#### 4.1.4 List of Concrete Structures

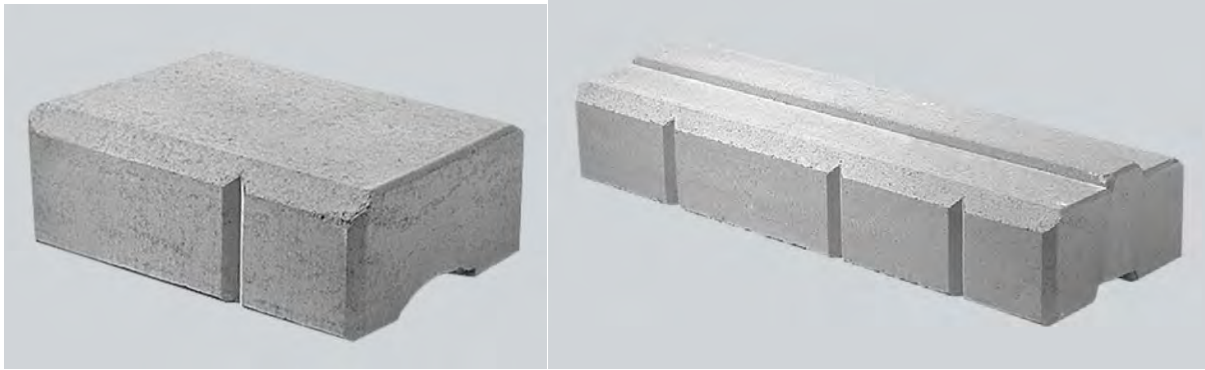
LTC-Owned Concrete Structures:

- Burnley Creek (Warkworth, TH) – Warkworth Dam
- Burnley Creek (Warkworth, TH) - Warkworth Floodwall

Not LTC-Owned Concrete Structures:

- Killoran Creek (Hastings, TH) – flood walls, Bay Street Box Culvert, Water Street Twin Box Culvert
- Rawdon Creek (Stirling, S-R) – Floodwalls, weir/dam and apron/spillway
- Trout Creek (Campbellford, TH) – DuraHold block flood walls
- Glen Miller Creek (Trenton, QW) – Foster Stearns Road Box Culvert
- Glen Miller Creek (Sidney, QW) – Peterson Road Box Culvert
- Mayhew Creek (Murray, QW) – Two Stage and Flat Trapezoidal Weirs; Wing Walls and Cap on Double Arch Culvert
- Cold Creek (Frankford, QW) – Concrete Spillway
- DND Creek (Trenton, QW) – Concrete Cap on Flood Control on Byron Street

The DuraHold wall along Trout Creek in Campbellford is an example of a floodwall made from pre-fabricated parts whereas the concrete floodwalls in Stirling were cast in place. The concrete twin box culvert on Killoran Creek in Hastings is an example of a culvert made from pre-fabricated parts but the floodwalls along the private properties were cast in place. The weirs in Mayhew Creek were cast in place.



**Figure 65: Concrete DuraHold Blocks (Coping Capstone and Standard)**

## 4.2 Earthen Berms

### 4.2.1 Description

An earthen berm, also known as a levee, dyke, dike, embankment, floodbank, or stop bank, is a structure that is usually earthen and that often runs parallel to the course of a river in its floodplain. The purpose of a berm is to keep the course of creeks and rivers from changing and to protect against flooding of the area adjoining the river, which results in higher and faster water flow. Levees can be naturally occurring ridge structures that form next to the bank of a river, or be an artificially constructed fill or wall that regulates water levels.

Artificial levees require substantial engineering and are typically (but not always) design with an inner impermeable core. Their surface must be protected from erosion, so they are planted with vegetation in order to bind the earth together on the land side. On the river side, erosion from strong waves or currents presents a threat to the integrity of the levee so the effects of erosion are countered by planting suitable vegetation or installing stones, boulders, weighted matting, or concrete revetments. Separate ditches or drainage tiles are constructed to ensure that the foundation does not become waterlogged.

Important factors regarding the stability of the flood berm include the height of the embankment, proximity to the riverbank, fill material, underlying soils, inclination of the berm and river embankment slope(s), presence and location of woody vegetation on or near the berm as well as hydrologic and hydraulic conditions, and the presence of burrowing animals.

Vegetation on berms and levees in form of grass-like vegetation layers or lawn, bushes, reeds, and trees may show several positive and negative effects regarding the ecological value, landscaping, leisure amenities, the stability of structure, its durability and many more. A well maintained strongly rooted lawn-like grass cover is protection against surface erosion and environmental impacts. This kind of sod fulfils frequently also the expectations of landscaping and it follows the recommendations for design from an engineering perspective.

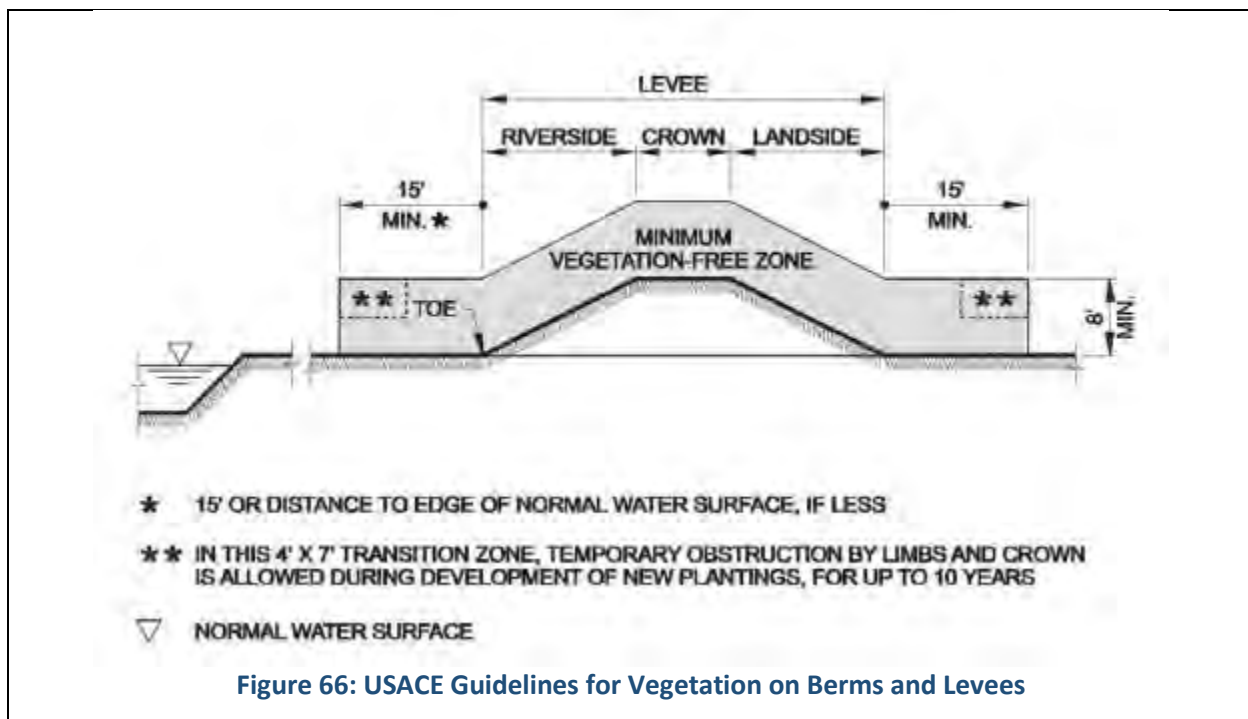
Flood berms can be permanent earthworks or emergency constructions (often of sandbags) built hastily in a flood emergency.

### 4.2.2 Common Issues

Woody vegetation such as large bushes and trees on and at levees can be problematic and the topic of woody vegetation on berms and levees has undergone recent study that has indicated that there can be

positive and negative impacts. There are some arguments that the root systems provide further reinforcement of the berm but other arguments state that the root system exacerbates seepage into the structure by piping along the root system and weakens it. Strong winds and flows can topple large trees and cause structural damage as well.

Generally speaking, an ordinary embankment fill without special protective elements should not host any woody vegetation, particular large trees, in regard with safety considerations. The United States Army Corps of Engineers (USACE) recommends that woody vegetation be kept at least 15 feet (5 metres) away from the toe of a flood berm embankment or levee. Note that only grasses are recommended in “Vegetation-Free Zone” shown in the figure below. Also the presence of any heavy vegetation limits the ability to view the structure to look for potential failure sites (erosions, water piping, etc.)



Surficial erosion on earthen embankments is another method of eventual potential failure if the erosion issue is not addressed. This would also include rill erosion down the embankment slopes. Rill erosion could indicate seepage or other drainage issues as well. Embankment slopes are prone to sheet erosion and rill erosion if there is ineffective erosion protection. Sheet erosion occurs when a thin layer of topsoil is removed over the entire slope and may not be readily noticed. Rill erosion occurs when runoff water forms small channels as it concentrates down a slope. These rills can be up to 0.3m deep. If they become any deeper than 0.3m they are referred to as gully erosion.

Any structure that slows down the flow of water will encourage sediment deposition and eventually sediment build up. Because some earthen berms form part of a dam structure, they are built to store water, they also store the sediment that the creeks and rivers carry. This sediment builds and steadily

decreases the storage capacity of the reservoir. Ultimately all dams fill with sediment or are destroyed by natural floods.

Failures of earthen berms due to erosion or other causes can be major disasters. Both natural and man-made levees can fail in a number of ways. Factors that cause levee failure include overtopping, erosion, structural failures, and saturation. The most frequent (and dangerous) is a breach where a part of the berm actually breaks or is eroded away, leaving a large opening for water to flood land otherwise protected by the berm/levee.

A breach can be a sudden or gradual failure, caused either by surface erosion or by subsurface weakness in the levee, so it is important to watch for signs of these potential failure methods through the listed common issues. Sometimes levees are said to fail when water overtops the crest of the levee. This will cause flooding on the floodplains, but because it does not damage the levee, it has fewer consequences for future flooding.

Among various failure mechanisms that cause levee breaches, soil erosion is found to be one of the most important factors. Predicting soil erosion and scour generation when overtopping happens is important in order to design stable levee and floodwalls.

Signs and symptoms of potential issues for earthen berms include, but are not limited to;

- Toe erosion
- Surface erosion (sheet, rill, gully)
- Woody vegetation
- Tilting or shifting of the structure
- Slumping
- Seepage
- Animal burrows or holes
- Sediment deposition

#### 4.2.3 Maintenance

Any long term maintenance will involve basic periodic visual inspections to detect damage or abnormalities. Any damage detected should be reported and advice on repair should be sought to ensure structural failure does not occur.

Special attention should be paid to any woody vegetation, animal burrows and signs of slumping, erosion or movement of the berm structure.

Note that given the amount of material typically included in these structures, it is not uncommon for settling or erosion of the structure to occur over time so periodic elevation surveying of the structure is recommended to ensure the structure is providing the protection it was designed for.

#### 4.2.4 List of Earthen Berm Structures

LTC-Owned Earthen Berm Structures:

- Burnley Creek (Warkworth, TH) – Warkworth Dam earthen berm along south and east sides of pond

Not LTC-Owned Earthen Berm Structures:

- Trent River (Trenton, QW) – earthen flood berm



- Glen Miller Creek (Trenton, QW) – earthen flood berm
- Mayhew Creek (Murray, QW) – north-south earth berm, berms along channel downstream of Wooler Road
- Cold Creek (Frankford, QW) – Eastern earth berm along former mill pond area; Western earth berm along tributary stream
- DND Creek (Trenton, QW) – Small earth berm with gabion wall and mattress at Byron Street Flood control

## 4.3 Gabion / Rip Rap / Stone

### 4.3.1 Description

Gabion, Rip Rap and Stone Protection are types of crushed stone, such as limestone, that come in various sizes depending on its use and are produced from crushed or fractured bedrock fragments with 100% fractured faces or crushed from cobbles or boulders greater than 300 mm diameter and will not deteriorate when exposed to air and water and are expected to be resistant to deterioration by cycles of wetting, drying, freezing, and thawing. Rip Rap stone is typically larger in size and mass from Gabion stone. From Ontario Provincial Standard Specification (OPSS) 1004, the size of stone required for Gabion or Rip Rap applications are specified. Gabion Stone means a graded fractured rock aggregate intended for use in gabion baskets and gabion mats or mattresses. Rip-Rap means a well graded, fractured rock or crushed reclaimed concrete intended for use as slope protection in hydraulic channels. Gabion stone, rip rap and rock protection should meet the physical property requirements shown in Table 7 and the gradation requirements shown in Table 8 of OPSS 1004, below.

Reclaimed hydraulic cement concrete is sometimes used in non-watercourse applications.

Gabions Baskets are rectangular wire mesh baskets filled with rock at the project site to form flexible, permeable, monolithic structures such as retaining walls for commercial, industrial and road projects. Gabion Baskets are most commonly used for walls, fences & boxes. A Gabion Mattress is typically a double twisted hexagonal woven galvanized steel wire mesh compartmented basket with a rectangular mattress shape commonly used for slope stabilization on steep hillsides, channel linings, bridge protection, soil retention, riverbank.

**TABLE 8**  
**Gradation Requirements for Gabion Stone, Rip-Rap and Rock Protection**

Mass kg	Approximate Dimension of an Equivalent Cube in cm (Note 1)	Gradation, percent less than mass specified (Note 2)					Rock Protection
		Gabion Stone		Rip-Rap		Well-Graded	
		G-3	G-10	R-10	R-50		
330	50.0	-	-	-	-	100	
75	30.5	-	-	-	100	Well-Graded	
50	26.5	-	-	-	70 - 90		
25	21.0	-	-	-	40 - 55		
15	18.0	-	100	100	-		
10	15.5	-	90 - 100	70 - 90	-		
5	12.5	100	-	40 - 55	-	0 - 10	
3	10.5	90 - 100	-	-	-		
2.5	10.0	-	0 - 5	-	0 - 15		
0.5	6.0	0 - 5	-	0 - 15	-	-	

**Notes:**

1. These dimensions are for estimating purposes only and are based on material having a specific gravity of 2.65.
2. The gradation shall be determined by individually weighing a minimum of 20 randomly-chosen stone particles from a sample taken from the stockpile representing a lot then comparing the total mass of the stone particles within each fraction with the total mass of all of the stone particles measured in the sample. For pieces of rock with masses that are larger than 25 kg, the approximate dimension of the equivalent cube determined using an average of the three rectilinear measurements of the piece shall be allowed, in lieu of weighing.

**Figure 67: Table 8 from OPSS 1004 – Stone Sizing**

#### 4.3.2 Common Issues

Gabion baskets and mattresses are sometimes criticized as being unsightly and provide very little habitat value. Gabions are typically more expensive than either vegetated slopes or Rip Rap.

Individual split, broken or damaged gabion cage components will not affect the structural capacity of the wall and can be repaired locally if required. If several components are broken in the same area such that it will affect other parts of the wall or loss of the infill stone, maintenance will be required.

Major collision damage resulting from large trees or other items in the waters may require re-building with localized support of the fill behind.

Some settlement of the gabion wall is to be expected and note that the Gabion system is a flexible structure that can accommodate differential settlement caused by seasonal moisture changes, so some minor movements will occur over its lifespan.

Excavation near or behind the retaining wall may affect the structure but it will be based on how close and to what depth the excavation is carried out. Excavation in front of the wall may undermine the

structure. Any excavation deeper than 500mm may have the potential to undermine the retaining wall foundations leading to settlement and possible collapse. Any excavation in front of the wall should be checked by a structural Engineer

The Gabion system is a caged structure filled with inert crushed stone, so it is not expected to be susceptible to vegetation establishment from within the wall. Vegetation growing on or up the face of the wall will not affect the structure. However, any vegetation growing out of the wall/cages should be removed, especially woody vegetation.

The Gabion retaining wall has crushed stone within and behind the wall, thus the wall should have very little evidence of water within it. If water is coming through the face this would mean excessive water is coming from behind the structure and should be investigated to find the water source and remove it.

The wire baskets used for gabions may be subject to heavy wear and tear due to wire abrasion by bedload movement in streams with high velocity flow. Failures observed in site investigation are bulging, corrosion, erosion of filled stone, backfill crack, and foundation erosion. Most these failures are due to improper stones and improper filling of stones in Gabion structures.

Abnormalities may include: localised bulging of the face; broken components; damage by impact or vandalism; vegetation on the face; excessive water through the face. No requirement for any cleaning is anticipated. If any fencing has been installed at the top of the wall to prevent falls, this will need to be inspected to ensure it remains adequate. Typically any fencing will not last as long as the structure and will need to be replaced during the lifespan of the retaining wall. If a rear of wall drain has been installed at the construction stage, the relevant catch pit, manhole or soak away within the development should be checked annually to ensure this can still flow

Signs and symptoms of potential issues for stone protection structures include, but are not limited to;

- Settlement or slumping of structures
- Shifting or tilting of structures
- Holes in gabion structures (typically caused from tearing of the structure or vandalism)
- Loss of stone within gabion structures or rip rap protection
- Woody vegetation
- Drainage, seepage or water flowing through structure

#### 4.3.3 Maintenance

Any long term maintenance will involve basic periodic visual inspections to detect damage or abnormalities. Any damage detected should be reported and advice on repair should be sought to ensure structural failure does not occur.

#### 4.3.4 List of Stone Structures

LTC-Owned Stone Structures:

- Burnley Creek (Warkworth, TH) – Warkworth Dam gabion baskets along wingwalls; additional rip rap along dam structure
- Cold Creek (Frankford, QW) – Rip Rap stone protection along the base of the pipe

Not LTC-Owned Stone Structures:

- Trout Creek (Campbellford, TH) – Rip Rap protection along north bank and east bank

- Rawdon Creek (Stirling, S-R) – Gabion basket erosion walls
- Mayhew Creek (Murray, QW) – Gabion/riprap mattress spillway through north-south berm
- Mayhew Creek (Murray, QW) - broken concrete/stone erosion protection near weirs
- Mayhew Creek (Trenton, QW) – Rip rap lined diversion channel
- DND Creek (Trenton, QW) – Gabion wall and mattress at Byron Street Flood control; Gabion basket wall erosion control channel at Connolly Street

## 4.4 Vegetated Channels

### 4.4.1 Description

A grass-lined channel is a graded, vegetated channel that collects and conveys water flow while encouraging infiltration into the ground. Vegetation lining the channel slows down concentrated flow. Because vegetated channels usually cannot control flows by themselves, other methods such as riprap stabilization, can be used with the vegetated channel.

### 4.4.2 Common Issues

Many flood channels are constructed in areas that may have been former wetlands with very little slope and the stream velocity naturally slows down in these areas even with channelization. However, sediment deposition in this area can eventually reduce the capacity of the channel to convey the flows during flood conditions so the sediment build-up in these channels should be monitored.

Many ecosystems benefit from sediment transport and deposition, whether directly or indirectly. Sediment builds aquatic habitats for spawning and benthic organisms. It is also responsible for providing nutrients to aquatic plants, as well vegetation in nearshore ecosystems such as floodplains and marshes. These facts should be kept in mind when arranging to clean out sediment along flood channels or behind impound structures such as dams and weirs and appropriate permits should be obtained before any work is completed.

Similar to sediment deposition, vegetation overgrowth can also impact the flow of water through flood channels and overgrowth may reduce the capacity of the flood channel to convey flood flows. Vegetation growth in these channels should be monitored.

In some cases trees and brush from upstream or along the banks of these vegetated channels fall and block the flow in the channel, increasing the potential for failure of the channel. Regular surveillance of the channels is required, especially after a large storm event and the spring freshet.

Signs and symptoms of potential issues for vegetated channels include, but are not limited to;

- Excessive vegetation growth
- Woody vegetation
- Toe erosion
- Sediment deposition
- Debris / garbage deposition

#### 4.4.3 Maintenance

Any long term maintenance will involve basic periodic visual inspections to detect damage or abnormalities. Any damage detected should be reported and advice on repair should be sought to ensure structural failure does not occur.

Occasional elevation surveying of the deposited sediment may be required to ensure the conveyance capacity of the channel has not been compromised. In the cases where sedimentation is impacting the conveyance capacity, the channels should be “cleaned out”. Disposal of the removed material should be part of the discussion – in some cases it can be placed on top of the “banks” for further protection but in other cases, it should be removed.

#### 4.4.4 List of Vegetated Channel Structures

Some of the channels discussed in this manual are not concrete or stone protected with rip rap or gabions but are left as vegetated channels, such as the Barry Heights Flood Channel. There is some stone placed in the Mayhew Creek diversion channel but the sides of the channel are vegetated as well.

LTC-Owned Vegetated Channel Structures:

- Barry Heights (Murray, QW) – Vegetated Flood Control Channel

Not LTC-Owned Vegetated Channel Structures:

- Killoran Creek (Hastings, TH) – channel between flood walls is considered a vegetated channel
- Glen Miller Creek (Trenton, QW) – vegetated channel from Highway 401 to Foster-Stearns Road
- Glen Miller Creek (Sidney, QW) – interceptor swale east of Peterson Road
- Mayhew Creek (Murray, QW) – Diversion Channel US of Wooler Road and Vegetated channel downstream of Wooler Road
- Cold Creek (Frankford, QW) – Spillway channels from concrete spillway in berm to the Trent River
- Trout Creek (Campbellford, TH) – Dredged bottom of Trout Creek from Simpson Street to Balaclava can be considered a vegetated channel in places

### 4.5 Culverts / Pipes / Flap Gates

#### 4.5.1 Description

Various metal structures also provide flood and erosion protection. Culverts can be constructed of metal – typically steel as a corrugated steel pipe (csp) or a structural plate csp (spcsp). The double arch culvert (spcsp) under Wooler Road is an example of a steel culvert used for flood control.

The Frankford Pipe is a large steel pipe as well that used to be the flume (intake pipe) for a mill.

Flap gates have a gate hinged at the top and opening one way only and placed in a channel to close automatically on reversal of flow. A small differential pressure on the back of the gate causes it to open automatically to allow discharge through levees, sewer lines or drainage conduits. When water on the face side of the gate rises above water on the back side, the gate closes automatically to prevent backflow. Flap gates are made of cast iron, stainless steel, aluminum, or rubber depending on the type of service and are equipped with flat-back seats for attaching to headwalls or pipe flanges. The seat or

frame of the flap gate is attached to a wall or pipe flange and forms the opening through which water passes. Flap gates are installed in the berms on Glen Miller Creek and the Trent River Berm and on the Burnley and Rawdon Creeks concrete floodwalls.

Most dams also have low flow pipes included as part of the infrastructure to allow a valve to be operated to control flows downstream during periods of low flow. In many instances these low flow pipes are no longer operational and should be properly decommissioned. Both the Warkworth Dam and the Stirling Dam have non-operational low flow pipes.

#### 4.5.2 Common Issues

Culverts fail over time for various reasons, such as usage, age, and environmental conditions. Some common causes for culvert failures are clogs, pipe damage, washouts, rusted or failed inverts, cracked concrete, exposed or corroded reinforcing steel, joint separation, and backfill infiltration.

Water can't pass through a culvert if the entrance is blocked. Large pieces of wood that get caught in front of the culvert can cause major water flow disruptions if they are not removed. Debris that would normally pass through the culvert unhindered, such as smaller sticks, leaves or vegetation, will catch onto the wood and then a thick mat of debris will block the entrance of the culvert. When this happens water will be diverted elsewhere, significantly increasing the risk of unwanted erosion.

A slower, but no less significant, way that culverts lose their integrity is due to erosion inside the culvert itself. This is particularly likely to happen inside metal culvert pipes. Small rocks and bits of dirt that are propelled through the water will slowly chip away at the culvert. It's possible for the pipe to collapse if it is no longer structurally sound due to this erosion.

Erosion is a major contributing factor to the collapse of culverts, but sometimes poor materials are to blame. Culverts should be built with long-term use in mind, in which they should be structurally sound for, ideally, 100 years or more. Check for deterioration, cracks, obstructions, or signs of a potential collapse before it becomes dangerous.

Signs and symptoms of potential issues for pipe structures include, but are not limited to;

- Blocked inlets/outlets
- Damage from erosion or impact
- Erosion around the structure
- Rusting or deterioration of the structure itself

#### 4.5.1 Maintenance

Any long term maintenance will involve basic periodic visual inspections to detect damage or abnormalities. Any damage detected should be reported and advice on repair should be sought to ensure structural failure does not occur.

Flap gates are the only operable structure included in this manual (note that dam operation, maintenance & surveillance is discussed under separate cover). Each flap gate should be checked to ensure that operates freely. This may require the outlet to be excavated to allow full movement and the hinges on the flap gates should be lubricated regularly.

#### 4.5.2 List of Pipe Structures

##### LTC-Owned Pipe Structures:

- Burnley Creek (Warkworth, TH) – Warkworth Dam low flow pipe
- Burnley Creek (Warkworth, TH) - Warkworth floodwall flap gates
- Cold Creek (Frankford, QW) – Old Flume Pipe
- Barry Heights (Murray, QW) – Culvert in Flood Channel

##### Not LTC-Owned Pipe Structures:

- Killoran Creek (Hastings, TH) – flap gates in flood walls
- Rawdon Creek (Stirling, S-R) – Flap gates in flood walls, low flow pipe
- Trent River (Trenton, QW) – Culverts and flap gates through flood berm
- Glen Miller Creek (Trenton, QW) – Culvert and flap gate through flood berm
- Mayhew Creek (Trenton, QW) – Twin Arch Culvert under Old Wooler Road
- Cold Creek (Frankford, QW) – Culvert through western berm

#### 4.6 Inspection Schedule

Inspections are typically conducted annually at the very minimum, but will vary depending on the location of the structure and the type of structure. Most should be inspected after the spring freshet and after any significant rainfall event.

It is recommended that the annual inspections take place after the spring freshet but before significant vegetation begins to grow and make the inspections more difficult – typically late April or early May. Follow-up inspections in the fall (after the leaves have fallen and vegetation has died but before snowfall) are also recommended to ensure the structures are prepared for spring freshet conditions. Some of the flood channels should be inspected during low flow so that the inspector can walk the channel to observe the conditions from the creek as well.

Any structures that could be damaged or blocked from debris should be inspected after significant rainfall events.

Increased inspections may be required for structures that have been identified in the past for additional monitoring.

It is recommended that an engineering firm familiar with flood and erosion control structures complete the inspections with LTC staff once every five years to ensure any major structural concerns will be addressed.

#### 4.7 Inspection Safety

As with any other work, proper safety equipment is necessary. Inspectors should be aware of their surroundings at all times and should be prepared with the proper personal protection equipment for any eventuality during the inspections.

Being in the outdoors, inspectors should wear protective footwear and clothing as uneven terrain will be encountered as well as insects and poisonous plants. Ticks and other biting insects can be expected so an insect repellent with DEET is recommended. Protection from the sun and stinging or poisonous plants

should be considered as well by wearing a long sleeved shirt and long pants. Poison Ivy and wild parsnip are abundant in the area and are known to be on site at many of the inspection locations.

If the inspections are going to include accessing the water then a personal flotation device (PFD) should be worn as well.

#### 4.8 Operations and Maintenance SOPs

Standard Operating Procedures (SOPs) for the operation and maintenance of these flood and erosion control structures are brief. Because most of the structures are constructed to be stationary there are limited “operations”. With the exception of the Warkworth Dam (Operations and Maintenance Manual under separate cover), the only operational features are the flap gates found along flood walls and berms. At one point there were operational low flow gates located in Stirling and in Warkworth but the infrastructure to operate these gates has been removed and the dam safety study for Warkworth recommended filling in the pipe. A similar recommendation for the weir dam in Stirling would be expected.

Flapgates are generally located close to the ground to convey flow from one side of a structure to the other. The gates can get blocked by sedimentation or vegetation growth and should be checked annually to ensure that the flaps swing without interference. The flapgates may require lubrication from time to time. Some of the flapgates are fitted with control bars to ensure that the flaps remain in a downward orientation and are not pushed fully open. These bars are restrictive for clearing around the flapgates and hinder lubricating the flap hinges.

As discussed above in previous sections, the inspections are the main “operations” of these structures. Checklists for LTC-Owned and Non LTC-Owned Structures have been developed for these inspections and are included in **Appendix A – Inspection Forms**.

#### 4.9 Reporting

Annual Reporting should be taken to document the status of each structure. Reporting of LTC-owned structures should be undertaken and presented to the CAO typically in late fall or early winter so that planning for any required maintenance, rehabilitation or further inspections can be completed for the next fiscal year. The provincial Water and Erosion Control Infrastructure (WECI) program is available for funding support for studies or large rehabilitation projects, if the project has scored over the threshold set by the WECI Committee. The WECI application process typically begins in early winter with funding approvals announced in the spring.

For municipalities that LTC has entered into an agreement with to continue inspecting their flood and erosion control structures, annual reporting should also be completed on structures specific to that municipality. It should be noted that if repairs or rehabilitation work is required for these projects, LTC will apply to the WECI fund on behalf of the municipal partner (if agreed to by the partner municipality), as has been completed in the past. Smaller repair or rehabilitation work that does not meet the threshold scoring for WECI funding will be funded entirely through the municipal partner. LTC may be able to provide project management of the required repair work (for a fee) but will no longer be contributing to the cost of the repairs.

As a minimum the Annual Reports will include the following information:



- List of structures inspected
- Date(s) of inspection(s)
- Photos
- Identification of concerns or issues
- Recommendation of required maintenance, repairs or rehabilitation
- Prioritization of maintenance, repairs or rehabilitation
- Expected timelines for the recommended maintenance, repairs or rehabilitation

Costing of recommended maintenance, repairs or rehabilitation will be discussed after the report is issued and may require input from contractors or engineers for scoping purposes.

## **Appendix A**

# **Flood and Erosion Control Structures Inspection Forms**

## Inspection Form Instructions:

Following this instruction sheet are four (4) forms to be used during the routine inspections of the flood and erosion control structures operated and maintained by LTRCA. They are labelled A1 to A4.

- A1 – Flood and Erosion Control Structures – Owned, Inspected and Maintained by LTRCA
- A2 – Flood and Erosion Control Structures in the City of Quinte West – Owned by the City of Quinte West and Inspected by LTRCA.
- A3 – Flood and Erosion Control Structures in the Township of Stirling-Rawdon – Owned by the Township and Inspected by LTRCA.
- A4 – Flood and Erosion Control Structures in the Municipality of Trent Hills – Owned by the Municipality and Inspected by LTRCA.

Each form lists the stream name, location, ownership and description by columns. These are arranged by ownership to include with annual reports to the owners (LTRCA or municipality).

The five categories of flood and erosion control structures are listed in the column headings. These categories follow the categories outlined in Chapter 4 of this manual:

- Concrete
- Earth Berm
- Gabion / Rip Rap / Stone
- Channel
- Pipes / Flap Gates

For each specific structure, a white box under each category of structure indicates this category is present at this structure and should be inspected. In most cases a watermark description is included in the white box. Greyed out boxes indicate that this category of structure is not present.

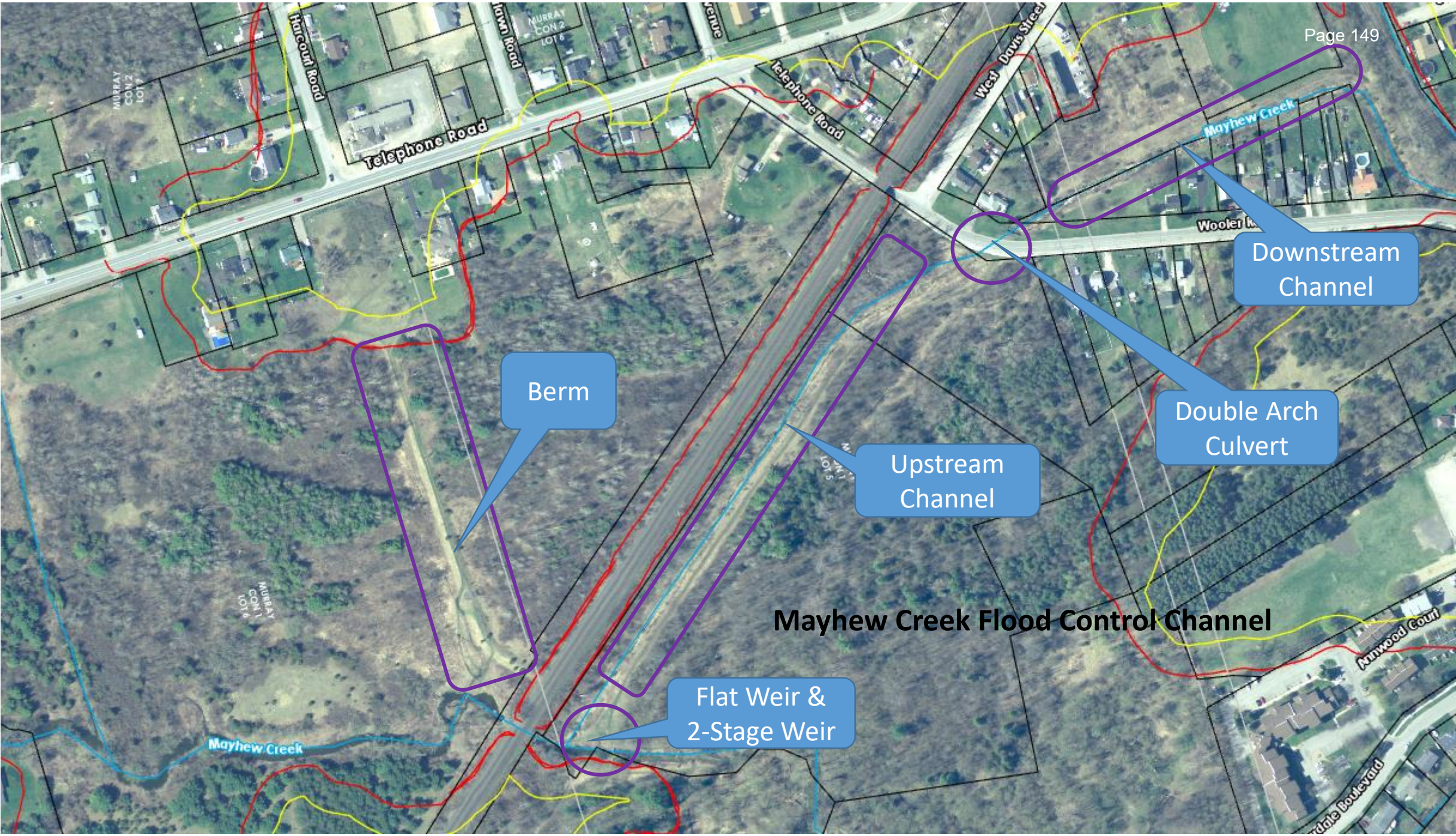
During the inspections, each noted structure should be inspected. Below each category column is a list of typical issues encountered with this category of structure. These issues are described in more detail in Chapter 4 of this manual. The white boxes can be marked with a check, a single word (i.e. OK, Watch, etc.) or other notation. There is a Comment column where specific notes can be included for each structure and additional comment space can be found below the listed structures on each form as well.

Inspection forms should be kept with the maintenance and inspection records for each structure.

Note that it is recommended that an engineering firm familiar with flood and erosion control structures complete the inspections with LTRCA staff once every five years to ensure any major structural concerns will be addressed.

# LTC Flood & Erosion Control Structure Locations





Berm

Upstream Channel

Double Arch Culvert

Downstream Channel

Flat Weir & 2-Stage Weir

Mayhew Creek Flood Control Channel

Mayhew Creek

Mayhew Creek

Telephone Road

Telephone Road

West Davis Street

Wooler

Annwood Court

Middle Boulevard

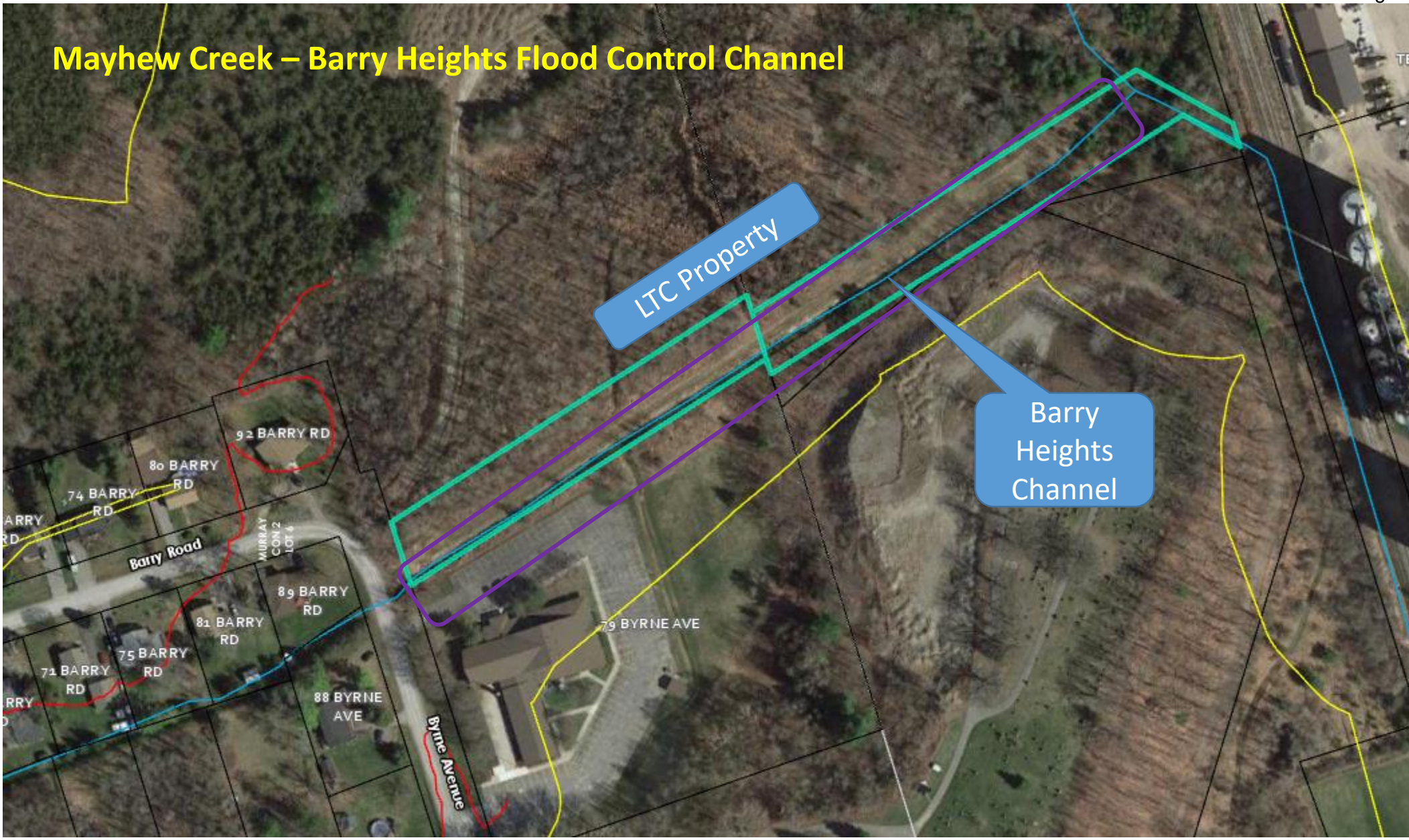
MURRAY CON. 2 LOT 7

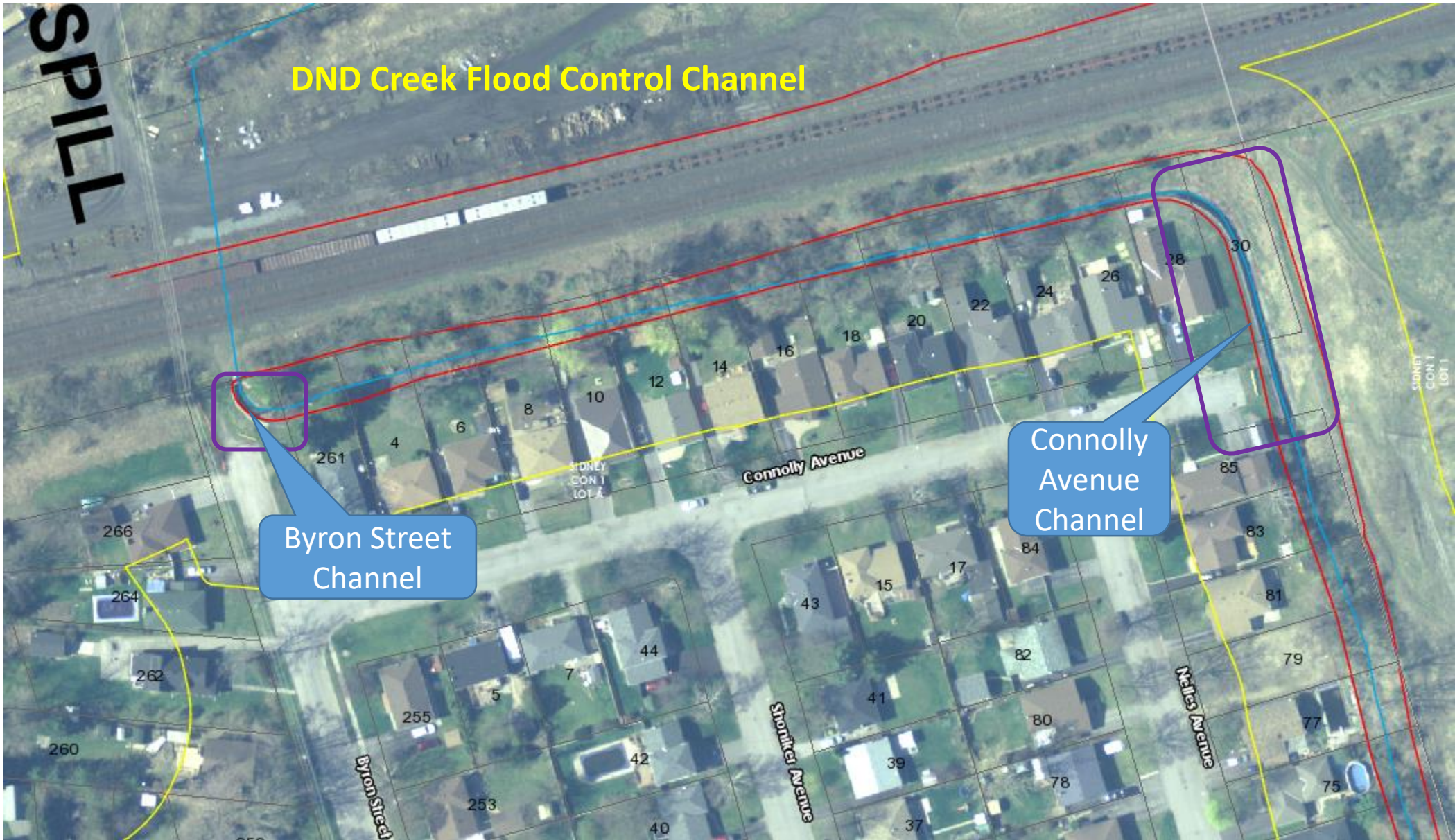
MURRAY CON. 2 LOT 6

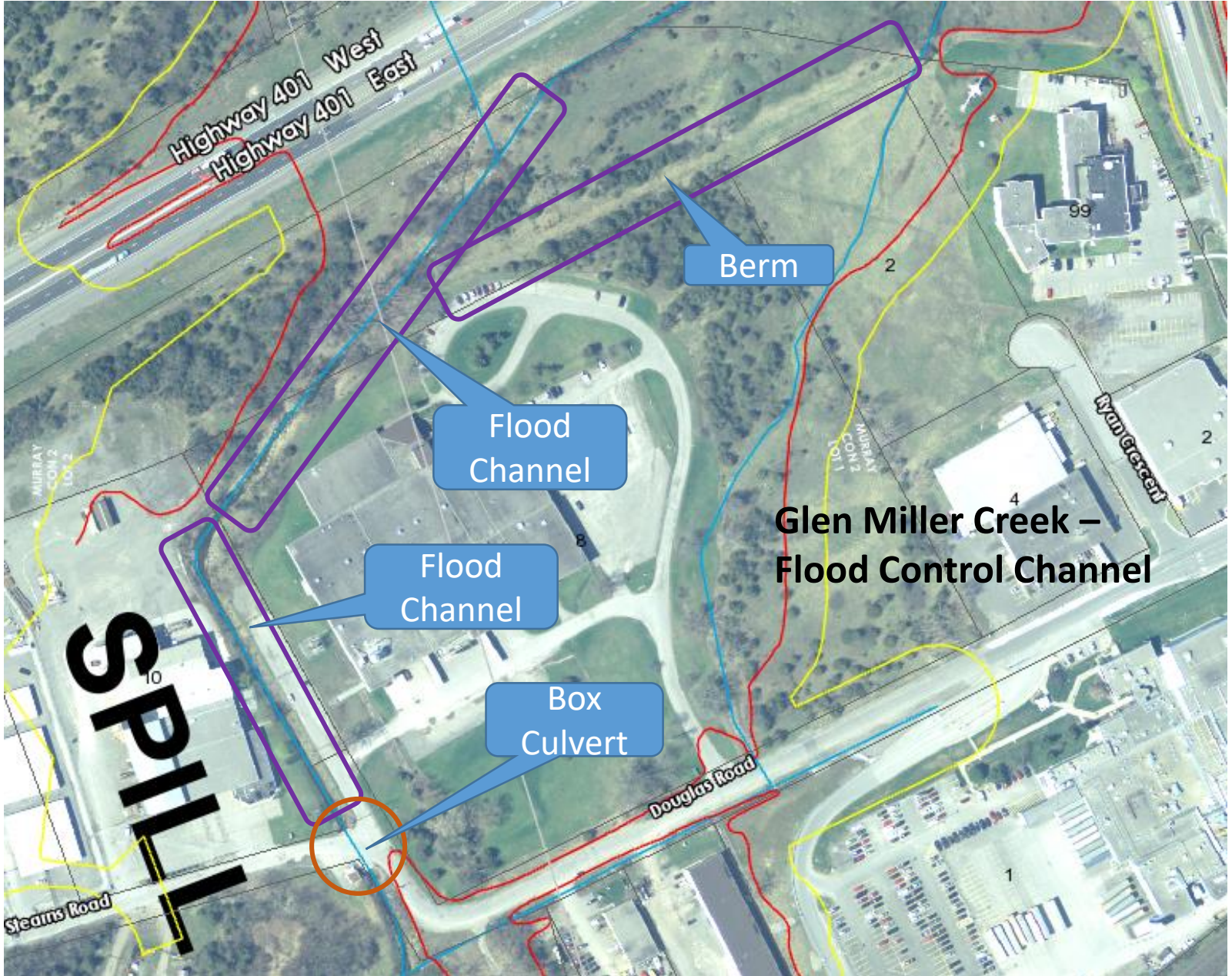
MURRAY CON. 1 LOT 6

Scene

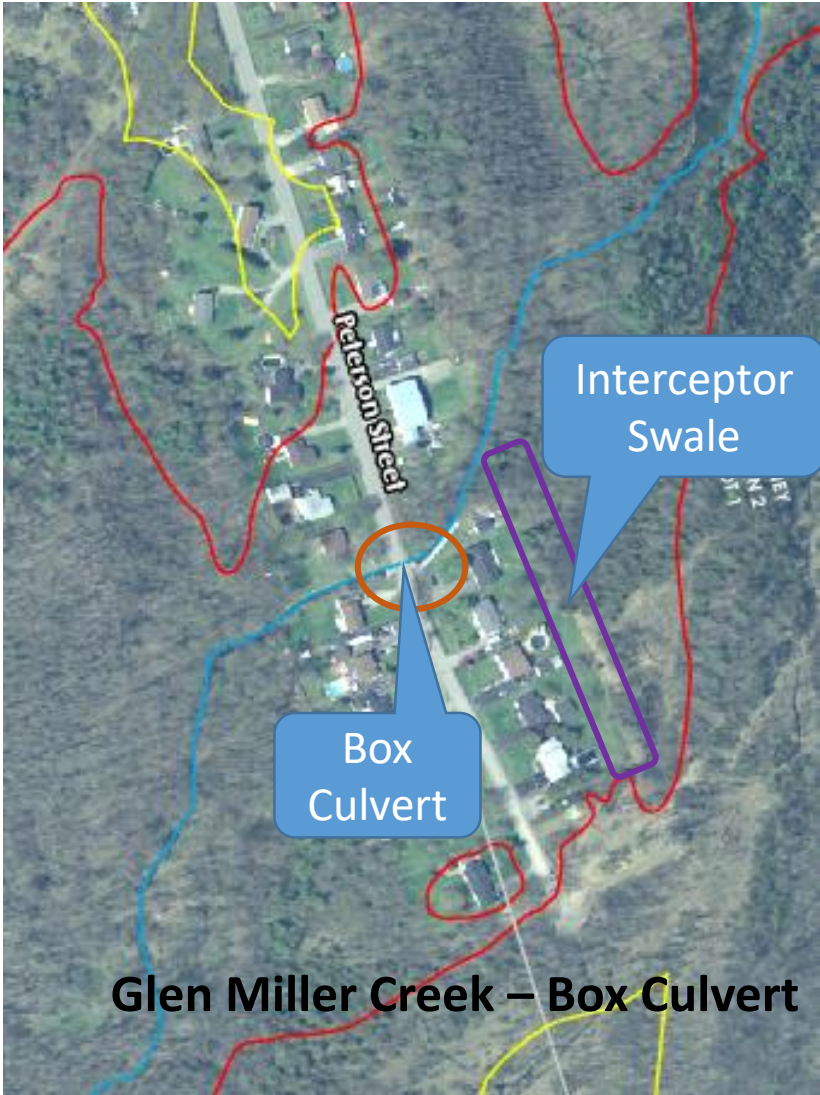
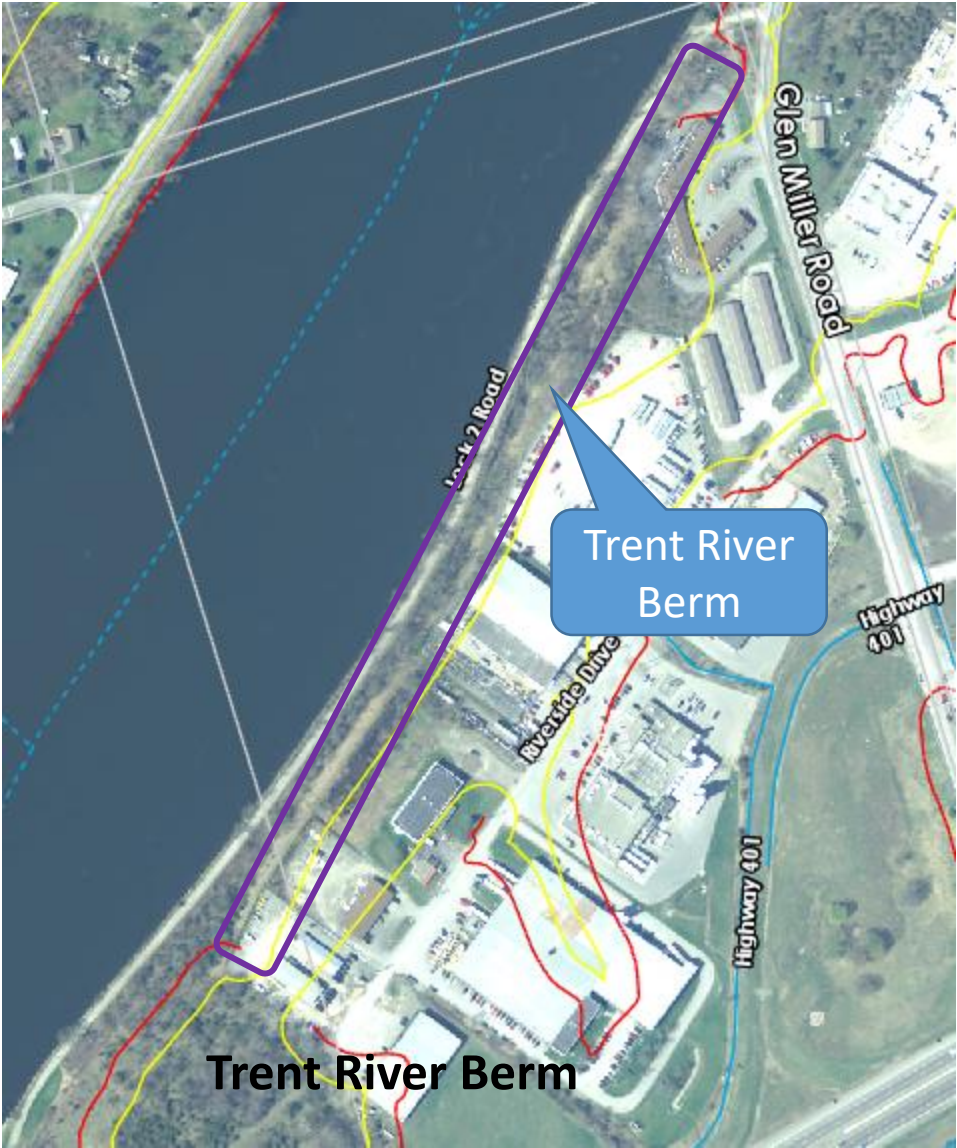
# Mayhew Creek – Barry Heights Flood Control Channel





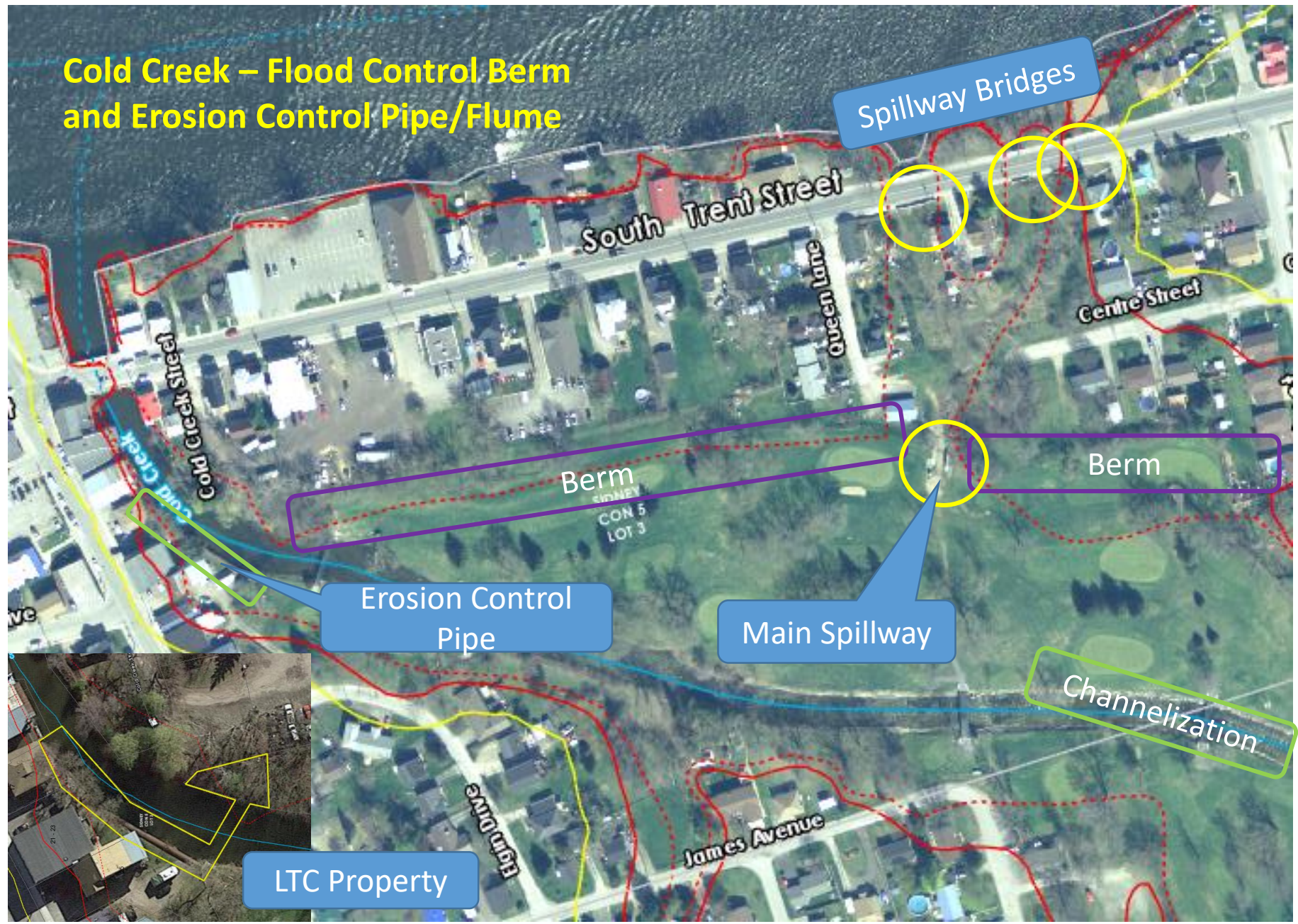






**Glen Miller Creek – Box Culvert**

# Cold Creek – Flood Control Berm and Erosion Control Pipe/Flume



LTC Property

Spillway Bridges

South Trent Street

Queen Lane

Centre Street

Berm

Berm

Erosion Control Pipe

Main Spillway

Channelization

James Avenue

Egton Drive



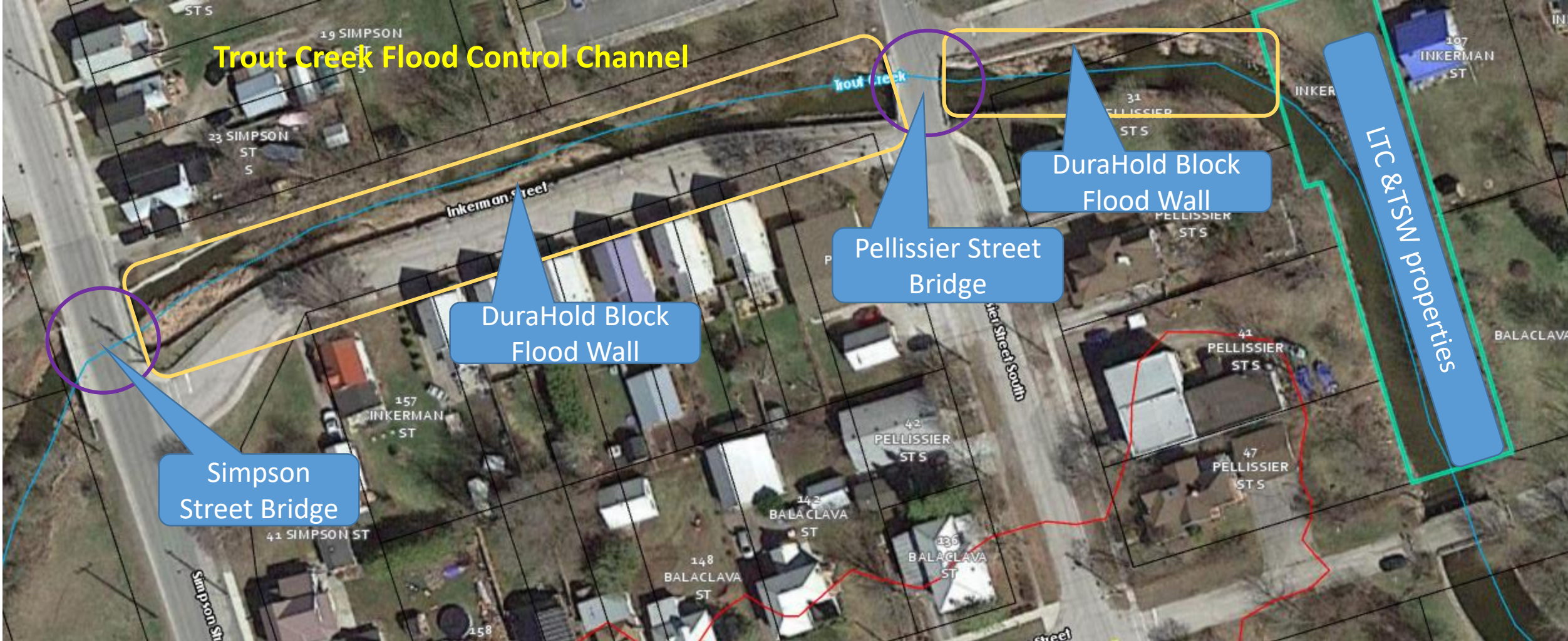
**Rawdon Creek – Flood Control Walls**

Concrete Flood Wall

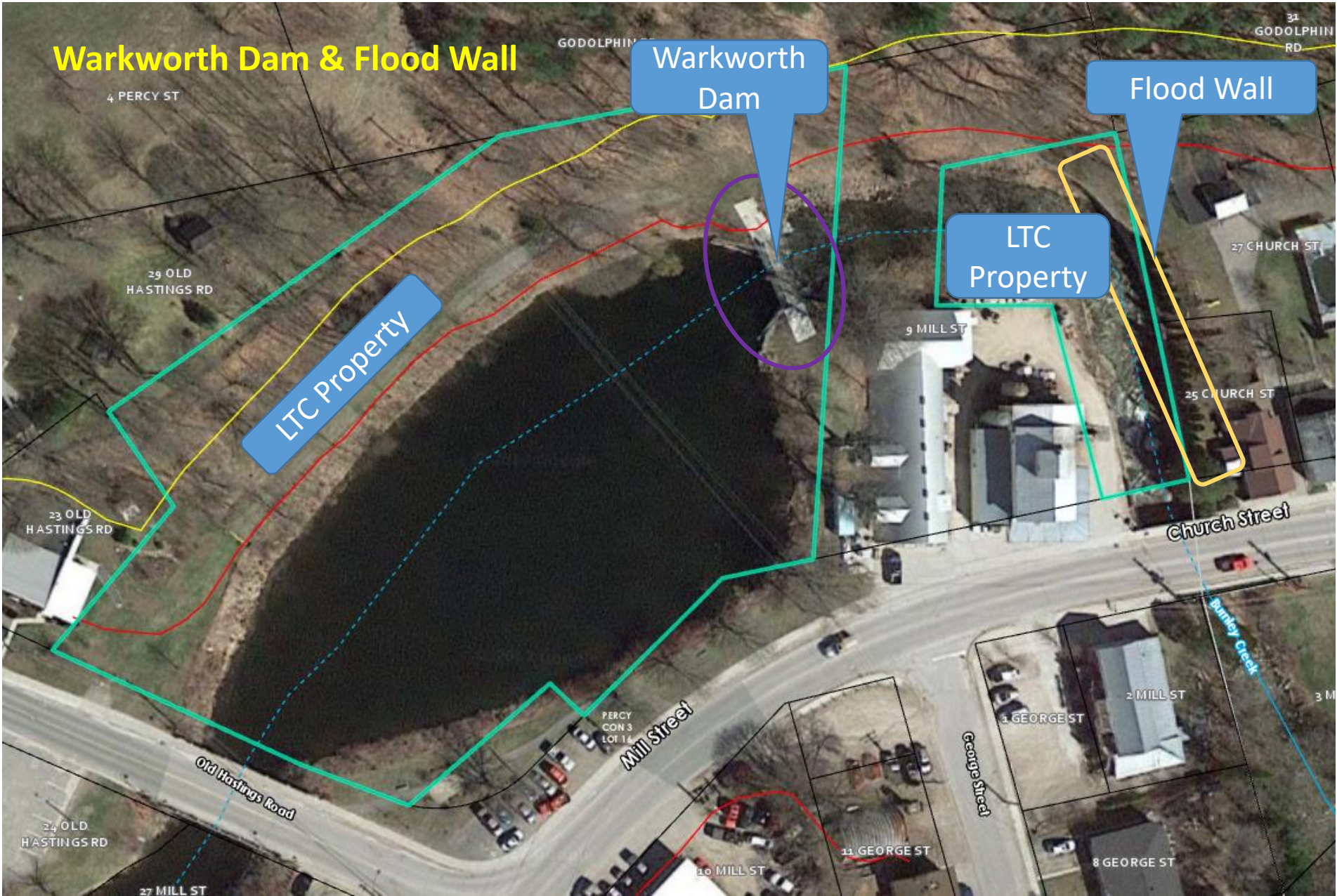
Weir Dam & Apron

Gabion Walls

Concrete Flood Wall







### LTC Flood Reduction & Erosion Control Structures - Inspection Record - LTRCA Properties

Date of Inspection: \_\_\_\_\_ LTC Staff: \_\_\_\_\_

Stream	Location	Ownership	Structure	Concrete	Earth Berm	Gabion/RipRap	Channel	Pipe/Flap Gate	Comments
Mayhew	Murray	LTC	Barry Heights flood channel - east of Byrne Avenue					culvert	
Cold Creek	Frankford	LTC	Erosion Pipe - Mill Street			under pipe		flume	
Trout	Campbellford	LTC	Flood Channel - Pellissier to Balaclava	durahold		east bank			
Burnley	Warkworth	LTC	Flood Wall - Church St	floodwall				flap gate	

movement  
spalling  
cracking  
erosion  
joint seals

toe erosion  
surface erosion  
movement  
woody vegetation  
animal burrows

movement  
holes/missing stone  
woody vegetation  
drainage/seepage

excessive vegetation  
woody vegetation  
blockage  
sediment deposition  
debris

blocked inlet/outlet  
movement  
erosion inside  
erosion outside  
structure damage  
flap gate operational

**Additional Comments:**

### LTC Flood Reduction & Erosion Control Structures - Inspection Record - Quinte West Properties

Date of Inspection: \_\_\_\_\_ LTC Staff: \_\_\_\_\_

Stream	Location	Ownership	Structure	Concrete	Earth Berm	Gabion/RipRap	Channel	Pipe/Flap Gate	Comments
Mayhew	Trenton	QW	Double Arch Culvert - Old Wooler Road	wing walls				arch culvert	
		Private	Channel - Downstream - east of Old Wooler Road		d/s end			2 flap gates	
		Private	Channel - Upstream - west of Old Wooler Road		south bank			2 flap gates	
		Private	Flat Weir	weir					
		Private	2 - Stage Weir	weir					
		Private	Berm on north side of railline - South of Telephone Rd				gabion spillway		
DND	Trenton	QW & Private	Byron Street Channel with wing walls	concrete cap		gabion wall			
		QW, DND & Private	Connolly Street Channel			gabion walls			
Glen Miller	Trenton	MTO Hydro & Private	Flood Berm					1 flap gate	
		MTO Hydro & Private	Flood Channel - 401 to Foster Stearns Road						
		QW	Box Culvert - Foster Stearns Road	culvert					
	Sidney	Private	Interceptor Swale - east of Peterson Street						
QW		Box Culvert - Peterson Street	culvert						
Trent River	Trenton	QW	Flood Berm - Lock 2 Road					2 flap gates	
Cold Creek	Frankford	QW	Flood Berm - golf course & Queen Lane						
		QW	Flood Spillway - Queen Lane	spillway		side of spillway			
		Private	Western Berm					culvert	

movement	toe erosion	movement	excessive vegetation	blocked inlet/outlet
spalling	surface erosion	holes/missing stone	woody vegetation	movement
cracking	movement	woody vegetation	blockage	erosion inside
erosion	woody vegetation	drainage/seepage	sediment deposition	erosion outside
joint seals	animal burrows		debris	structure damage
				flap gate operational

**Additional Comments:**



### LTC Flood Reduction & Erosion Control Structures - Inspection Record - Stirling-Rawdon Properties

Date of Inspection: \_\_\_\_\_

LTC Staff: \_\_\_\_\_

Stream	Location	Ownership	Structure	Concrete	Earth Berm	Gabion/RipRap	Channel	Pipe/Flap Gate	Comments
Rawdon	Stirling	SR & Private	Flood Wall - Mill Street & James Street					2 flap gates	
		SR	Weir Dam & Apron Spillway					low flow pipe	
		SR	Gabion Channel - Mill & East Front Streets						
		SR	Concrete Flood Wall - North Side						
		SR	Wing Walls for Covered Bridge						

movement	toe erosion	movement	excessive vegetation	blocked inlet/outlet
spalling	surface erosion	holes/missing stone	woody vegetation	movement
cracking	movement	woody vegetation	blockage	erosion inside
erosion	woody vegetation	drainage/seepage	sediment deposition	erosion outside
joint seals	animal burrows		debris	structure damage
				flap gate operational

**Additional Comments:**

### LTC Flood Reduction & Erosion Control Structures - Inspection Record - Trent Hills Properties

Date of Inspection: \_\_\_\_\_ LTC Staff: \_\_\_\_\_

Stream	Location	Ownership	Structure	Concrete	Earth Berm	Gabion/RipRap	Channel	Pipe/Flap Gate	Comments
Trout	Campbellford	TH	Flood Channel - Simpson to Pellissier	durahold		north bank			
		TH & Private	Flood Channel - Pellissier to Balaclava	durahold		east bank			
Killoran	Hastings	TH	Box Culvert - Bay Street	box culvert					
		TH	Double Box Culvert - Water Street	box culvert					
		Private	Flood Channel	flood wall				flap gates	

movement	toe erosion	movement	excessive vegetation
spalling	surface erosion	holes/missing stone	woody vegetation
cracking	movement	woody vegetation	blockage
erosion	woody vegetation	drainage/seepage	sediment deposition
joint seals	animal burrows		debris
			blocked inlet/outlet
			movement
			erosion inside
			erosion outside
			structure damage
			flap gate operational

**Additional Comments:**



**LOWER TRENT**  
CONSERVATION

# STAFF REPORT

**Date:** August 30, 2024  
**To:** Board of Directors  
**Re:** 2025 Fee Policy and Schedules  
**Prepared by:** Rhonda Bateman, Chief Administrative Officer

---

## PROPOSED RESOLUTION:

THAT staff proceed with public and municipal consultation on the proposed Lower Trent Conservation 2025 Fee Policy and Schedule be approved.

## BACKGROUND:

Lower Trent Conservation (LTC) charges fees to assist with covering the program costs for services and products that are not supported through provincial grant funding and assist in reducing the general levy. The fees take into account estimated staff time, travel, and material costs to provide the service. To date the fees have only covered a portion of the service costs. As a result of provincial cutbacks to the operating budget, it is imperative to charge a fee reflective of full costs associated with the service provided.

On January 1, 2023, the *Conservation Authorities Act* was amended by repealing 21 (1) (m.1) which related to the power of CAs to charge fees for services approved by the Minister of Natural Resources and Forestry and enacting section 21.2 (1) - (12) "Fees for Programs and Services". Subsection (1) enables the Minister of Natural Resources to determine the classes of programs and services in respect of which an authority may charge a fee and (2) requires the minister to publish a List in a policy document. The Minister published the list through the [Policy: Minister's list of classes of programs and services in respect of which conservation authorities may charge a fee](#) ("Minister's List") on April 11, 2022. Conservation authorities may only charge a fee for a program or service that it provides if it is included in this List.

All CAs are required to have a fee policy and fee schedules approved by their Board. Lower Trent's fee policy and schedules are reviewed annually, distributed for comment and posted on our website. The fee policy enforces that the fees are intended to recover the cost of the services.

The Minister froze CA planning and development fees for 2023 and that freeze continued through 2024. However, the Fee Policy and Schedules are required to be reviewed and updated annually and any changes be brought forward to the Board of Directors for consideration. Consultation is also required annually as noted under Process and Public Notification prior to Board approval. This report is bringing forward the proposed changes for 2025.

The 2024 LTC Fee Policy and Schedules were approved by the Board of Directors on November 9, 2023. Realistic consideration of staff time and expenses required for these services were evaluated. There have been proposed additions to development charges that were considered by LTC for 2024 but the minister's freeze did not allow LTC to implement these changes. The 2025 LTC Fee Policy and Schedules are attached.

**DISCUSSION:**

Staff have begun the 2024 Fee Policy and Schedules review. There were minor changes to the policy document to reflect changes in regulations. Staff recommend that changes to the policy and schedules be accepted for implementation in 2025. The full draft 2025 LTC Fee Policy and Schedules document is attached.

Consultation for the 2025 Fee Policy and Schedules will be premised with the understanding that the planning and regulation fees will not be implemented until the removal of the current freeze. There may be changes to the Schedule 1 fees post-consultation dependent on the outcome of further research into local CA charges.

**Schedule 1 – Planning and Regulations Fees**

The new 2025 proposed fees are compared to the 2024 proposed fees for planning and regulations that were accepted by the Board but not ratified due to the minister's fee freeze.

- Increases of 3-6% were added for most categories based on the 2024 proposed schedule.
- Addition of Large Fill Permit fees for loads up to 500 cubic metres and loads greater than 500 cubic metres as noted in the proposed 2024 fee schedule.
- Refinement of Complex Permit fees based on the number of technical reviews required.
- Refinement of Zoning By-law Amendment fees to one charge.
- Removal of the provincially significant wetland boundary updates for MNR purposes due to the changes in provincial direction for PSW designations.
- Increased the deposit for MZO application by \$5,000 to \$20,000 to help cover associated costs.

**Schedule 2 – General Service Fees**

- Fees for professional services were increased by \$10 for each category. There have not been increased for several years and are more reflective of actual staff and overhead costs.

**Schedule 3 – Stewardship Services Fees**

- Fees for nursery pricing is unknown at this time. A range is given to accommodate potential increases.
- There is a proposed \$1.00 increase to the administrative fee for 2025 which has been steady for two years prior.

**RECOMMENDATION:** That staff proceed with public and municipal consultation on the proposed Lower Trent Conservation 2025 Fee Policy and Schedule.



# Lower Trent Conservation Fee Policy and Schedules

*This manual outlines Lower Trent Conservation's policies  
for setting and charging fees*

Approved by Lower Trent Conservation Board of Directors – XXXX, 2024  
RES: GXXX/24

**Effective Date: January 1, 2025**

Lower Trent Conservation  
Administration Office  
714 Murray Street  
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K8V 0N1  
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**POLICY**

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Refunds ..... 2  
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**FEE SCHEDULES**

- Schedule 1: LTC Planning and Regulations Fees
- Schedule 2: LTC General Fees
- Schedule 3: LTC Stewardship Services Fees

## POLICY

### Purpose

The purpose of the Fee Policy and Schedules is to inform the public and our municipal partners of the fees charged for programs and services delivered by Lower Trent Conservation.

### Legislative Framework

The *Conservation Authorities Act (CAA)* Section 21.2 allows for conservation authorities to charge fees for services.

The CAA Section 21.1 Mandatory programs and services and Ontario Regulation (O. Reg.) 686/21 Mandatory Programs and Services outline mandatory (Category 1) programs that may be funded by municipal apportionment, provincial grants, or self-generated revenue with the user pay principal as appropriate.

Section 21.1.1 of the CAA outlines Category 2 Municipal programs and services, “An authority may provide, within its area of jurisdiction, municipal programs and services that it agrees to provide on behalf of a municipality situated in whole or in part within its area of jurisdiction under a memorandum of understanding, or such other agreement as may be entered into with the municipality, in respect of the programs and services”

Section 21.1.2 of the CAA defines Category 3 Other programs and services, “In addition to programs and services described in sections 21.1 and 21.1.1, an authority may provide, within its area of jurisdiction, any other programs and services that it determines are advisable to further the purposes of this Act.”

#### Category 1 Mandatory Programs and Services include:

- Administration of *Conservation Authorities Act (CAA)* Section 28 and 28.1 including technical advice and studies;
- Response to legal, real estate and public inquiries regarding a CAA Section 28 and 28.1 and natural hazard inquiries under the *Planning Act*;
- Activities requiring a permit made pursuant to section 29 of the CAA;
- Review and commenting on applications under other legislation noted under the Mandatory Programs and Services Regulation (O. Reg. 686/21) and associated inquiries.
- Commenting on Planning Act applications for consistency with natural hazard policies.
- Access to authority owned or controlled land for recreational activities not requiring direct authority or other staff involvement.

#### Category 2 Municipal programs and services include but are not limited to:

- Risk Management Official/Inspector Services under the Clean Water Act.
- Source Water Education and Outreach as per the Trent Source Protection Plan policies.
- Flood and Erosion Control Infrastructure inspections.

#### Category 3 Other programs and services include but are not limited to:

- Extension Services (e.g. technical advice/implementation of erosion control measures, forest management/tree planting, wildlife/fisheries habitat management, management of forests/recreational land owned by others, technical studies)
- Recreational activities that are provided on land that is owned or controlled by the authority with the direct support or supervision of staff employed by the authority or by another person or body, or with facilities or other amenities maintained by the authority, including equipment rentals and renting facilities for special events.
- Public education services to improve awareness of issues relating to the conservation, restoration, development, and management of natural resources in watersheds in Ontario.
- Youth education.
- The sale of products by the authority.

## Policy Principles

This Fee Policy and associated Schedules have been prepared in conformity with the *Conservation Authorities Act*. The Fee Schedules are based on the user-pay principle. The fees and revenues for planning and permitting services are designed to assist with recovering the costs associated with administering and delivering the services on a program basis. These fees do not exceed the cost of the service.

## Process and Public Notification

The Fee Policy and Schedules has been established by the Lower Trent Conservation (LTC) Board of Directors following consultation with local stakeholders and the public.

Consultation includes direct e-mail to key stakeholders (e.g., municipalities) and posting the notice for comment for review and/or revisions to the Fee Policy and Schedules on the LTC website for a minimum of 30 days. Comments received will be presented to the Board of Directors prior to any approval.

## Implementation

It is the objective of LTC to provide an effective and efficient delivery of services. To achieve this objective:

- Land use proposals will be reviewed in a timely fashion.
- Comments on applications under the *Planning Act* will be provided in time for the legislated public meeting or hearing.
- Permit applications under the *CAA* generally will be processed within timelines outlined in the *Conservation Authorities Act* and O. Reg. 41/24 Prohibited Activities, Exemptions and Permits.

Exemptions to the application of these fees include:

- Non-profit conservation groups contributing to the protection and restoration of the natural environment, such as Ducks Unlimited (DU), Nature Conservancy of Canada (NCC), Ontario Federation of Anglers and Hunters (OFAH) for permit applications, *Planning Act* applications, inquiries, and site assessments;
- LTC municipalities forming part of the permit applications, inquiries, and site assessments (excluding exceptional circumstances where considerable staff time is required to conduct major technical reviews and enforcement matters).

## Refunds

Lower Trent Conservation does not issue refunds for services or products once the application or order is submitted and the payment has been processed. Under exceptional circumstances, refund requests will be considered and may be approved by the Chief Administrative Officer. If a refund is approved, a 10% refund fee will apply.

## Appeal

The fee appeal process will be based on the principles of fairness, opportunity, and notification. The only fees that would be considered for an appeal are those found under planning and permitting.

Consideration of appeals will be directed to the Chief Administrative Officer (CAO). The appellant must submit in writing to the CAO the reasons for the appeal request. The CAO will review the request, consult with staff and the proponent. The appeal will be dismissed, upheld or the fee altered. If the appeal is dismissed, the proponent is required to pay the fee amount. If the appeal is upheld, the fee could be waived or varied from the original amount. The applicant will be notified of the CAO's decision.

If the applicant is dissatisfied with the decision from the CAO an appeal to the LTC Board of Directors can be requested.

The appellant must submit in writing to the CAO the reasons for the appeal request to the Board of Directors. The written request must identify a request to present the appeal before the Board of Directors. Once heard, the appeal will be



dismissed, upheld or the fee altered. If the appeal is dismissed, the proponent is required to pay the fee amount. If the appeal is upheld, the fee could be waived or varied from the original amount. Any appeal decision requires a resolution passed by the Board of Directors. The appellant will be notified of the Board's decision.

**Date of Effect**

The Fee Policy and Schedules becomes effective as of the date set by the LTC Board of Directors.

**Transition**

The establishment of this Fee Policy and Schedules supersedes and replaces all previous fee policies and/or schedules. The Policy also applies to proposals not previously invoiced, such as draft approved plans of subdivision which predated any fee schedule.

**Review Process**

This Fee Policy and Schedules will be reviewed annually by LTC staff to monitor effectiveness and any changes will be brought forward to the Board of Directors for consideration. Consultation is required if changes are applied to the Policy or Schedules (as noted under Process and Public Notification) prior to Board approval. Approval of the updated Fee Policy and Schedule will require passage of a resolution by the Board of Directors.

## FEE SCHEDULES

**Schedule 1: LTC Planning and Regulations Fees**

**Schedule 2: LTC General Fees**

**Schedule 3: LTC Stewardship Services Fees**

<b>SCHEDULE 1 Planning and Regulations Fees</b>				
<b>FEE TYPE</b>	<b>Proposed 2024 Fee</b>	<b>Proposed 2025 Fee</b>	<b>NOTES</b>	<b>Change</b>
<b>Pre-Application Services Fees</b>			<b>No reimbursement or crediting of fees</b>	
General Inquiry	Free	free	Verbal or email response	No change
Clearance Letter/Screening Letter	\$125	\$100		\$25 decrease
Pre-Consultation with Written Comments	\$200	\$200		No change
Site Visit - Project Specific (< 0.5 ha)	\$250	\$260	detailed discussion on specific site locations	\$10 increase
Site Visit - Standard (<2 ha)	\$400	\$410		\$10 increase
Site Visit - Large (>2 ha)	Min \$500	Min \$500	Cost estimate to be provided based on scope and complexity	No change
<del>PSW Boundary Update</del>	<del>\$1,000</del>	<del>\$1,000</del>	<del>Includes submission to MNRF</del>	REMOVE
Legal Inquiry	\$220	\$225	(3-10 business days)	\$5 increase
Legal Inquiry – RUSH	\$350	\$360	(up to 2 business days)	\$10 increase
Technical Report Review	\$275	\$285	Per Report (EIS, HE, Floodline, etc.)	\$10 increase
Map of property with environmental constraints	\$30	\$30		No change
<b>Permit Fees</b>				
Routine Permit Drainage Act (DART Protocol)	\$100	\$100		No change
Hydro One - Utility Corridor (up to five sites)	\$500	\$515		\$15 increase
Minor Permit	\$230	\$235		\$5 increase
Standard Permit	\$575	\$590		\$15 increase
Complex Permit – <del>One Technical Study</del>	<del>\$825 +</del>	<del>\$850 +</del>	<del>\$850 plus technical review fee(s)</del>	<del>\$25 increase</del>
<del>Complex Permit – Two Technical Studies</del>	<del>\$1,100</del>	<del>\$1,100</del>	<del>Deposits may be required</del>	REMOVED
Compliance Permit			Double the Application Fee	No change
Large Fill Permit	\$575 +	\$590 +	\$590 + \$0.50 per m3 up to 500m3	NEW 2024/\$15 increase
Large Fill Permit	\$3,000 +	\$3,100 +	\$3,100 + \$0.75 per m3 greater than 500m3	NEW 2024/\$100 increase
Restoration Agreement			Double the Application Fee	No change
Permit Amendment - Administrative	\$100	\$100		No change
Permit Amendment			50% of original fee	No change
Hearing Administration Fee - Standard	\$400	\$400	Single residential lot development	No change
Hearing Administration Fee - Complex	\$1,000	\$1,030	Multiple lots; Commercial or Industrial Development; Large Residential Development	\$30 increase

FEE TYPE	Proposed 2024 Fee	Proposed 2025 Fee	NOTES	Change
<b>Standard Plan Review Fees</b>				
Consent	\$440	\$450		\$10 increase
Consent - Multiple (up to 3)	\$660	\$680		\$20 increase
Zoning Bylaw Amendment (ZBA)	\$440	\$450		\$10 increase
ZBA (condition of previously reviewed consent OR concurrent)	\$220	\$220		REMOVED
Minor Variance (MVA)	\$440	\$445		\$5 increase
Official Plan Amendment (OPA)	\$560	\$575		\$15 increase
Combined OPA/ZBA	\$990	\$1020		\$30 increase
Recirculation (any Standard Plan Review)			50% of original fee	No change
<b>Site Plan Control Fees</b>				No change
Single Lot Residential Site Plan	\$550	\$565		\$15 increase
Minor Site Plan	\$1,050	\$1,080		\$30 increase
Major Site Plan	\$2,600	\$2,700		\$100 increase
<b>Subdivision / Condominium Fees</b>				
DRAFT PLAN Subdivision - Basic	\$3,500	\$3,750		\$250 increase
DRAFT PLAN Subdivision - Complex	\$7,000	\$7,500	Phasing may incur additional fees	\$500 increase
Redline Revision or Resubmission	\$1,300	\$1,340	No Technical Reports to review	\$40 increase
Redline Revision or Resubmission	\$2,600	\$2,675	Technical Reports to review	\$75 increase
Detailed Design Review & Clearance of Draft Conditions	\$1,900	\$2,000	per Phase	\$100 increase
Detailed Design Review & Clearance of Draft Conditions	\$3,500	\$3,600	Draft Plan Approval > 5yrs ago	\$100 increase
Ministerial Zoning Order (MZO)	\$15,000 deposit	\$20,000 deposit	Additional fees for Cost recovery of: Review of technical reports, consultant costs, compensation, development and implementation, administration and legal fees	\$5,000 increase

Note: No fees apply to applications for submissions from levying municipalities on municipal initiatives  
(excluding major technical reviews and enforcement matters)

***Payments can be made by cash, cheque, or credit card (Visa or MasterCard)***

<b>SCHEDULE 2 General Service Fees</b>				
<b>FEE TYPE</b>	<b>2024 Fee</b>	<b>2025 Fee</b>	<b>NOTES</b>	<b>Change</b>
<b>Staff Charge Out Rates</b>				
<i>Management/Project Management</i>	\$90	\$100	Staff charge out rates have not changed for 3 years	\$10 increase
<i>Engineering/Planning</i>	\$75	\$85		\$10 increase
<i>Specialists – IT, GIS, Ecologist</i>	\$60	\$70		\$10 increase
<i>Administration/ Technicians</i>	\$55	\$65		\$10 increase
<i>Outside Engineering Consultant Fees</i>			Cost recovery	
<b>Conservation Lands</b>				
Group picnics/Special events				No change
Up to 50 people	\$150	\$150		No change
Up to 100 people	\$300	\$300		No change
Up to 200 people	\$600	\$600		No change
>200 people (per 100)	+ \$150	+ \$150		No change
Delivery Charges (picnic tables/garbage cans)	\$110	\$110		No change
<b>Goodrich-Loomis Conservation Centre Rental</b>				
Half day – one floor	\$100	\$100		No change
Half day – two floors	\$150	\$150		No change
Full day – one floor	\$175	\$175		No change
Full day – two floors	\$300	\$300		No change
Murray Marsh Hunting permission	\$75	\$75		No change
Other events (filming, athletic, sponsored events)			Cost recovery	No change
Discover Your Watershed Events			Cost recovery	No change
<b>Administrative Services</b>				
Shipping and Handling – minimum fee		\$10		No change
NFS Cheque		\$50		No change
Printing – all printing and sizes			Cost recovery	No change

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<b>SCHEDULE 3 Stewardship Services Fees</b>			
	<b>2024 Fee</b>	<b>2025 Fee</b>	<b>NOTES</b>
<b>Tree Seedlings and Shrubs</b>			
Conifer Stock	\$1.52-\$1.75	\$1.60-\$1.80	Pricing information from nurseries unavailable
Deciduous Stock	\$1.96-\$2.30	\$2.00-\$2.35	Pricing information from nurseries unavailable
Administrative Fee – per order	\$14	\$15	No change
<b>Potted Trees</b>	\$17-\$19	\$18-\$21	Pricing information from nurseries unavailable
<b>Wildflower Kits</b>			
Sun-loving	\$50	\$55	No change
Shade-tolerant	\$70	\$75	No change
<b>Little Forest Kits</b>	\$400-\$450	\$425-\$475	Pricing information from nurseries unavailable

*Payments can be made by cash, cheque, or credit card (Visa or MasterCard)*



**LOWER TRENT**  
CONSERVATION

# CAO REPORT

**Date:** August 28, 2024  
**To:** Board of Directors  
**Prepared by:** Rhonda Bateman, Chief Administrative Officer

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## STAFFING

The new Regulations and Enforcement Officer is Toby Farrell. His background in law is an important asset for the position. He started work on August 19, 2024.

We have said goodbye to the contingent of five Lower Trent Conservation and one Ontario Federation of Anglers and Hunters youth summer employees who have completed their work placements. These individuals were integral in assisting program areas in meeting their 2024 business plan targets. All the summer employees were hard working and diligent which was appreciated. Many of the summer staff had the opportunity to assist in other program areas and projects. This exposure to different program areas is important in expanding their interests and potential job opportunities. We held an appreciation lunch for the summer staff on August 23<sup>rd</sup>.

## MANAGED IT SERVICES

The Request for Quotes for Managed IT Services resulted in six proposals being submitted. After an analysis of the submissions by the CAO, Corporate Services Manager, and GIS and Information Technology Specialist, Nesda Technologies Ltd. in Belleville was determined to be the successful service provider. Their annual fee for a service level agreement fell within LTC's budget estimates.

In addition to service level agreements Nesda will be undertaking specific projects over the next few years as priorities under the 2023 IT Operations Review are examined. Firstly, they will be conducting an in-depth review of our existing systems and facilitating file migration to the Cloud. Cloud migration was one of the important early steps recognized in the IT Operations Review after increasing our internet capacity and speed with the switch to Starlink. Once the files are available online, it will allow our staff access to files normally only available at the office, increasing productivity both in the field and when working from home.

## HUMAN RESOURCES

Traditionally, LTC used the services of HR Downloads for its online training requirements but did not utilise the other human resources services offered mainly due to the costs. We decided to review our HR services options and compared several HR consultants (HRdownloads, HRCovered, and Peninsula) for products and delivery.

As a result, LTC has decided to move to HRCovered. For similar pricing, HRCovered provides more comprehensive HR services including access to HR professionals, legal professionals, and legislated training.

### **BUILDING MAINTENANCE UPGRADES**

The administration building is scheduled to have a new electronic entry system installed for the staff door in September. This will allow staff more access and ease of entry.

The administration building will also have a new set of six hard wired smoke detectors installed to replace older models.

The workshop's current heat detectors are scheduled to be replaced soon.

### **CONSERVATION ONTARIO**

There was a General Managers meeting on August 26<sup>th</sup> focussed on the current planning and regulations programs.

The next CO Council meeting will take place in Newmarket on September 23<sup>rd</sup>. The CAO and Chair will not be attending due to previous commitments.

### **SOURCE PROTECTION PROGRAM**

LTC has signed the transfer payment agreement with the Ministry of the Environment, Conservation and Parks (MECP) for a three-year budget for the Drinking Water Source Protection Program (DWSP). Changes to the budget approach by the province has resulted in a decrease in the administrative funding available to larger Source Protection Regions. This will affect the budgets of the five CAs in our region including LTC. We are working with MECP staff to minimize losses in revenue versus expenditures.

### **MUNICIPAL UPDATES**

The CAO, Conservation Lands Supervisor and Communications Specialist are to meet with Brighton Council on September 3<sup>rd</sup> to outline the initial proposal concept for a Proctor Park Pavilion committee. We will be asking for support from Brighton for staff and council member time to participate on the committee.